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The application of Comfort Theory in healthcare promoting adults' comfort: A scoping review

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The application of Comfort Theory in healthcare promoting adults' comfort: A scoping review

ABSTRACT

Objectives To map the evidence of Comfort Theory application in healthcare promoting adults' comfort.

Design Scoping review

Data sources Databases of MEDLINE, CINAHL, PsycINFO, Embase, AMED, Web of Science, Scopus, Cochrane Library, JBI Library of Systematic Reviews, CNKI, Wan Fang; grey literature of Google Scholar, Baidu Scholar, The Comfort Line from 1991 to 2022.

Methods This scoping review was conducted following the Joanna Briggs Institute guidance. Two reviewers selected papers and extracted data independently. A thematic synthesis and a descriptive analysis were provided.

Results The review included 317 papers. Nearly a half (n = 144, 45.4%) were published in the last five years. The majority of papers (n = 285, 89.9%) originated from China, USA, Turkey, Brazil, and Portugal. The use of Comfort Theory was dominated in a range of hospital settings (n = 233). Seven categories of application were identified: 1) interventions underpinned by Comfort Theory as the theoretical framework, 2) interventions evaluated by instruments derived from Comfort Theory, 3) descriptive or observational studies of services or practices underpinned by Comfort Theory, 4) surveys using questionnaires derived from Comfort Theory, 5) questionnaires development or adaption based on Comfort Theory, 6) qualitative studies interpreted by Comfort Theory, and 7) literature reviews and discussion about Comfort Theory use. The most commonly used intervention was music therapy (n = 29), and the most commonly used questionnaire was General Comfort Questionnaire (n = 100).

Conclusions Kolcaba's Comfort Theory has been used in interventions and assessments in different healthcare settings but in a limited international scope. A set of holistic comfort measures and questionnaires have been proposed offering many options for practitioners. However, the application of theory is insufficient, lacking an informed and explicit description of theory use. Further systematic reviews are warranted based on the categorisation of theory application developed by this review.

Keywords: Comfort care, Comfort interventions, Comfort measures, Comfort questionnaires, Comfort Theory, Patient comfort

Strengths and limitations of this study

- This scoping review provides a first comprehensive overview of 317 systematically collected papers on the application of Comfort Theory.
- The scoping review methodology allowed for assessing a wide variety of articles and identifying significant gaps in the literature.
- Further systematic reviews and meta-analysis or meta synthesis are warranted based on the categorisation of theory use established by this scoping review.
- Our findings have limitations in generalisation for not including results from non-adults and those published in other languages.

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43 INTRODUCTION

44 Comfort is a universal concept understood across different disciplines and cultures [1].
45 Enhanced comfort is a positive, affirmative, and desired health outcome [2-4]. Comfort
46 was first defined systematically by American researcher Dr. Katherine Kolcaba through
47 a concept analysis published in 1991 [5, 6] and then she developed the Comfort Theory
48 in healthcare context [5, 7, 8]. As a middle range theory, Comfort Theory is most widely
49 known for its systematization and projection among the different theorists [9-11], and
50 is most frequently described use in guiding practice at both the unit level and the
51 hospital-wide level [12].

52 Comfort is “the immediate experience of being strengthened through having the needs
53 for relief, ease, or transcendence met in four contexts: physical, psychospiritual,
54 environmental, and sociocultural contexts” [8 P14]. Comfort can be enhanced by
55 therapeutic interventions, taking into account intervening variables such as age,
56 prognosis and finances [2, 13]. There are three types of comfort interventions: (1)
57 *Technical comfort measures* are those that are specified by discipline protocol,
58 including medications and treatments; (2) *Coaching* is to relieve anxiety, provide
59 reassurance and information, promote hope, listen, and help plan realistically for
60 recovery, integration, or death in a culturally sensitive way; (3) *Comfort Food for the*
61 *Soul* are those extra holistic measures such as hand massage, guided imagery, music
62 therapy and family support [2, 8].

63 Comfort is measured and quantified before and after interventions, using Comfort
64 Theory-derived instrument for example General Comfort Questionnaire (GCQ). If their
65 comfort is enhanced, patients/ family members engage more fully in health seeking
66 behaviours (HSBs), and subsequently the institution integrity (i.e., satisfaction, cost)
67 will be improved. Applying Comfort Theory in practice generates a philosophy of
68 healthcare named as Comfort Care [8], which provides a pattern and practical rationale
69 for practicing comfort management [14]. Comfort Theory can be adopted to any
70 healthcare settings or age group [1, 14].

71 Comfort assessments and interventions, however, are complex practices [15, 16].
72 Comfort is dynamic, varying, individualized [11], multidimensional [17], with inherent
73 properties of change over a short period of time [18, 19]. Individuals’ experience of
74 comfort can be influenced by a variety of factors including patients’ personal strategies,
75 the unique role of family, staff actions and behaviours, and factors within the clinical
76 environment [17]. Nurses reported that they had difficulties to assess the patient to
77 fulfil their comfort needs [20]. Comfort care practices are hindered by the lack of
78 effective experimental studies and the difficulty in assessing outcomes [11].

79 Comfort Theory should be useful for instrument development, theory testing through
80 research, and healthcare practice strategies in relation to comfort care [21]. A scoping
81 review is needed to produce an evidence base about how this important theory has
82 been applied in comfort enhancement practice or research for adults in an international
83 scope. A scoping review can also be helpful precursors to systematic reviews on more
84 focused questions in relation to the theory use [22]. The proposed scoping review in
85 this document differs from the existing reviews by focusing on the documents reporting
86 the application of Kolcaba’s Comfort Theory in adult healthcare instead of paediatric
87 [23], and including the latest evidence published after the existing reviews in a limited
88 scope [9, 10].

OBJECTIVES

Our scoping review aimed to categorise and synthesize the international literature on the application of Comfort Theory in research and practice aiming to promote adults' comfort. The specific objectives were to map: 1) the categories of Comfort Theory application; 2) characteristics of the application of Comfort Theory in interventions, measurement, and interpretation of comfort experience; and to determine 3) if a further systematic review is feasible to determine whether Comfort Theory is a valid and reliable theory for guiding healthcare.

METHODS

Study design

We conducted this scoping review following the Joanna Briggs Institute (JBI) guidance [24, 25]. The choice of the JBI framework was underpinned by the consideration that it is an advanced guidance to the collective work by Arksey and O'Malley, 2005, Scoping studies: towards a methodological framework [26] and Levac, Colquhoun, 2010, Scoping studies: advancing the methodology [27] and therefore has the least deficiencies as a methodological framework for scoping reviews [24, 25, 28]. In line with the JBI framework, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting checklist was used for the report of this review [24, 29].

Search strategy and paper selection

A three-step search was conducted between 25th November 2021 and 10th January 2022, with an update search for new papers from 13th October 2022 to 17th October 2022. The first step was an initial limited search on MEDLINE and CINAHL on the following terms: patient comfort, comfort care, comfort intervention, comfort measurement, Comfort Theory. This initial search was then followed by an analysis of the text words contained in the title and abstract of retrieved relevant papers, and of the index terms used to describe the articles. A second search using all identified keywords and index terms was then undertaken across all included databases: MEDLINE, CINAHL, PsycINFO, Embase, AMED, Web of Science, Scopus, Cochrane Library, JBI Library of Systematic Reviews, China National Knowledge Infrastructure (CNKI), and Wan Fang. Grey literature was sought from Google Scholar, Baidu Scholar, and The Comfort Line. Thirdly, the reference list of papers that were included in the review was scanned for additional papers. The reviewers contacted key authors of primary studies or reviews for further information, including Dr. Katherine Kolcaba, Dr. April Bice, and Dr. Sebnem Cinar Yucel. The full search terms are listed in online supplemental table S1. The review protocol can be accessed on request.

Papers written in English and Chinese were included as the research team is proficient in the two languages. The majority of papers published in the widely used international databases are written in English so that the consideration of papers in English allows the most extent of coverage on papers met the inclusion criteria. Databases mainly covering publications in Chinese were searched to scope evidence from the context of China. Papers published from 1991 to present were included as the first publication regarding Comfort Theory is in 1991 [5, 6].

Following the search, all identified articles were imported into the software Endnote X9 (Clarivate Analytics, PA, USA). After removing duplicates, two reviewers (YZ and CC) initially screened the title and abstract of each paper against the inclusion criteria and exclude those were considered to be completely irrelevant respectively. Following the

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screening of title and abstracts, the full text of the potentially relevant papers was retrieved and reviewed in detail in qualitative data analysis software NVivo (QSR International, MA, USA) by two reviewers (YZ and CC) independently. Any disagreements that arose between the two reviewers at each stage of the study selection process were solved through discussion with the third reviewer (YL) to achieve final consensus.

The results of search and the process of paper selection were documented and presented in a PRISMA-ScR flow diagram [30] with the reasons for exclusion. A narrative description was written aligns with the flow diagram to demonstrate the selection process.

Inclusion and exclusion criteria

This scoping review included adult participants who aged 18 and older, and who could be patients, their family members, and healthcare professionals (HCPs), from any geographic location and any settings. The broad context was not limited to any particular countries or health systems while it had to be in healthcare settings where all the activities whose primary purpose was to promote, restore or maintain health.

The review sought any types of paper reporting the application of Comfort Theory developed by Kolcaba, including quantitative studies, qualitative studies, or mixed methods studies (MMS), literature reviews, meta-analyses or synthesis, guidelines, website reports, and grey literature [31]. The work could be an intervention to enhance comfort, an instrument to measure comfort level, qualitative interpretations of comfort experience or any other type of activity utilising the Comfort Theory. The review only considered papers that clearly indicated that Kolcaba's Comfort Theory was used, with cited references of which Dr. Katherine Kolcaba was listed as the author or one of the authors.

Data extraction

The full text of included papers was imported into the software NVivo (QSR International, MA, USA) for data extraction. After close reading of each paper, relevant data were coded based on the charting form (see supplemental table S2) by one reviewer and then checked by a second reviewer (YL and CC). Discrepancies and uncertainties of data extraction were solved through discussions within the review team.

To ensure a standardised data extraction consistently carried out on each source, data items were defined for this review: a) *Study participants* included the group or individuals investigated or cared for, social demographic and/ or clinical characteristics of the participants, and sample size; b) *Interventions* were defined as the care or measures provided to enhance comfort; c) *Outcomes* referred to the variables or items evaluated before and/ or after interventions to show the effects of interventions; d) *Comfort measurement* was the assessment or evaluation of comfort via a specific tool or approach; e) *Setting* referred to the specific location where the study was conducted such as a unit of hospital or an institution while f) *Country of origin* referred to which country the study was conducted; g) Any other key information related to the review questions and objectives will be extracted as “*Other key findings*”.

Data synthesis

Following data extraction, codes of relevant data generated from the included papers were then grouped into categories or themes as following: year of publication, country, settings, participants, study design, categories of application in research or practice. Year of publication was divided into the last five years and years earlier. Countries

were further grouped according to World Health Organization (WHO) regions system [32]. Settings were grouped into different types of institutions, and those in a hospital were further grouped based on the typical classification of hospital units. Participants were categorised into healthy people and patients, the latter were further categorised in accordance with The International Classification of Diseases and Related Health Problems (ICD-11) [33]. The typology of theory application was established based on study design or methodology and the purpose of using Comfort Theory by authors of included papers. Some synthesized results were visualised in figures or maps, such year of publication and country distribution. A descriptive narrative was provided accompanying the tables to demonstrate how the findings relate to the review objectives.

Patient and public involvement

No patients or public were involved in the study.

RESULTS

The entire PRISMA-ScR flow chart is shown in Figure 1. The initial search yielded 6,632 results. Removing duplicates and applying the eligibility criteria resulted in a total of 1,228 articles. At the end of study selection, 317 papers were included in the review, and information about the characteristics of Comfort Theory application were properly extracted (see supplemental table S3).

Year of publication

The publication year of one document was unknown and the remaining 316 papers were published between 1992 – 2022 (Figure 2). The number of papers published annually increased steadily since 1996 with fluctuations in between. The largest number of publications within a year was 37 in 2020. Nearly a half of the total (n = 144, 45.4%) were published in the last five years (2018 - 2022).

Country of origin

The included 317 documents reported the application of Comfort Theory in 24 countries or regions (Figure 3) covering Western Pacific (n = 152), Americas (n = 98), South-East Asia (n = 5), Europe (n = 57), and Eastern Mediterranean (n = 5). Whereas many countries published one or two papers, the majority of papers (n = 285, 89.9%) originated from the following five countries: China (n = 147), USA (n = 74), Turkey (n = 31), Brazil (n = 20), and Portugal (n = 13).

Settings

As reported in the 317 papers retrieved, the studies or practices applying Comfort Theory were carried out largely in hospitals (n = 233), followed by a range of settings comprising: nursing home (n = 8), university (n = 7), hospice or palliative clinic (n = 5), online (n = 4), community (n = 3), participants' home (n = 3) and others (n = 17). In the documents specifying unit of hospital (n = 173), Comfort Theory was mainly applied in: surgical units (n = 56), internal units (n = 52), critical care units (CCUs, n=17), obstetrics and gynaecologic unit (n = 16), outpatient (n = 15), operating room (n = 6), and emergency (n = 3).

Participants

Participants included in the studies or practices applying Comfort Theory were dominated by those with neoplasms (n = 52), followed by circulatory diseases (n = 28), genitourinary diseases (n = 27), pregnancy, childbirth or the puerperium (n = 25), healthy people (n = 22), digestive diseases (n = 18), surgical or post-surgical status

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(n=18), palliative care (n = 15), nervous diseases (n = 10), respiratory diseases (n = 9), musculoskeletal or connective tissue diseases (n = 8), injury, poisoning or certain other consequences of external causes (n = 6), mental, behavioural or neurodevelopmental disorders (n = 4).

Study design

The included 317 papers using Comfort Theory adopted a range of study design or methodology with a domination of interventional studies, comprising: randomised controlled trial (RCT) (n = 70), quasi-experimental study (n = 56), cross-sectional study (CSS, n = 50), literature review (n = 37), questionnaire development or adaption (n = 33, including questionnaire development (n = 14), questionnaire cross-cultural adaption (n = 8), questionnaire psychometric test (reliability and validity) (n = 7), questionnaire revalidation (n = 2), questionnaire validation feasibility study (n = 1)), longitudinal study (n = 16), qualitative study (n = 16), MMS (n = 13), case study/report (n = 13), case controlled study (CCS, n = 6), service description (n = 6), and cohort study (n = 2).

Categories of application in research/ practices

Based on the study design and/ or methods as well as the purpose of using Comfort Theory by authors of the 317 papers, theory application was synthesized into seven categories, which is presented in Table 1 and Figure 4.

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Table 1 Seven categories of Comfort Theory application in healthcare (n = 317)

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Interventions underpinned by Comfort Theory as the theoretical framework	49	2018 - 2022: n = 20, 1992 - 2017: n = 29.	USA: n = 23, China: n = 19, Turkey: n = 3, Portugal: n = 2, Canada: n = 1, Indonesia: n = 1.	Hospital: n = 38, Others: n = 11	Neoplasms: n = 8, Genitourinary system diseases: n = 7, Digestive system diseases: n = 5, Palliative care: n = 5, Surgical or postsurgical status: n = 5, Pregnancy, childbirth or the puerperium: n = 4, Nervous system diseases: n = 3, Healthy people: n = 3, Mental, behavioural or neurodevelopmental disorders: n = 2, Circulatory system diseases: n = 2, Critical care patients: n = 2, Respiratory system diseases: n = 1, Patients with pain: n = 1, Chemotherapy patients: n = 1.	Quasi-experimental study: n = 27, RCT: n = 14, MMS: n = 8.
Interventions evaluated by instruments derived from Comfort Theory	84	2018 - 2022: n = 49, 1992 - 2017: n = 35.	China: n = 67, Turkey: n = 12, Iran: n = 2, Australia: n = 1, Thailand: n = 1, USA: n = 1.	Hospital: n = 82, Nursing home: n = 2.	Neoplasms: n = 18, Circulatory system diseases: n = 5, Pregnancy, childbirth or the puerperium: n = 9, Digestive system diseases: n = 5, Genitourinary system diseases: n = 7, Respiratory system diseases: n = 4, Injury poisoning or certain other consequences of external	RCT: n = 56, Quasi-experimental study: n = 27, MMS: n = 1.

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Descriptive or observational studies of services or practices underpinned by Comfort Theory	28	2018 - 2022: n = 11, 1992 - 2017: n = 17	USA: n = 14, China: n = 10, Brazil: n = 1, Chile: n = 1, Pakistan: n = 1, Singapore: n = 1.	Hospital: n = 19, Others: n = 9.	causes: n = 4, Musculoskeletal system or connective tissue diseases: n = 4, Bone/joint diseases: n = 4, Bone/joint patients: n = 3, Supracondylar or post-surgical status: n = 1, Elders: n = 2, Endocrine, nutritional or metabolic diseases: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 1, Certain infectious or parasitic diseases: n = 1, Ear or mastoid process diseases: n = 1, Faecal incontinence patients: n = 1, Unspecified patients: n = 1. Neoplasms: n = 8, Healthy people: n = 5, Circulatory system disease: n = 3, Respiratory system diseases: n = 2, Elders: n = 2, Pregnancy, childbirth or the puerperium: n = 2, Genitourinary system diseases: n = 1, Neurocognitive disorders patients: n = 1, Injury, poisoning or certain other consequences of external causes: n = 1, Surgical or post-surgical status: n = 1, Palliative care: n = 1, Post traumatic loss	Case study: n = 12, CCS: n = 6, Service description: n = 6, Quasi-experimental study: n = 2, MMS: n = 1, Cohort study: n = 1

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Surveys using questionnaires derived from Comfort Theory	70	2018 - 2022: n = 29, 1992 - 2017: n = 41.	China: n = 29, USA: n = 14, Turkey: n = 12, Brazil: n = 7, Korea: n = 2, Austria + Germany: n = 1, Colombia: n = 1, Jordan: n = 1, Iran: n = 1, Israel: n = 1, Thailand: n = 1.	Hospital: n = 55, Others: n = 15.	of limb patients: n = 12 Neoplasms: n = 12 Genitourinary system diseases: n = 8, Pregnancy, birth or the puerperium: n = 7, Surgical or post-surgical status: n = 1 Digestive system diseases: n = 1 Palliative care: n = 1 Circulatory system diseases: n = 4, Nervous system diseases: n = 3, Critical care: n = 3, Elder patients and nurses: n = 3, Urinary incontinence patients: n = 2, Respiratory system diseases: n = 2, Injury poisoning or certain other consequences of external causes: n = 1, Certain infectious or parasitic diseases: n = 1, Multiple system diseases: n = 1. Healthy people: n = 5, Genitourinary system diseases: n = 1 Diseases of the musculoskeletal system or connective tissue: n = 1, Surgical or post-surgical status patients: n = 4, Nervous system	CSS: n = 50 (in which online survey: n = 5), Longitudinal study: n = 16, MMS: n = 3, Cohort study: n = 1.
Questionnaires development or adaption based on Comfort Theory	32	2018 - 2022: n = 13, 1992 - 2017: n = 19.	China: n = 12, Austria + Germany: n = 4, Brazil: n = 4, Portugal: n = 4, Turkey: n = 3, USA: n = 3, Indonesia: n = 1,	Hospital: n = 27, Others: n = 5.	Neoplasms: n = 5, Healthy people: n = 5, Genitourinary system diseases: n = 1 Diseases of the musculoskeletal system or connective tissue: n = 1, Surgical or post-surgical status patients: n = 4, Nervous system	Questionnaire development: n = 14, Questionnaire cross-cultural adaption: n = 8, Questionnaire psychometric test (reliability and validity): n = 7,

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Qualitative studies interpreted by Comfort Theory	17	2018 - 2022: n = 11, 1992 - 2017: n = 6.	Spain: n = 1. Brazil: n = 7, USA: n = 3, Australia: n = 1, Austria: n = 1, China: n = 1, Norway: n = 1, Portugal: n = 1, Sweden: n = 1, Wales: n = 1.	Hospital: n = 12, Others: n = 5.	disease: n = 3, Circulatory system diseases: n = 1, Palliative care: n = 1, behavioural or neurodevelopmental disorders: n = 1, Pregnancy, childbirth or the puerperium: n = 1, Unspecified participants: n = 1. Patients and staff members: n = 4, Circulatory system diseases: n = 3, Palliative care: n = 2, Healthy people: n = 2, Pregnancy, childbirth or the puerperium: n = 2, Neoplasms: n = 1, Nervous system diseases: n = 1, Elder patients: n = 1, Surgical or post-surgical status: n = 1.	Questionnaire revalidation in populations: n = 2, Questionnaire validation feasibility study: n = 1. Qualitative study: n = 6, Descriptive qualitative study: n = 3, Phenomenological study: n = 2, Reflective qualitative study: n = 2, Explorative qualitative study: n = 1, Case study: n = 1, Collective subject discourse: n = 1. Secondary qualitative analysis: n = 1. Literature review: n = 20 (which included: integrative review: n = 3, concept analysis: n = 2, systematic review: n = 2, theory derivation method: n =
Literature reviews and discussion about Comfort Theory use	37	2018 - 2022: n = 11, 1992 - 2017: n = 26.	USA: n = 16, China: n = 9, Portugal: n = 6, Brazil: n = 1, Canada: n = 1, Indonesia: n = 1, Kazakhstan: n = 1,	---	---	

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
			Spain: n = 1, Turkey: n = 1.			1, scoping review: n = 1, psychometric review: n = 1.), Literature review and discussion paper: n = 10, Literature review and discussion as a book chapter: n = 6, Literature review and discussion as a slide presentation: n = 1.

USA: United states of America.

CCS: case-controlled study; CSS: cross-sectional study; MMS: mixed methods study; RCT: randomized controlled trial.

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Application category 1: Interventions underpinned by Comfort Theory as the theoretical framework

Of the 317 papers, 49 (15.5%) reported interventions using Comfort Theory as the theoretical framework, including: music therapy (n = 13), massage (n = 8), health education (n = 7), therapeutic touch (n = 6), guided imagery (n = 6), position intervention (n = 6), aromatherapy (n = 4), cold and hot therapy (n = 6), coaching (n = 3), traditional Chinese medicine (TCM) (n=3), progressive muscle relaxation (PMR) (n = 2), cognitive strategies (n = 2), positive connotation (n = 2), pet visit (n = 1), silent therapy (n = 1), mindfulness (n = 1), still point induction (n = 1), and Robusta coffee (n = 1). Many studies reported an effective improvement in comfort (n = 35), satisfaction (n = 9), quality of life (QoL) (n = 1), and well-being (n = 1); and a significant reduce in anxiety (n = 7), pain (n = 7), depression (n = 4), stress (n = 3); and symptoms such as sleep quality (n = 3) and urine leakage (n = 2).

Application category 2: Interventions evaluated by instruments derived from Comfort Theory

The largest number of papers (n = 84, 26.5%) reported interventions that did not apply Comfort Theory as the theoretical framework but were evaluated using instruments derived from Comfort Theory. The common comfort measures evaluated in this group included: TCM (n = 13), health education (n = 11), music therapy (n = 9), position intervention (n = 7), massage (n = 4), , exercise (n = 4), cold and hot therapy (n = 3), foot reflexology (n = 2), PMR (n = 2), therapeutic touch (n = 2), shower (n = 1), doll intervention (n = 1), labour dance (n = 1), paradoxical intention therapy (n = 1), yoga (n = 1). The commonly used questionnaires to measure comfort before and/ or after interventions included Chinese version GCQ (n = 63), Turkish version GCQ (n = 6), Turkish version Paranaesthesia Comfort Questionnaire (n = 4), English version GCQ n = 3 and Turkish version Postpartum Comfort Scale (n = 3). Many studies reported the intervention had an effective enhancement in comfort (n = 81), satisfaction (n= 18), and QoL (n = 5); a significant reduce in pain (n = 30), anxiety (n = 18), depression (n = 6), length of hospital stay (n = 10), costs (n = 3); and improvement in symptoms such as constipation (n = 7), nausea and vomiting (n = 4), sleep quality (n = 4), swelling (n = 3), loss of appetite (n = 4) and difficulty urinating (n = 3).

Application category 3: Descriptive or observational studies of services or practices underpinned by Comfort Theory

28 (8.8%) papers reported a description of a specific service or practice applying Comfort Theory, and some of which could be case-level (n = 4), unit-level (n = 3) and institution-wide level (n = 2). The following comfort measures were reported in the service or practice enhancing comfort: music therapy (n = 7), position change (n = 6), massage (n = 6), aromatherapy (n = 3), and healing touch (n = 2). Comfort was evaluated (n = 9), with some comfort related variables: pain (n = 3), anxiety (n = 2), depression (n = 1), satisfaction (n = 2), QoL (n = 1), and symptoms such as sleep quality (n = 1), delirium (n = 1), and nausea and vomiting (n = 1).

Application category 4: Surveys using questionnaires derived from Comfort Theory

The second large group was surveys investigating comfort level and associated factors in different populations (n = 70, 22.1%). Sociodemographic factors such as education level (n = 19), age (n = 18) and gender (n = 15) were often reported to be influential to comfort. The relationship between comfort and the following variables were examined:

pain (n = 9), satisfaction (n = 9), anxiety (n = 6), QoL (n = 5), depression (n = 2), length of hospital stay (n = 2), and stress (n = 1). In these surveys comfort was often measured by Chinese version GCQ (n = 25), Turkish version GCQ (n = 6), and Childbirth comfort questionnaire (n = 3).

Application category 5: Questionnaires development or adaption based on Comfort Theory

There were 32 (10.1%) papers that reported questionnaire development or adaptation for measuring comfort among different groups, with tests of reliability and validity. The main questionnaire that was translated and adapted was GCQ (n = 8), followed by Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ) (n = 4), Immobilization Comfort Questionnaire (ICQ) (n = 2), Radiotherapy Comfort Questionnaire (RTCQ) for patients with head and neck neoplasms (n = 2), and Holistic Comfort Questionnaire – Family (HCQ-F) (n = 2).

Application category 6: Qualitative studies interpreted by Comfort Theory

A small group of papers (n = 17, 5.4%) reported a qualitative study understanding comfort needs, factors of comfort and comfort measures, most of which mapping the findings to the four contexts depicted in Comfort Theory: physical comfort (n = 12), psychospiritual comfort (n = 12), sociocultural comfort (n = 11), and environmental comfort (n = 8).

Application category 7: Literature reviews and discussion about Comfort Theory use

The last group was literature reviews and discussion papers or book chapters (n = 37, 11.7%), that summarised the use of Comfort Theory mainly surrounding the following topics: comfort care models (n = 23), comfort measures (n = 14), wide application (n = 11), questionnaires (n = 10), institution-level application (n = 5), best practices (n = 5), alternative and complementary therapies (n = 4), and comfort needs (n = 3). The common care model using Comfort Theory discussed in these literature reviews included: hospice care (n = 8), perianesthesia nursing (n = 5), childbirth care (n = 3), cardiac care (n = 3), and elderly care (n = 2).

DISCUSSION

To our knowledge, this is the first comprehensive review mapping the international literature regarding the application of Comfort Theory in healthcare to generate an evidence base for research and practices with an aim to promote adults' comfort. Our review has produced an overview of the characteristics of all papers reporting the theory use, and a synthesis of the categories of theory application in these reports. Comfort Theory has been applied in a wide range of healthcare contexts but focused areas about comfort enhancement. Comfort Theory is useful in guiding research and practices particularly in assessing comfort and developing comfort interventions or services. However, our review has also identified some pitfalls or limitations of the theory use.

Our review has identified that only 317 documents reported the use of Comfort Theory in the last 30 years and this number suggested an insufficient application of the theory. Comfort is a universal concept across races and cultures and is a central experience and primary goal of healthcare practices. Comfort Theory providing the most systematic definition of comfort and theoretical framework for comfort interventions, can be used to guide research questions, methods, and analyses, and can assist practice by facilitating the understanding of patients' behaviour, suggesting directions

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344 for future development of interventions, providing possible explanations for the degree
345 of effectiveness of the interventions [34, 35], and enabling systematic application and
346 evaluation in practice [12]. Greater efforts are therefore needed to apply Comfort
347 Theory in healthcare research and practices aiming to promote comfort.

348 From an international perspective, Comfort Theory has not been applied across a
349 broad scope of different social and cultural contexts as we expected because the
350 countries reported the use of this theory are mainly limited to several countries. The
351 development of instruments, adaption or translation of comfort questionnaires derived
352 from Comfort Theory from American to different cultural and social groups are limited.
353 This finding is inconsistent with the existing understanding in literature that Comfort
354 Theory was widely applied internationally [9-11, 14]. As a middle range theory, the
355 application of Comfort Theory might be in a defined scope between grand theory and
356 practice theory [35, 36]. Compared to grand theories, middle range theories are
357 characterised as more applicable directly to practice for explanation and
358 implementation [34]. Evidence shows that middle range theories can be applied in
359 different countries particularly behaviour or implementation theories [36, 37]. Attention
360 then should be paid on that when Comfort Theory is applied directly into practices in
361 specific context, they need to be adapted or modified to situation-specific theories [38,
362 39].

363 Our review has identified that Comfort Theory was most widely used in guiding or
364 evaluating interventional studies in different hospital units. In these studies, many
365 holistic comfort measures were tested or used to enhance comfort, and this allows a
366 further systematic review and meta-analysis. In traditional practice, technical
367 interventions are much more common than coaching and comfort food for the soul; the
368 latter two that are considered important as an 'expert' nurse [2]. In our review most of
369 the comfort measures being tested were coaching or comfort food for the soul and
370 were found effective in improving comfort. This result indicates the value of Comfort
371 Theory in developing comfort interventions.

372 Comfort Theory has also been used in explaining qualitative findings exploring comfort
373 experiences of different individuals in a small number of studies, which allow a further
374 systematic review and meta synthesis. Theory use in qualitative research is a
375 deductive process of understanding the complex comfort experience and is also a way
376 of testing and modifying the middle range theory within in specific contexts. The
377 included qualitative studies in our review did not explicitly report revisions or
378 modifications of Comfort Theory, which might suggest that Comfort Theory is useful in
379 projecting or explaining comfort related questions across contexts, or a limitation of the
380 included papers.

381 Many studies retrieved in our review did not clearly describe how the Comfort Theory
382 was used in the research or practice while a large number of papers were excluded
383 after full text review due to the missing references informing the use of Comfort Theory.
384 Similar issues about limited description of middle range theory use in research is
385 common [12, 40] and challenges and lessons from using theory are rarely discussed
386 in the literature [41]. A informed use of theory that provided the framework for the
387 research and a clear description of theory use to guide practice is recommended in
388 published work [12, 34, 42]. This provides a means by which other studies using the
389 same theory can be used to build the body of scientific knowledge, thus advancing
390 best practices in healthcare [34]. More informed use of theory can strengthen
391 improvement programmes and facilitate the evaluation of their effectiveness [42].

Explicit descriptions of using theory to guide practice promise a substantive step toward meeting the mandate for making a difference for society through theory guidance [12].

Future research

Based on the evidence base generated in our review, more research is needed to further test and explore the effects of Comfort Theory in guiding research and practice that aim to promote comfort, particularly in diverse social and cultural contexts, given comfort is a universal demand of people. More rigorous studies are required to develop comfort questionnaires derived from Comfort Theory for comfort assessment among different races or ethnicities. Further quantitative or qualitative systematic reviews can be conducted to answer more focused questions in relation to the effectiveness of theory use in guiding interventions, developing instruments, and interpreting qualitative findings. How the theory is used in research and practice need to be more explicit and informed.

Limitations

Our literature search may have introduced selection bias and missed relevant articles. By restricting our inclusion to studies written in English and Chinese, we may undermine the global generalisability of our findings, especially in terms of the lack of studies written in other languages. We excluded literature from non-adult groups, thus limiting the application of results to adults' healthcare practice. We did not formally assess the quality of included studies, as we respected the scoping review approach but we took a critical stance in the overall quality of evidence based on study design and methodology.

CONCLUSIONS

Kolcaba's Comfort Theory has been used largely in interventions and assessments for a range of participants in hospital settings but limited to a very small number of countries. A variety of holistic comfort measures and questionnaires have been proposed and tested for adults' comfort enhancement offering many options for healthcare practitioners, researchers, patients and public members. The overview of evidence and categorisation of Comfort Theory application can serve as the first step in enabling stringency in the field as well as inspire further exploration, and thereby support for the needed growing research interest in comfort care. Nevertheless, there are still several issues that deserve further research by the scientific community in order to match the quality of scientific evidence to the undeniable complexity inherent in comfort theory use in guiding research and practice.

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Ethical approval

Approval of IRB exemption for this study was granted by Shanghai Ethics Committee

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for Clinical Research (approval number: SECCR/ 2022-111-01) because we conducted a scoping review following the JBI and PRISMA-ScR guideline.

Contributors

YL and YZ are joint first authors. YL conceptualized the study, drafted the protocol and wrote the manuscript. YZ and CC have performed database search, study selection and data extraction, supervised by YL. YZ formed tables. CC created figures. All authors have read and approved the final manuscript.

Patient consent for publication

Not applicable.

Competing interests

None.

For peer review only

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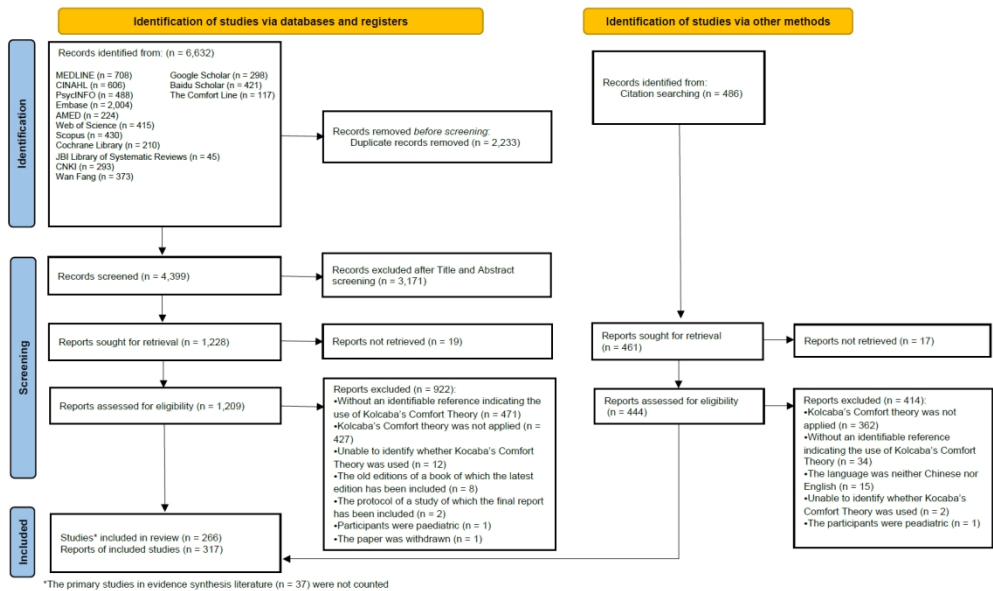


Figure 1 The PRISMA-ScR flow chart

575x338mm (76 x 76 DPI)

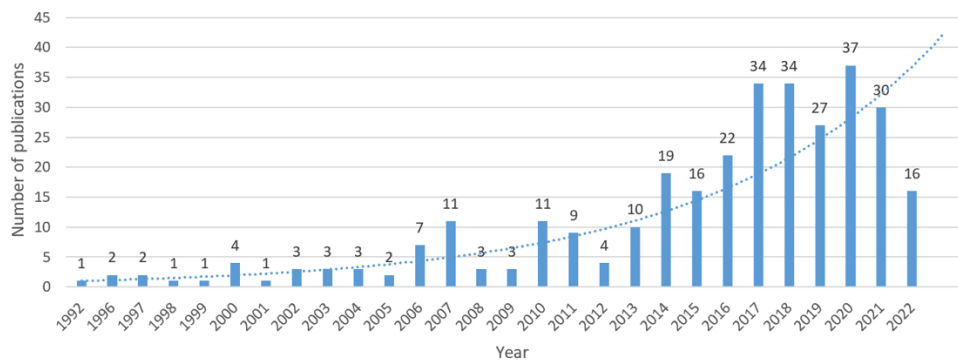


Figure 2 Number of publications per year

383x147mm (76 x 76 DPI)

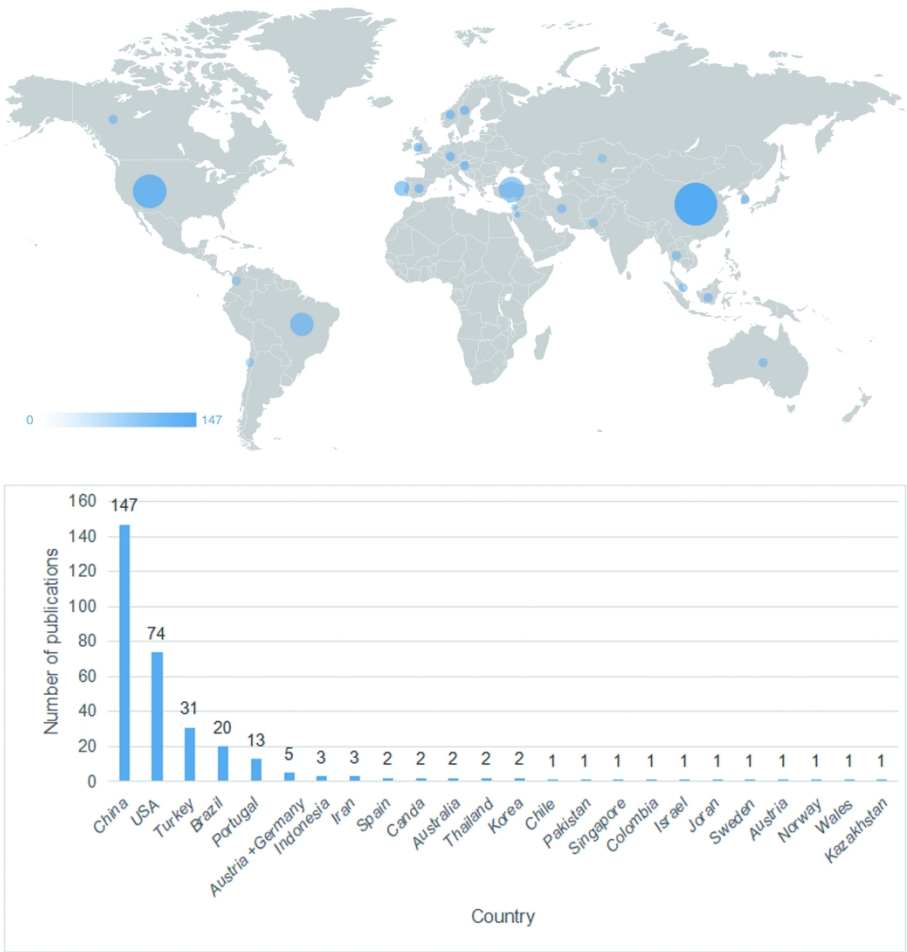


Figure 3 Number of publications by country

297x297mm (300 x 300 DPI)

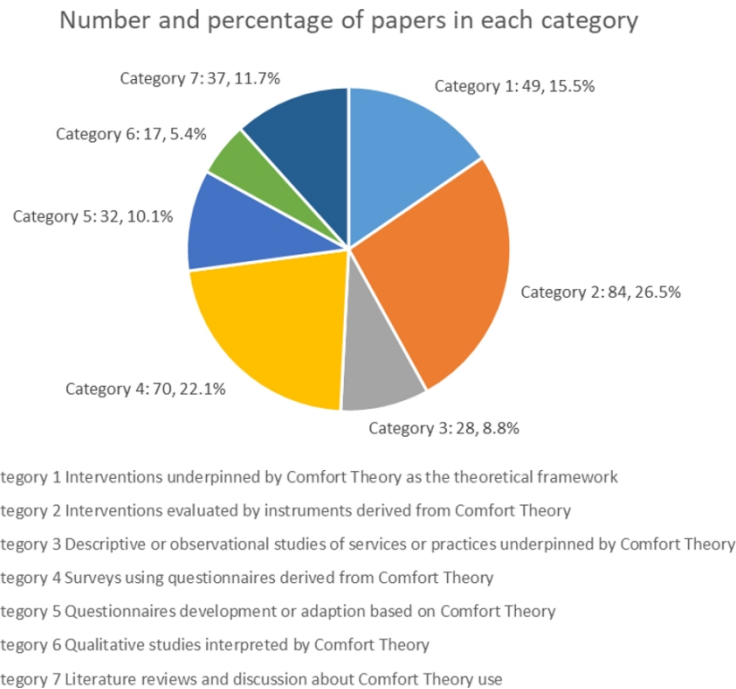


Figure 4 Number and percentage of papers in each category of Comfort Theory application

421x291mm (76 x 76 DPI)

Supplemental table S1-Search strategy

Database: MEDLINE (EBSCO)

Search date: 4th January 2022

Set #	Search strategy	Results
S23	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 Limiters-Date of Publication:19910101-20211231 Expanders-Apply equivalent subjects Narrow by Subject Age: - young adult:19-24 years, - aged,80 and over, aged: 65+years, adult: 19-44 years, middle aged:45-64years, all adult: 19+years Narrow by Language: Chinese, English	686
S22	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21	1520
S21	"application of comfort theory"	4
S20	"comfort practice"	4
S19	"holistic comfort"	23
S18	"comfort scale"	290
S17	"comfort questionnaire"	115
S16	"comfort evaluation"	62
S15	"comfort measurement"	5
S14	"comfort assessment"	113
S13	"comfort enhancement"	6
S12	"comfort promotion"	3
S11	"comfort intervention"	9
S10	"comfort care"	846
S9	"theory of holistic comfort"	2
S8	"holistic comfort theory"	3
S7	"comfort theory of Kolcaba"	1
S6	"Kolcaba's comfort theory"	13
S5	"Kolcaba's theory of comfort"	6
S4	"Kolcaba's theory"	9
S3	"Kolcaba"	61
S2	"theory of comfort"	18
S1	"comfort theory"	41

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Supplemental table S2

Data Extraction Charting Form

Author, year	Country of origin	Aim	Study participants	Setting	Design/methods	Interventions	Outcomes	Comfort measurement	Other key findings

Summplemental Table S3 An overview of included papers reporting the application of Comfort Theory (N=317)

NO	Category of theory application	Authors (Year)	Country	Aim	Participants	Settings	Study design/ methods	Key findings
1	Application category 1 - Interventions underpinned by Comfort Theory as the theoretical framework: Comfort management plan for high flow nasal cannula	Luo (2021)	China	To construct a comfort management plan for high flow nasal cannula, to improve patient comfort, reduce concurrency, shorten the length of ICU stay, reduce reinsertion and test the effectiveness of management rate and mortality rate, improve patient satisfaction and other aspects	Patients using high flow nasal cannula after extubated: n = 102 (51 vs 51)	One ICU at a tertiary hospital	MMS	Increased comfort after intervention 24h, 48h (p<0.05); Improved satisfaction (p<0.05); No significant decrease in duration of ICU stay (p>0.05).
2	Application category 1 - Interventions underpinned by Comfort Theory as the theoretical framework: Music therapy, reposition, therapeutic backrub, training	Doe (2021)	USA	To determine if the implementation of assessments combined with the use of non-pharmacologic comfort measures would reduce the narcotic dose and increase the patients' comfort levels in post-cardiopulmonary surgical intensive care	Patients post cardiopulmonary surgery: n = 105 (23 vs 82)	One cardiopulmonary surgical ICU	Quasi-experimental study	Enhanced comfort: pre intervention (M=3.05, SD=2.66) vs post intervention (M=5.27, SD=3.28) (p=0.000); Decreased in narcotic dose from comparative (M=6.61, SD=8.83) to implementation (M= 2.47, SD=4.46) (p=0.000).

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1	Application							
2	category 1 -							
3	Interventions							
4	underpinned by							
5	Comfort Theory							
6	as the							
7	theoretical							
8	framework:							
9	Interventions of	Yang	China	To explore the effects of	Patients	One		Enhanced comfort after intervention (p<0.05): intervention
10	four contexts:	(2021)		comfort care on patients	undergoing	preoperatio	MMS	group: 83.41±6.42 vs control group: 83.41±9.42;
11	environmental,			undergoing gynaecological	gynaecologic	nal waiting		Decreased anxiety (p<0.05); Increased satisfaction
12	physical,			surgery	al surgery: n	room at a		(p<0.05)
13	psychospiritual,				= 92 (46 vs	tertiary		
14	and				46)	general		
15	sociocultural,					hospital		
16	music therapy,							
17	silent therapy,							
18	aromatherapy							
19	Application							
20	category 1 -							
21	Interventions							
22	underpinned by							
23	Comfort Theory							
24	as the							
25	theoretical	Lian (2021)	China	To evaluate the effect of	Patients	One		Enhanced comfort (p<0.001); Increased healthcare
26	framework:			modified inspiratory position	receiving	bronchosc	MMS	professionals' satisfaction (p<0.05).
27	Modified			in bronchoscopy with	moderate	py room in		
28	inspiratory			moderate sedation	sedation	a tertiary		
29	position in				bronchoscop	general		
30	bronchoscopy				y: n = 124	hospital		
31	Application				(62 vs 62)			
32	category 1 -							
33	Interventions							
34	underpinned by	Uzamere-		To determine if or to what	Patients with	One urban	Quasi-	Significant decrease in agitation (p=0.000): before
35	Comfort Theory	Ogbeide	USA	degree the implementation	dementia-	assisted	experimental	intervention (65.3 or 93.2%) vs after intervention (23.7 or
36	as the	(2020)		of music listening sessions,	related	living facility	study	33.8%).
37	theoretical			when compared with no	agitation			
38	framework:			music, reduced agitation in	associated			
39	Music listening			adult dementia	with			
40					Alzheimer's			
41					disease: n =			
42					10			

Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Education
program on EoL
care
Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Training
Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Interventions of
four contexts:
enviromental,
physical,
sociocultural,
music therapy

Hare (2020) USA

To develop a project guided
by Kolcaba's theory on
caring

Nurses: n =
36

One CCU

Quasi-
experimental
study

92% staff nurses provided care to dying patients; Extended
knowledge

Kacaroglu
Vicdan
(2020)

Turkey

To determine the effect of
training in accordance with
the Comfort Theory to
haemodialysis patients

Haemodialys
is patients: n
= 68 (34 vs
34)

One
haemodialy
sis unit of a
teaching
university
hospital

RCT

Increased comfort (p<0.001).

Xiong
(2020)

China

To explore the effect of two
double-tube drainage in
patients with
enterocutaneous fistula

Patients with
enterocutane
ous fistula: n
= 79 (40 vs
39)

One
gastrointesti
nal surgery
unit of a
tertiary
hospital

Quasi-
experimental
study

Higher CCQ scores after intervention: intervention group:
89.65±11.9 vs control group: 75.31±9.04; Enhanced
comfort (p<0.05).

Study	Author (Year)	Country	Application category 1 - Interventions underpinned by Comfort Theory as the theoretical framework:	Interventions	Population	Setting	Study Design	Outcomes
12	Luo (2020)	China	Comfort nursing based on Roy adaptive model, massage, music therapy, position intervention, positive verbal communication	To investigate comfort and factors of comfort, develop comfort care measures, and build a comfort care plan based on Roy adaptive model	Pituitary adenoma patients: n = 121 (60 vs 61)	One neurosurgey unit	MMS	Comfort scores after intervention: Intervention group: 95.12±8.88 vs Control group: 83.78±10.11; Enhanced comfort (p<0.05); Significant decrease in anxiety and depression: intervention group higher than control group (p<0.05); Improved satisfaction (p<0.05): intervention group: 14.2% vs control group: 11.48.
13	Chen et al. (2020)	China	Comfort Theory as the theoretical framework: Interventions of environmental context	To evaluate the effects of a quiet surgical unit	Surgical patients and clinicians: n = 84 (not specified number in each group)	One surgical unit	Quasi-experimental study	Improved satisfaction (p<0.05) from 85.7 to 94.8; Decreased noise level (p<0.05) from 66.0 to 59.0 dB(A).
14	Wang et al. (2019)	China	Comfort Theory as the theoretical framework: Mindfulness-based intervention	To evaluate the effectiveness of a modified short-term mindfulness-based intervention on improving the mindfulness, comfort, and ambulation ability of stroke survivors undergoing inpatient rehabilitation	Stroke survivors: n = 50 (25 vs 25)	Rehabilitation Unit and Neurology unit	Quasi-experimental study	Enhanced comfort (p<0.05); No significant difference in environmental subscale, Berg Balance Scale, 10-Meter Walk Test, and Functional Ambulation Classification scale (p>0.05).

Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Interventions of
three contexts:
physical,
psychospiritual,
sociocultural.
Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Interventions of
environmental
context
Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework as
the theoretical
framework:
Aromatherapy

Xiong et al.
(2019)

China

Investigating the effects of
comfort care on symptoms,
gastric motility, and mental
state of patients with
functional dyspepsia

Patients with
functional
dyspepsia: n
= 100 (50 vs
50)

One
gastroenter
ology unit
RCT

Significant reduction in symptoms: comfort care group:
8.3±2.4 vs routine nursing group: 10.2±2.4 (p<0.001);
Significant decrease in anxiety: comfort care group:
41.1±7.1 vs routine nursing group: 46.3±6.9, (p<0.001);
Significant decrease in depression: comfort care group:
42.5±6.1 vs routine nursing group: 47.3±6.4 (p=0.001).

Liu et al.
(2019)

China

To discuss the effect of the
noise management in
cardiac unit

Cardiac
patients

One
cardiology
unit at a
tertiary
hospital

Quasi-
experimental
study

Decreased noise level at daytime and nighttime (Z=-13.0, -
12.8, p<0.001).

Stallings-
Welden et
al. (2018)

USA

To determine effectiveness
of aromatherapy compared
with standard care for
postoperative and post
discharge nausea and
vomiting in ambulatory
surgical patients

Ambulatory
surgical
patients: n =
221 (108 vs
113)

One 537-
bed
teaching
hospital

RCT

Effectiveness: the aromatherapy group: 100% vs the
standard care group: 67%.

1	Application								
2	category 1 -								
3	Interventions								
4	underpinned by								
5	Comfort Theory	Susanti et	Indonesia	To evaluate the effects of	Patients with	One central	Quasi-	Significant increase in comfort level (p<0.05): before	
6	as the	al. (2018)		Robusta coffee as an	head neck	hospital	experimental	intervention: 5.4 vs after intervention: 6.4.	
7	theoretical			media in increasing the	cancer		study		
8	framework:			comfort level	undergoing				
9	Robusta coffee				radiotherapy:				
10	Application				n = 32 (16 vs				
11	category 1 -				16)				
12	Interventions								
13	underpinned by								
14	Comfort Theory	Coelho et	Portugal	To evaluate the effects of	Palliative	One	Quasi-	Enhanced comfort (p=0.001); Decreased heart rate	
15	as the	al. (2018)		guided imagery on the	care	palliative	experimental	(p=0.001); Decreased respiratory rate (p=0.001); Reduced pain	
16	theoretical			comfort of patients in	patients: n =	care unit of	study	(p=0.001)	
17	framework:			palliative care	26	a hospital			
18	Guided imagery								
19	Application								
20	category 1 -								
21	Interventions								
22	underpinned by								
23	Comfort Theory	Zhang	China	To develop and evaluate an	Lung cancer	One	MMS	GCQ scores after discharge 1 month: intervention	
24	as the	(2018)		APP of a transitional care	patients with	oncology		group: 85.54±11.24 vs control group: 62.43±13.54;	
25	theoretical			model in relieving pain,	pain: n = 396	unit		Enhanced comfort after intervention (p<0.05); Decreased	
26	framework: APP			improving comfort, meeting	(195 vs 191)			pain after intervention (p<0.05).	
27	of transitional			the needs of care of lung					
28	care model			cancer patients with pain					
29	Application								
30	category 1 -								
31	Interventions								
32	underpinned by								
33	Comfort Theory	Parks et al.	USA	To assess the difference in	Psychiatric	One acute	Quasi-	Comfort score: experimental group 7.29 vs control group	
34	as the	(2017)		the level of comfort between	patients: n =	psychiatric	experimental	6.81.	
35	theoretical			psychiatric inpatients who	37 (21 vs 16)	adult unit	study		
36	framework:			received a warmed blanket					
37	Warmed blanket			and psychiatric inpatients					
38				who did not receive a					
39				warmed blanket					
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1	Application							
2	category 1 -							
3	Interventions							
4	underpinned by							
5	Comfort Theory							
6	as the							
7	theoretical	Charles et	USA	To provide simple, evidence-	Women with	Bay Area	Quasi-	Enhance comfort from 17.5 to 30 (p= 0.00); Reduced pain
8	framework:	al. (2016)		based, holistic/ alternative	nonemergen	Hospital	experimental	from 5.8 to 3.5/10 (p=0.00).
9	Holistic			remedies for women who	t pain during		study	
10	techniques			experienced nonemergent	pregnancy: n			
11	(aromatherapy,			pain during pregnancy	= 31			
12	music therapy,							
13	massage,							
14	acupressure)							
15	Application							
16	category 1 -							
17	Interventions							
18	underpinned by							
19	Comfort Theory							
20	as the							
21	theoretical	Zhang et al.	China	To evaluate the efficacy of	Patients	One	Quasi-	Improve sleep quality (p=0.034); Increased patient
22	framework:	(2016)		perioperative application of	receiving	hospital	experimental	satisfaction (p=0.02); Decreased postoperative food intake
23	Interventions of			comfort nursing in patients	endoscopic		study	without permission (p=0.018).
24	environmental			with gallstone disease	retrograde			
25	and			undergoing endoscopic	cholangial			
26	psychospiritual			retrograde cholangial	pancreatogr			
27	context, music			pancreatography (ERCP)	aphy: n =			
28	therapy				166 (106 vs			
29					60)			
30								
31								
32								
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Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Positive verbal
communication,
progressive
prone training,
peer education,
music therapy,
therapeutic
touch, position
intervention,
guided imagery,
PMR
Application
category 1 -
Interventions
underpinned by
Comfort Theory
as the
theoretical
framework:
Massage, still
point induction,
music therapy,
aromatherapy

Gao (2016) China

To explore the effectiveness
of application of Comfort
Theory among patients with
uterine fibroids receiving
ultrasound ablation

Patients with
uterine
fibroids: n =
210 (102 vs
108)

One
ultrasound
ablation
centre

MMS

Enhanced comfort (p<0.05); intervention group:
93.22±9.04 vs control group: 81.90±10.68; Decreased pain
(p<0.05); increased satisfaction (p<0.05).

Townsend
et al. (2014) USA

To determine whether
complementary techniques
provide pain relief and
comfort in patients with
chronic pain

Chronic pain
patients: n =
22 (9 vs 13)

Unspecified RCT

Significant improvement in both groups: enhanced comfort;
reduced pain (p<0.05).

1	Application								
2	category 1 -								
3	Interventions								
4	underpinned by								
5	Comfort Theory	Li et al.		To demonstrate the	Haemodialys	Dialysis	Quasi-	No significant difference between two groups: blood	
6	as the	(2014)	USA	feasibility and safety of	is patients: n	Unit at Saint	experimental	pressure, comfort (p>0.05).	
7	theoretical			isothermal haemodialysis	= 59 (28 vs	Joseph's	study		
8	framework:				31)	Hospital			
9	Isothermal								
10	haemodialysis								
11	Application								
12	category 1 -								
13	Interventions								
14	underpinned by								
15	Comfort Theory				Patients				
16	as the			To explore the effect of	receiving				
17	theoretical			comfort nursing on comfort	Percutaneou	One	Quasi-	Enhanced comfort (p<0.001): intervention group:	
18	framework:	Jia (2014)	China	and QoL of patients	s	general	experimental	82.03±4.95 vs control group: 72.17±10.833; Improved	
19	Interventions of			receiving Percutaneous	Transhepatic	hospital	study	QoL (p<0.001); Shortened hospitalization stay.	
20	four contexts:			Transhepatic Cholangial	Drainage: n				
21	environmental,			Drainage	= 81 (40 vs				
22	physical,				41)				
23	psychospiritual,								
24	and								
25	sociocultural								
26	Application								
27	category 1 -								
28	Interventions			To determine whether	Patients	Outpatient		Enhanced comfort: Reiki therapy group (p=0.020) and	
29	underpinned by	Catlin and		provision of Reiki therapy	receiving	chemothera		sham Reiki placebo group (p=0.003) vs standard care	
30	Comfort Theory	Taylor-Ford	USA	during outpatient	chemotherap	py in an	RCT	group; Increased well-being: Reiki therapy group (p=0.005)	
31	as the	(2011)		chemotherapy is associated	y: n = 189	infusion		and sham Reiki placebo group (p=0.005) vs standard care	
32	theoretical			with increased comfort and	(63 vs 63 vs	clinic		group.	
33	framework: Reiki			well-being	63)				
34	therapy								
35									
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1	Application						
2	category 1 -						
3	Interventions						
4	underpinned by						
5	Comfort Theory						
6	as the	Zhao (2011)	China	To evaluate the effects of	Haemodialysis patients: n = 60 (30 vs 30)	One blood purification unit of a hospital	MMS
7	theoretical			magnetic bead plaster			
8	framework:			therapy on auricular point on			
9	Auricular point			sleep disorders and comfort			
10	magnetic bead			in haemodialysis patients			
11	plaster therapy						
12	Application						
13	category 1 -						
14	Interventions						
15	underpinned by						
16	Comfort Theory						
17	as the	Whyte	Canada	To measure the comfort	Patients with	Outpatient	Quasi-
18	theoretical	(2010)		levels of patients with	gynaecologic	at a tertiary	experimental
19	framework:			gynaecologic type cancer	type cancer	level cancer	study
20	Warmed			before and after the	who received	facility	
21	chemotherapy			administration of warmed	intraperitoneal		
22	solution			intraperitoneal	chemotherapy:		
23	Application			chemotherapy on day one	n = 10		
24	category 1 -			and day eight			
25	Interventions						
26	underpinned by						
27	Comfort Theory						
28	as the	Whitehead	USA	To assess the ongoing	Registered	One	Quasi-
29	theoretical	et al. (2010)		impact of the End-of-Life	nurses: n =	primary	experimental
30	framework: End-			Nursing Education	38 (11 vs 27)	care	study
31	of-Life Nursing			Consortium training program		medical	
32	Education			on RNs' death anxiety,		centre	
33	Consortium			concerns about dying, and			
34	training program			knowledge of the dying			
35				process utilizing the			
36				principles of the Comfort			
37				Theory and Practice by			
38				Kolcaba at the institutional			
39				level			
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Higher comfort scores after intervention: intervention group: 79.50 vs control group: 74.50; Enhanced comfort (Z=-1.33, p=0.001); Treatment effective rate: intervention group: 80.0% vs control group: 76.67%; Improved treatment effective rate (p=0.019).

No significant change in comfort before and after receiving warmed intraperitoneal chemotherapy (p=0.630) or over the three chemotherapy cycles (p=0.603).

Improved knowledge about dying: at 2 weeks, 12 months (p=0.01).

1	Application								
2	category 1 -								
3	Interventions								
4	underpinned by								
5	Comfort Theory								
6	as the								
7	theoretical								
8	framework:								
9	Interventions of	Wu et al.	China	To explore the effectiveness	Old stroke	One	Quasi-	Enhanced comfort (p<0.05): intervention group:	
10	four contexts:	(2010)		of comfort care interventions	patients: n =	hospital	experimental	74.32±13.93 vs control group: 68.45±13.93.	
11	environmental,			on the comfort of elderly	118 (58 vs		study		
12	physical,			stroke patients in recovery	60)				
13	psychospiritual,			stage					
14	sociocultural,								
15	massage, music								
16	therapy,								
17	therapeutic								
18	touch, position								
19	intervention								
20	Application								
21	category 1 -								
22	Interventions	Apóstolo	Portugal	To describe imagery		Three	Quasi-	Enhanced comfort (t=-2.01, p=0.03); Decreased	
23	underpinned by	and		intervention for decreasing	Depressive	psychiatric	experimental	depression, anxiety, stress (t=-2.48, p=0.01).	
24	Comfort Theory	Kolcaba		depression, anxiety, and	patients: n =	unities/	study		
25	as the	(2009)		stress and increasing	60 (30 vs 30)	facilities			
26	theoretical			comfort in psychiatric					
27	framework:			inpatients with depressive					
28	Guided imagery			disorders					
29	Application								
30	category 1 -								
31	Interventions								
32	underpinned by								
33	Comfort Theory	Dowd et al.	USA	To measure and compare	Students: n	Midwest	RCT	Enhanced comfort; Decreased stress; Healing touch had	
34	as the	(2007)		the effects of 3 nursing	= 52 (12 vs	state		better immediate results on comfort and stress. Coaching	
35	theoretical			interventions for increasing	14 vs 13 vs	university		had better carryover effects on comfort and stress.	
36	framework:			students' comfort and	13)				
37	Healing Touch,			decreasing their stress-					
38	Coaching			related symptoms					
39									
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1	Application							
2	category 1 -							
3	Interventions							
4	underpinned by							
5	Comfort Theory	Dowd and		To study the effects of two	Students: n	Midwestern		Improved comfort: HTCQ of comfort (F=4.27, p=0.01) and
6	as the	Kolcaba	USA	types of holistic	= 58	university	RCT	numerical rating scale of comfort (p=0.0001); Decreased
7	theoretical	(2007)		interventions for effective				stress: numerical rating scale of stress (p=0.0001); No
8	framework:			stress management				significant differences in stress.
9	Healing touch,							
10	coaching							
11								
12	Application			To evaluate the effects of				
13	category 1 -			progressive muscle	Kidney			
14	Interventions			relaxation (PMR) on	transplant			
15	underpinned by			relieving anxiety and	recipients: n	One urology		Enhanced comfort (p=0.02): intervention group:
16	Comfort Theory	Xiao (2007)	China	depression and promoting	= 87 (42 vs	surgery unit	MMS	84.17±9.68 vs control group: 79.67±8.68; Decreased
17	as the			comfort among kidney	45)			anxiety (p=0.04) and depression (p=0.03).
18	theoretical			transplant recipients				
19	framework: PMR							
20								
21	Application							
22	category 1 -							
23	Interventions							
24	underpinned by							
25	Comfort Theory							
26	as the							
27	theoretical							
28	framework:							
29	Comfort contract							
30	(Warming	Patrol	USA	To address how to increase	Adult	One urban		No results reported.
31	Blanket	(2006)		patient comfort post cardiac	patients: n =	hospital.	RCT	
32	(Recovery			bypass surgery	90 (45 vs 45)			
33	Room), Music,							
34	Pillows -							
35	location,							
36	Massage, Pet							
37	Visitation, Cold							
38	Wash Cloth,							
39	Family Visits)							
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1	Application							
2	category 1 -							
3	Interventions							
4	underpinned by							
5	Comfort Theory							
6	as the							
7	theoretical	Wagner et	USA	To compare the effects of	Patients with	One large	RCT	Enhanced N/VAS thermal comfort P = 0.005; Decreased
8	framework:	al. (2006)		preoperative warming with	scheduled	public		anxiety P = 0.006.
9	Warmed cotton			warmers cotton blankets	for surgery:	hospital		
10	blankets versus			versus patient-controlled	n = 118 (60			
11	patient-			warming gowns on patients'	vs 58)			
12	controlled			perceptions of thermal				
13	warming gowns			comfort and anxiety				
14	Application							
15	category 1 -							
16	Interventions							
17	underpinned by							
18	Comfort Theory	Kolcaba et	USA	To test the effectiveness of	Nursing	Two nursing	Quasi-	No significant difference in comfort: groups (p=0.15) or
19	as the	al. (2006)		hand massage that affects	home	homes	experimental	over time (p=0.29); At T2: treatment group higher than
20	theoretical			nursing home residents'	residents: n		study	comparison group (p=0.07); No significant difference in
21	framework:			comfort and satisfaction	= 60 (35 vs			satisfaction between two groups (p=0.64).
22	Hand massage				25)			
23	Application							
24	category 1 -							
25	Interventions							
26	underpinned by							
27	Comfort Theory	Besel	USA	To assess the effects of	Mechanically	One ICU	Quasi-	No significant change in comfort (t=-1.378, p=0.206),
28	as the	(2006)		music therapy on comfort in	ventilated		experimental	anxiety (t=-1.250, p=0.247) and pain (t=0.909, p=0.390):
29	theoretical			acute mechanically	patients: n =		study	before vs after the intervention; No significant change in
30	framework:			ventilated patients in the	5			comfort (t=0.302, p=0.770), anxiety (t=-1.512, p=0.169)
31	Music therapy			ICU				and pain (t=-0.956, p=0.367): before vs after the control.
32	Application							
33	category 1 -							
34	Interventions							
35	underpinned by							
36	Comfort Theory	Kolcaba et	USA	To determine the beneficial	Hospice	Three	RCT	No significant change between groups: comfort (p=0.445);
37	as the	al. (2004)		effects of hand massage on	patients: n =	hospice		symptom distress (p=0.698).
38	theoretical			patients near EoL	31 (16 vs 15)	agencies		
39	framework:							
40	Hand massage							
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1	Application							
2	category 1 -							
3	Interventions							
4	underpinned by	Kolcaba		To measure the	Breast	Two		
5	Comfort Theory	and Fox	USA	effectiveness of customized	cancer	radiation	RCT	Increased differences in comfort between two groups;
6	as the	(1999)		guided imagery for	patients	oncology		Higher comfort: treatment group than control group.
7	theoretical			increasing comfort in	undergoing	units		
8	framework:			women with early-stage	radiation			
9	Guided imagery			breast cancer	therapy: n =			
10	Application				53 (26 vs 27)			
11	category 1 -							
12	Interventions			To test the effectiveness of	Breast	Two		
13	underpinned by	Kolcaba	USA	guided imagery in	cancer	hospital		
14	Comfort Theory	(1997)		enhancing comfort of	patients post	radiation	RCT	Higher comfort in treatment group: p=0.04 (at alpha .10);
15	as the			women experiencing	breast	oncology		Differences in comfort between two groups increased
16	theoretical			negative side effects of	conserving	units		steadily over time.
17	framework:			breast conserving therapy	surgery: n =			
18	Guided imagery				53 (26 vs 27)			
19	Application							
20	category 2 -			To investigate the effect of	Patients with	One		
21	Interventions			preventive care in	severe	hospital		
22	evaluated by	Jiang et al.	China	conjunction with the use of a	faecal		RCT	Enhanced comfort: higher GCQ score in the observation
23	instruments	(2022)		flushable double-lumen	incontinence			group than in the control group (p<0.05); Improved faecal
24	derived from			stoma bag in the prevention	: n = 164 (82			incontinence QoL (p<0.05).
25	Comfort Theory:			of incontinent dermatitis in	vs 82)			
26	A flushable			critically ill patients				
27	double-cavity							
28	colostomy bag							
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1									
2	Application								
3	category 2 -								
4	Interventions								
5	evaluated by								
6	instruments								
7	derived from								
8	51 Comfort Theory:	Zhang et al.	China	To examine the clinical	Tooth	One			No difference in pain and comfort (GCQ score) at day 1
9	Dental-implant	(2022)		effects of placement of	defects	stomatology	RCT		after surgery (p>0.05); Enhanced comfort and reduced
10	placement in the			dental implants using the	patients: n =	unit of a			pain: at day 1 and day 7 after surgery (p<0.05); No
11	hydraulic			hydraulic maxillary sinus lift	68	hospital			difference in prognostic QoL (p>0.05); Reduced treatment
12	maxillary sinus			(MSL), without bone grafting	(unspecified				costs.
13	lift (MSL) without				group size)				
14	bone grafting								
15	Application								
16	category 2 -								
17	Interventions								
18	evaluated by								
19	52 instruments	Solt Kirca	Turkey	To determine the effects of	Pregnant	One			Enhanced postpartum comfort (Postpartum Comfort
20	derived from	and Kanza		acupressure and shower on	women: n =	maternity	RCT		Questionnaire (PPCQ)) (p<0.016); Reduced pain (VAS):
21	Comfort Theory:	Gul (2022)		labour pain and postpartum	120 (80 vs	unit of a			dilation = 7 cm (p<0.001); No significant difference in pain:
22	Acupressure,			comfort	40)	private			dilation = 1 cm (p>0.05).
23	shower					hospital			
24	Application								
25	category 2 -								
26	Interventions								
27	evaluated by								
28	53 instruments	Akin et al.	Turkey	To evaluate the effect of	Primiparous	One			Increase comfort levels (Turkish version Childbirth Comfort
29	derived from	(2022)		labour dance on traumatic	pregnant	maternity	RCT		Questionnaire (CCQ) and Turkish version Postpartum
30	Comfort Theory:			childbirth perception and	women: n =	hospital			Comfort Scale); Decreased traumatic childbirth perception
31	Labour dance			comfort	120 (60 vs				(p<0.01).
32					60)				
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54	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Acupressure	Hsu et al. (2022)	China	To assess the effectiveness of practicing acupressure on the Shenmen and Neiguan acupoints in reducing anxiety and improving comfort and physical health of patients undergoing thoracoscopic surgery	Patients undergoing thoracoscopic surgery: n = 100 (49 vs 51)	One cardiothoracic unit of a medical centre	RCT
55	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Portable electronic drug infusion pump	Zhao et al. (2022b)	China	To investigate the clinical safety of portable electronic drug infusion pump in performing hepatic arterial infusion chemotherapy and its impact on patient comfort	Liver cancer patients: n = 70 (50 vs 20)	One intervention unit of a university affiliated hospital	Quasi-experimental study
56	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: FOLFOX-hepatic arterial infusion chemotherapy (FOLFOX-HAIC) for relieving bed restriction activity program	Zhao et al. (2022a)	China	To investigate the safety and feasibility of relieving bed restriction during hepatic arterial infusion chemotherapy	Patients with primary hepatocellular carcinoma: n = 70 (50 vs 20)	One intervention unit of a university affiliated hospital	Quasi-experimental study

Insignificant difference in comfort between two groups (Chinese version GCQ) (F=2.953, p= 0.057); Insignificant difference in anxiety between two groups as time progressed; insignificant difference in health insurance expenses for hospitalization (t=0.81, p=0.073) and hospitalization duration days (t=1.25, p=0.216). Significant difference in anxiety (STAI-YI scores) in the pre-test and post-test interactions between the two groups (β =-4.72, p=0.03). Increased significant: the average STAI-Y1 score in the experimental group from pre-intervention to T3 (β =-7.33, p<0.001), significant difference between two groups in pre-test and post-test interactions (β =4.72, p=0.03).

Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Improved Barthel Index; Decreased incidence of symptoms: difficult defecation and loss of appetite (p<0.05).

Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Improved Barthel Index; Decreased incidence of symptoms: sleep disorders, constipation, loss of appetite, limb numbness, lumbar acid (p<0.05).

1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments	Chen et al.	China	To investigate the	Patients	One	Quasi-	Enhanced comfort (Chinese version GCQ): total comfort,
6	derived from	(2022)		application value of	receiving	hospital unit	experimental	physical and psychological dimensions; Decreased
7	Comfort Theory:			paradoxical intention	s coronary	of Structural	study	incidence of symptoms: anxiety, depression; Reduced
8	Paradoxical			therapy in patients	intervention:	Cardiology		heart rate and blood pressure (p<0.05).
9	intention therapy			undergoing Percutaneous	n = 116 (58			
10	Application			coronary intervention (PCI)	vs 58)			
11	category 2 -							
12	Interventions							
13	evaluated by							
14	instruments							
15	derived from							
16	Comfort Theory:	Ren et al.	China	To observe the effect of	Burn	One	RCT	Enhanced comfort (GCQ); Reduced pain; Increased
17	Incentive	(2021)		application of incentive	patients	university		satisfaction; Shorter wound healing time and hospital stay
18	nursing			nursing intervention on	using	affiliated		time (p<0.05).
19	intervention			recovery in burn patients	vacuum	hospital		
20	(INI),			undergoing vacuum sealing	sealing			
21	interventions of			drainage	drainage: n =			
22	physical context				82 (41 vs 41)			
23	Application							
24	category 2 -							
25	Interventions							
26	evaluated by							
27	instruments	Zhao et al.	China	To investigate the safety of	Patients with	One	RCT	Enhanced comfort (Chinese version GCQ): 88.78±6.705 vs
28	derived from	(2021)		relieving bed restriction in	malignant	university		78.47±9.51; Improved self-care ability; Reduce pain;
29	Comfort Theory:			hepatic arterial infusion	liver tumour:	affiliated		Improved poor defecation symptom (p<0.001).
30	Removing bed			chemotherapy and its	n = 90 (60 vs	hospital		
31	restriction			effects on patient comfort	30)			
32	Application							
33	category 2 -							
34	Interventions							
35	evaluated by							
36	instruments	Kapıkıran	Turkey	To determine the effect of foot	Liver	One organ	RCT	Enhanced comfort in both groups (Turkish version
37	derived from	and Özkan		reflexology on the levels of	transplantati	transplantati		Perianesthesia Comfort Questionnaire): post-test vs pre-
38	Comfort Theory:	(2021)		pain, comfort and beta	on patients:	on clinic of		test (p<0.05); No significant differences in comfort between
39	Foot reflexology			endorphins in patients	n = 120 (60	a liver		two groups after intervention (p>0.05); Decreased pain
40				receiving liver transplantation	vs 60)	transplantati		(p<0.001).
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61	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Therapeutic touch Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Enhanced recovery after surgery using the multidisciplinary team model Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Modified cervicothoracic compression band	Alp and Yucel (2021)	Turkey	To find out the effects of therapeutic touch on comfort and anxiety of nursing home residents	Old people: n = 60 (30 vs 30)	One nursing home	Quasi-experimental study	Enhanced comfort (Turkish version Perianesthesia Comfort Questionnaire (RCQ)); Decreased anxiety (p<0.05).
62		Zhang et al. (2021a)	China	To explore the application value of enhanced recovery after surgery with the multidisciplinary team model in laryngeal cancer surgery	Laryngeal cancer patients: n = 72 (38 vs 34)	One hospital unit of Otorhinolaryngology Head and Neck Surgery	RCT	Enhanced comfort Chinese version GCQ (Z=-4.370, p<0.001); Decreased anxiety (Z=-4.179, p<0.001); Shorter duration of hospitalization stay (p<0.05); Improved hungry and thirsty symptoms (p<0.001).
63		Hu et al. (2021)	China	To investigate the effect of a modified pressurized band of neck and chest for patients with endoscopic radical thyroidectomy via breast areola approach	Patients receiving endoscopic radical thyroidectomy via breast areola approach: n = 128 (64 vs 64)	One unit of Thyroid Surgery of a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural and environmental dimensions; Increased well-being; Reduced incidence of symptoms (p<0.05).

1	Application			To investigate the effect of					
2	category 2 -			health education on the	Patients with				
3	Interventions			comfort level, pain degree,	primary	One			
4	evaluated by			psychological state and	hepatic	university			
5	instruments	Zhang et al.	China	degree of cancer- related	carcinoma	affiliated	Quasi-	Enhanced comfort (Chinese version GCQ); Decreased	
6	derived from	(2021b)		fatigue of patients with	undergoing	hospital	experimental	anxiety and depression; Improved QoL; Increased	
7	Comfort Theory:			primary hepatic carcinoma	interventional		study	satisfaction; Decrease incidence of symptoms: dysuria,	
8	Health			undergoing interventional	therapy: n =			numbness of the lower limbs, irritability and insomnia	
9	education			therapy	98 (49 vs 49)			(p<0.05)	
10	Application								
11	category 2 -			To evaluate the effects of	Elderly	One		Enhanced comfort (Chinese version GCQ); Increased	
12	Interventions			dialectical paste on	patients with	hospital unit		treatment efficiency; Improved constipation symptom	
13	evaluated by			Shenque acupoint in elderly	Qi deficiency	of hip injury	RCT	(p<0.05)	
14	instruments	Wen (2021)	China	patients with Qi deficiency	constipation				
15	derived from			constipation after hip	after hip				
16	Comfort Theory:			fracture	fracture: n =				
17	Shenque				75 (37 vs 38)				
18	acupoint								
19	dialectical paste			To investigate the use of	Patients with	One		Enhanced comfort (Chinese version GCQ): total comfort	
20	Application			pressurized gloves on hand	coronary	cardiologic		and physical, psychological, sociocultural, environmental	
21	category 2 -			swelling, hand pain, hand	heart	unit of a	RCT	dimensions (p>0.05); Reduced hand pain; Reduced finger	
22	Interventions			hypoxia and comfort of	disease: n =	tertiary		swelling (p<0.05).	
23	evaluated by	Wang	China	patients after percutaneous	176 (88 vs	hospital			
24	instruments	(2021)		radial coronary intervention	88)				
25	derived from								
26	Comfort Theory:								
27	Compression								
28	gloves								
29	Application								
30	category 2 -								
31	Interventions								
32	evaluated by								
33	instruments								
34	derived from								
35	Comfort Theory:								
36	The optimized								
37	intraoperative								
38	cooperation								
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1	Application						
2	category 2 -						
3	Interventions						
4	evaluated by						
5	instruments						
6	derived from						
7	Comfort Theory:	Li and Jia	China	To evaluate the influence of	Gastric	One	Enhanced comfort (Chinese version GCQ): total comfort
8	Acupoint paste,	(2021)		acupoint application, low-	cancer	university	and physical psychological, sociocultural, environmental
9	low-frequency			frequency pulse	patients: n =	affiliated	dimensions. Decreased anxiety and depression; Reduced
10	pulse electric			electrotherapy combined	158 (79 vs	hospital	pain; Decreased incidence of postoperative complications:
11	therapy, clinical			with clinical psychological	79)		5.06% vs 19% (p<0.05).
12	guidance			guidance on postoperative			
13	psychological			complications of patients			
14	Application			with gastric cancer			
15	category 2 -						
16	Interventions						
17	evaluated by						
18	instruments						
19	derived from						
20	Comfort Theory:	Li (2020)	China	To develop, apply and	Chronic	One	Enhanced comfort (Chinese version adapted comfort
21	5S health			evaluate a list of 5s health	sinusitis	otolaryngolo	questionnaire for postoperative patients with chronic
22	education			mode in perioperative	patients: n =	gy unit of a	sinusitis (p<0.05); Decreased anxiety (p<0.001); Improved
23	inventory			patients with chronic	120 (60 vs	university	QoL (p<0.001); Increased satisfaction (p<0.001).
24	management			sinusitis	60)	affiliated	
25	mode					hospital	
26	Application						
27	category 2 -						
28	Interventions						
29	evaluated by						
30	instruments						
31	derived from						
32	Comfort Theory:	Gao et al.	China	To evaluate the benefits of	Chronic	One	Patients in enhanced recovery after surgery (ERAS) group
33	Enhanced	(2020)		Enhanced Recovery After	rhinosinusitis	hospital	demonstrated significantly higher general comfort scores
34	recovery after			Surgery (ERAS) protocol	patients: n =		(GCQ) and lower anxiety scores compared to patients in
35	surgery,			compared to traditional care	55 (11 vs 11		traditional care with Flubiprofen Axetil or analgesia pump
36	interventions of			following endoscopic sinus	vs 10 vs 10		group and control groups (p<0.05); Reduced pain: at 6, 24,
37	physical context			surgery	vs 13)		48h after surgery (p<0.05); Decreased anxiety (p<0.05);
38							Improved satisfaction (p<0.05).
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1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments	Yücel et al.	Turkey	To investigate the effects of	Old patients:	One nursing		Enhanced comfort (Turkish version GCQ); Decreased
6	derived from	(2020)		hand massage and	n = 30 (10 vs	home	RCT	anxiety (p<0.05).
7	Comfort Theory:			therapeutic touch on comfort	10 vs 10)			
8	Hand massage,			and anxiety in older people				
9	therapeutic							
10	touch							
11								
12	Application				Patients			
13	category 2 -				received	One oral		
14	Interventions				vascularized	and 5		
15	evaluated by	Yang et al.	China	To explore improvements of	free flap	Maxillofacial		Enhanced comfort (Chinese version adapted comfort
16	instruments	(2020)		postoperative mobilization	reconstructio	surigcal unit	RCT	questionnaire for perioperative patients with oral and
17	derived from			protocol	n for head	of a		maxillofacial surgery; Reduced pain; Increased sleep time;
18	Comfort Theory:				and neck	university		Shorter tracheal removal time (tracheal incision,
19	Early				defect: n =	affiliated		nasogastric tube, urethral catheter) (p<0.05).
20	mobilization				149 (38 vs	hospital		
21					37 vs 38 vs			
22					36)			
23	Application							
24	category 2 -							
25	Interventions							
26	evaluated by							
27	instruments	Wen and	China	To explore the application	Patients with	One		Enhanced comfort (Chinese version GCQ): total comfort,
28	derived from	Huang		effect of peripherally	gastrointesti	university		psychosocial context; Improved satisfaction; Increased
29	Comfort Theory:	(2020)		inserted central catheter	nal cancer	cancer	Quasi-	health-related knowledge (p<0.05).
30	Peripherally			(PICC) combined with Orem	receiving 5-	centre	experimental	
31	inserted central			self-care model in patients	FU pump		study	
32	catheter (PICC)			with gastrointestinal cancer	chemotherap			
33	based on Orem			receiving 5-fluorouracil (5-	y: n = 88 (42			
34	self-care model			FU) pump chemotherapy	vs 46)			

1	Application								
2	category 2 -								
3	Interventions	Gökşin and		To evaluate the effect of		One			
4	evaluated by	Ayaz -	Turkey	progressive muscle	Primipara	teaching	Quasi-	Enhanced comfort (GCQ score): at the first, second, and	
5	instruments	Alkaya		relaxation (PMR) on the	women: n =	and	experimental	third follow-ups; Decreased depression (p<0.05).	
6	derived from	(2020)		postpartum depression risk	70 (35 vs 35)	research	study		
7	Comfort Theory:			and general comfort levels		hospital			
8	PMR			in primiparas					
9	Application								
10	category 2 -			To evaluate the effects of	Patients with	One		Enhanced perianesthesia comfort (Turkish version	
11	Interventions	Pazar and	Turkey	preoperative education on	mechanical	cardiovascu		Perianesthesia Comfort Questionnaire (PCQ)); Decreased	
12	evaluated by	lyigun		hemodynamic parameters,	ventilation	lar surgical	RCT	anxiety; Improved patient ventilator synchrony levels	
13	instruments	(2020)		patient comfort and anxiety,	receiving	clinic of a		(p<0.05)	
14	derived from			and patient-ventilator	cardiac	teaching			
15	Comfort Theory:			synchrony provided to	surgery: n =	hospital			
16	Preoperative			patients before cardiac	200 (100 vs				
17	education			surgery	100)				
18	Application								
19	category 2 -			To observe effects of the	Patients with	One		Enhanced comfort (Chinese version GCQ); Reduced pain;	
20	Interventions	Yin et al.	China	hydrogel containing mint as	closed	Orthopaedic		Improved limb swelling (p<0.05).	
21	evaluated by	(2020)		the cold medium for local	fractures of	s unit of a	RCT		
22	instruments			and external treatment on	extremities:	TCM			
23	derived from			pain, bleeding, swelling,	n = 195 (97	hospital			
24	Comfort Theory:			fatigue and discomfort of	vs 98)				
25	Hydrogel cold			patients with closed fracture					
26	media with mint			of limbs					
27	Application								
28	category 2 -			To explore the effects of	Patients			Enhanced comfort (Chinese version GCQ): total comfort	
29	Interventions			rapid rehabilitation nursing	receiving	One		and physical, psychological, sociocultural, environmental	
30	evaluated by			care on postoperative	permanent	hospital unit		dimensions; Increased satisfaction; Decreased incidence	
31	instruments	Zhang et al.	China	comfort and complications in	cardiac	of	RCT	of back pain; difficulty urinating, difficulty defecating,	
32	derived from	(2020)		patients undergoing	pacemaker	Cardiology		urinary retention; Reduced costs and shortened duration of	
33	Comfort Theory:			permanent cardiac	implantation:			hospital stay (p<0.05).	
34	Fast			pacemaker implantation	n = 86 (43 vs				
35	rehabilitation				43)				
36	nursing								
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1	Application						
2	category 2 -						
3	Interventions						
4	evaluated by						
5	instruments						
6	derived from						
7	Comfort Theory:						
8	Self-oral care						
9	based on Orem						
10	nursing theory						
11	Application						
12	category 2 -						
13	Interventions						
14	evaluated by						
15	instruments						
16	derived from						
17	Comfort Theory:						
18	Music therapy						
19	Application						
20	category 2 -						
21	Interventions						
22	evaluated by						
23	instruments						
24	derived from						
25	Comfort Theory:						
26	Fast track						
27	surgery						
28	Application						
29	category 2 -						
30	Interventions						
31	evaluated by						
32	instruments						
33	derived from						
34	Comfort Theory:						
35	Quality control						
36	circle						
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1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments	Xie (2019)	China	To probe into the impacts of	Patients with	One	RCT	Enhanced comfort (Chinese version GCQ); Decreased
6	derived from			finger gymnastic on the	coronary	hospital unit		anxiety; Reduced pain; Decreased swelling (p<0.05).
7	Comfort Theory:			degree of hand swelling,	heart	of		
8	Finger			pain in the wrist and palm,	disease: n =	Cardiology		
9	gymnastic			oxygen saturation, extent of	90 (45 vs 45)			
10	Application			anxiety, and comfort level				
11	category 2 -			after transradial coronary				
12	Interventions			intervention				
13	evaluated by				Patients with	One		
14	instruments	Wang and	China	To explore the application	acute	hospital unit	RCT	Enhanced comfort (Chinese version GCQ); Reduced pain;
15	derived from	Wang		value of comfort scale in	leukaemia	of		Increased satisfaction; Decreased complication incidence
16	Comfort Theory:	(2019)		patients with acute	receiving	Hematologi		(p<0.05).
17	A bundle of			leukaemia chemotherapy	chemotherap	c Tumour		
18	measures				y: n = 80 (40			
19	named as				vs 40)			
20	comfort care							
21	Application							
22	category 2 -							
23	Interventions			To evaluate the effect of	Patients	One unit of		
24	evaluated by			acupoint paste with Fructus	undergoing	Urology		
25	instruments	Wu et al.	China	Evodiae on the recovery of	ureteroscopy	Surgery of a	Quasi-	Enhanced postoperative comfort (Chinese version GCQ);
26	derived from	(2019)		postoperative	lithotripsy	hospital	experimental	Increased postoperative satisfaction; Shortened time to
27	Comfort Theory:			gastrointestinal function in	with	integrating	study	first flatulence, time to first stool (p<0.05).
28	Acupoint paste			patients undergoing	holmium: n =	Traditional		
29	with Fructus			ureteroscopic lithotripsy with	79 (37 vs 42)	Chinese		
30	Evodiae			the holmium: YAG laser		and		
31	Application					Western		
32	category 2 -					Medicine		
33	Interventions							
34	evaluated by				Patients with	One		
35	instruments	Chen	China	To explore the effect of a	gastric tube	university	RCT	Enhanced comfort (Chinese version GCQ); Decreased
36	derived from	(2019)		new fixation bag for gastric	post surgery:	affiliated		incidence of pressure sore, incidence of gastric tube
37	Comfort Theory:			tube in patients post surgery	n = 138 (69	cancer		dislocation and displacement (p<0.05).
38	A new gastric				vs 69)	hospital		
39	tube fixation bag							
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1	Application								
2	category 2 -								
3	Interventions								
4	evaluated by								
5	instruments								
6	derived from	Wang							
7	Comfort Theory:	(2019a)	China	To improve the comfort of	Patients with	One	Quasi-	Enhanced comfort (Chinese version GCQ): total comfort	
8	A bundle of			patients with myocardial	infarction	hospital unit	experimental	and physical, psychological, sociocultural, environmental	
9	measures			infarction after thrombolysis	after	of	study	dimensions (p<0.05).	
10	named as				thrombolysis	cardiology			
11	comfort care				: n = 60 (30				
12	Application				vs 30)				
13	category 2 -								
14	Interventions								
15	evaluated by								
16	instruments								
17	derived from	Meng							
18	Comfort Theory:	(2019)	China	To evaluate the effect of	Diabetic	Two tertiary	RCT	Enhanced comfort (Chinese version GCQ) (p<0.05);	
19	TCM fumigation			TCM fumigation combined	pruritus	TCM		Improved L (p<0.05); No significant difference in	
20	combined with			with auricular acupoint paste	patients: n =	hospitals		adherence and satisfaction (p>0.05).	
21	auricular point			pressure on pruritus	184 (60 vs				
22	sticking			symptoms, comfort level, life	62 vs 62)				
23	pressure			quality and satisfaction of					
24	Application			patients with diabetic					
25	category 2 -			pruritus					
26	Interventions								
27	evaluated by								
28	instruments	Wang							
29	derived from	(2019b)	China	To explore the influence of	Diabetic foot	One tertiary	Quasi-	Enhanced comfort (Chinese version GCQ): total comfort	
30	Comfort Theory:			podiatric nursing	patients: n =	hospital	experimental	and physical, psychological, sociocultural, environmental	
31	Podiatric nursing			intervention on comfort and	134		study	dimensions, improved behaviours of foot self-examination	
32	care			occurrence of foot ulcers				and self-care (p<0.05).	
33				among patients with					
34				diabetes foot					
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1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments	Ünülü and	Turkey	To determine how wristband	Patients			Enhanced comfort (Perianesthesia Comfort Questionnaire
6	derived from	Kaya (2018)		6 (P6) Neiguan point affects	receiving	One		(PCQ)) (p<0.001); Improved nausea and vomiting
7	Comfort Theory:			nausea, vomiting, and	gynaecologic	obstetrics		(p<0.05). No significant differences in anxiety between two
8	Neiguan point			comfort level in the	surgery	hospital	RCT	groups (p<0.05).
9	(P6)			postoperative period	other than			
10	acupressure				caesarean			
11	Application				section: n =			
12	category 2 -				97 (47 vs 50)			
13	Interventions			To summarize factors				
14	evaluated by			affecting comfort of patients	Patients			
15	instruments			after heart valve surgery, to	after heart			
16	derived from	Ling et al.	China	develop targeted comfort	valve	One		Enhanced comfort (Chinese version GCQ); Increased
17	Comfort Theory:	(2018)		care measures, to improve	surgery: n =	hospital	Quasi-	satisfaction; Improved oral cleanliness; Shortened
18	A bundle of			comfort and satisfaction of	101 (50 vs		experimental	mechanical ventilation and duration of ICU stay (p<0.05).
19	measures			postoperative patients, and	51)		study	
20	named as			to shorten length of stay in				
21	comfort care			ICU				
22	Application							
23	category 2 -							
24	Interventions			To evaluate the effect of doll	Psychiatric	One mental		Enhanced comfort (Chinese version GCQ): 87.07±9.58 vs
25	evaluated by	Gong et al.	China	intervention in psychiatric	female	health unit		79.81±7.94 (p=0.002); Improved social interest, retardation
26	instruments	(2018)		patients	patients: n =	of a	RCT	and depression (p<0.05).
27	derived from				61 (30 vs 31)	university		
28	Comfort Theory:					affiliated		
29	Doll intervention					hospital		
30	Application							
31	category 2 -							
32	Interventions			To analyse the effect of	Patients			Enhanced comfort (Chinese version GCQ); Increased QoL
33	evaluated by			perioperative nursing care	receiving	One		at 1 month, 3 months and 6 months post-surgery; Reduced
34	instruments			for patients receiving	laparoscopic	university		pain at day 1, day 7 post surgery; Shortened duration of
35	derived from	Chen et al.	China	laparoscopic precise	hepatectomy	affiliated	RCT	hospital stay; Improved preoperative symptoms: thirst and
36	Comfort Theory:	(2018)		hepatectomy	: n = 110 (55	hospital		hungry (p<0.05).
37	Perioperative				vs 55)			
38	nursing							
39	measures							
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1	Application							
2	category 2 -							
3	Interventions			To explore the effect of	Patients			
4	evaluated by			applying a warming blanket	scheduled	One		
5	instruments	Ye et al.	China	machine on postoperative	for	university		
6	derived from	(2018)		chills in patients undergoing	transurethral	affiliated		
7	Comfort Theory:			prostate transurethral	resection of	hospital		
8	Warming			resection	prostate: n =			
9	blanket machine				120 (60 vs			
10	Application				60)			
11	category 2 -							
12	Interventions							
13	evaluated by							
14	instruments							
15	derived from							
16	Comfort Theory:							
17	Three therapies	Xun (2018)	China	To explore the effect of TCM	Patients with			
18	of TCM, and a			Three therapies combined	acute			
19	bundle of			with comfort nursing care on	exacerbation	One ICU of		
20	measures			the prognosis of AECOPD	chronic	a tertiary		
21	named as			patients with invasive	obstructive	hospital		
22	comfort care			mechanical ventilation	pulmonary			
23	Application				disease: n =			
24	category 2 -				189 (94 vs			
25	Interventions				95)			
26	evaluated by							
27	instruments							
28	derived from							
29	Comfort Theory:							
30	Comfort							
31	education							
32	brochure							
33	Application							
34	category 2 -							
35	Interventions							
36	evaluated by							
37	instruments							
38	derived from							
39	Comfort Theory:							
40	Music therapy							
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1	Application						
2	category 2 -						
3	Interventions						
4	evaluated by						
5	instruments						
6	derived from	Tabiee et	Iran	To determine the effect of	Patients with	One heart	Enhanced comfort in two groups (Hospice Comfort
7	Comfort Theory:	al. (2017b)		care, including reflective	coronary	centre of a	Questionnaire (HCQ)); before/ after intervention (p<0.001);
8	Face to face			massage and education, on	artery	hospital	No significant differences in comfort between two groups
9	training,			the comfort of patients	bypass		after intervention (p>0.05).
10	reflective			undergoing coronary artery	grafting		
11	massage			bypass grafting	(CABG): n =		
12	Application				70 (35 vs 35)		
13	category 2 -						
14	Interventions			To determine the efficacy of			
15	evaluated by	Senol and	Turkey	cold gel pad application for	Mothers: n =	One	Enhanced postpartum comfort (Turkish version Postpartum
16	instruments	Aslan		relieving perineal pain and	200 (50 vs	postpartum	Comfort Questionnaire (PCQ)); Reduced perineal pain; Decreased
17	derived from	(2017)		possibly increasing mothers'	50 vs 50 vs	unit of	perineal temperature (p<0.05).
18	Comfort Theory:			comfort after vaginal	50)	hospital	
19	Cold gel pads			delivery			
20	Application						
21	category 2 -						
22	Interventions			To evaluate the effects of			
23	evaluated by			comfort-based interventions	Haemodialys	One	Enhanced comfort before / after intervention (hospice
24	instruments			(back massage along with	is patients: n	haemodialy	comfort Questionnaire (HCQ)); intervention group:
25	derived from	Tabiee et	Iran	patient and family education)	= 40 (20 vs	sis unit of	environmental and psychospiritual dimensions; control
26	Comfort Theory:	al. (2017a)		on the level of comfort among	20)	hospital	group: psychospiritual dimension (p<0.001); Enhanced
27	Back massage,			haemodialysis patients			comfort between two groups: total comfort and
28	patient and						environmental dimension (p=0.02).
29	family education						
30							
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104	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Training	Gurcayir and Karabulut (2017)	Turkey	To define the effects of training to patients who are scheduled for hip prosthesis surgery on the level of postoperative comfort and activities in their daily lives	Patients receiving total or partial hip prosthesis surgery: n = 60 (30 vs 30)	Clinics (Number of clinics was not specified) of Orthopaedic and Traumatology of two teaching and research hospitals	Quasi-experimental study	Enhanced comfort (Turkish version Perianesthesia Comfort Questionnaire (PCQ) and Turkish version GCQ) (p<0.001); No significant difference in preoperative daily activities (p=0.17); Improved daily activities one month after surgery (p<0.001).
105	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Modified Trendelenburg position intervention	Wang (2017)	China	To observe the influence of modified surgical position on the comfort and position related complications in elderly patients with gynaecological laparoscopic surgery	Old patients undergoing gynaecological laparoscopic surgery: n = 100 (50 vs 50)	One operating room of a university affiliated hospital	RCT	Enhanced operation position comfort (Chinese version Operation Position Comfort Questionnaire): 73.18±4.38 vs 67.80±4.05; Reduced pain; Decreased incidence of limbs postoperative complications (p<0.05).
106	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Early ambulation	Xu (2017)	China	To investigate the effect of early ambulation on patients after ablation, to provide a safe protocol that promote patients' comfort without increasing the risk of vascular complications	Patients receiving radiofrequency catheter ablation via femoral vein approach: n = 116 (39 vs 39 vs 38)	One cardiologic unit of a teaching hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Reduced pain; Decreased incidence of symptoms: urinary discomforts, numbness of limb, loss of appetite and severity of back pain (p<0.05).

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1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments							
6	derived from	Ji (2017)	China	To explore the effects of deep breathing exercises combining with acupoint paste therapy on preventing constipation and improving general comfort and satisfaction for middle aged and elderly patients who are bedridden with hip fracture	Middle aged and elderly patients with hip fracture: n = 60 (30 vs 30)	One hospital trauma unit	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Improved constipation symptom (p<0.05).
7	Comfort Theory:							
8	Deep breathing							
9	exercises and							
10	acupoint sticking							
11	therapy							
12	Application							
13	category 2 -							
14	Interventions							
15	evaluated by	Ji et al. (2017)	China	To explore the effectiveness of automatic shower systems in the comfort care of elderly patients with disabilities	Elderly patients with disabilities: n = 80 (40 vs 40)	One unit of Geriatric model, one unit of stroke and one unit of orthopaedics of a hospital	RCT	Enhanced comfort (Chinese version GCQ): 79.85±4.61 vs 71.68±7.14; Decreased time of providing nursing intervention: 21.75±3.14 vs 39.08±5.47 (p<0.01).
16	instruments							
17	derived from							
18	Comfort Theory:							
19	Automatic							
20	shower systems							
21	Application							
22	category 2 -							
23	Interventions							
24	evaluated by							
25	instruments							
26	derived from	Zhang and Liu (2016)	China	To investigate the safety and efficiency of improved low semi-recumbent in postoperative nursing care after replacement of total hip	Patients receiving total hip replacement: n = 100 (50 vs 50)	One hospital of TCM	RCT	Enhanced comfort (Chinese version GCQ): at 1h, 3h, 6h post-surgery (p<0.05); Insignificant change of pain; No significant difference in vomiting, pulmonary infection and length of hospital stays (p>0.05).
27	Comfort Theory:							
28	Improved low							
29	semi-recumbent							
30	position							
31	intervention							

1	Application							
2	category 2 -							
3	Interventions			To investigate the effects of	Patients			
4	evaluated by			perioperative nursing	receiving			
5	instruments			interventions based on track	hepatectomy	One		
6	derived from	Li (2016)	China	surgery fast theory for	for	hepatobiliar	Quasi-	Enhanced comfort (Chinese version GCQ); Improved
7	Comfort Theory:			patients with hepatic bile	hepatolithiasi	y surgical	experimental	hungry and thirsty symptoms; Reduced pain: postoperative
8	Fast track			duct stones hunger and	s: n = 75 (35	unit	study	72h and 1 week; Shorter cost and duration of hospital stay
9	surgical nursing,			thirst before operation	vs 35)			(p<0.05)
10	acupressure							
11	Application							
12	category 2 -							
13	Interventions							
14	evaluated by							
15	instruments							
16	derived from							
17	Comfort Theory:	Zheng et al.	China	To investigate the safety	Patients			
18	The optimized	(2016)		and superiority of the	receiving	One		
19	pressing time			optimized pressing time	transradial	cardiologic		
20	after transradial			after transradial coronary	coronary	unit of a	RCT	Enhanced comfort (Chinese version GCQ): at 2h, 4h post-
21	coronary			intervention	intervention:	teaching		surgery; Increased SpO2 at 24h post-surgery (p<0.05).
22	intervention				n = 238 (120	hospital		
23	Application				vs 118)			
24	category 2 -							
25	Interventions							
26	evaluated by							
27	instruments							
28	derived from							
29	Comfort Theory:	Yang et al.	China	To observe the	Maternal	One unit of		
30	Washing	(2016)		effectiveness of the external	women: n =	obstetric of	RCT	Enhanced comfort (Chinese version GCQ) at 72h after
31	formulas that			cleansing formula for	350 (175 vs	a TCM		delivery; Reduced pain: Day 1-3 after delivery (p<0.05).
32	clear Damp-			postpartum lateral perineal	175)	hospital		
33	Heat			incision rinsing				
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1	Application						
2	category 2 -						
3	Interventions						
4	evaluated by						
5	instruments						
6	derived from	Zuo and	China	To investigate the effects of	Haemodialys	One blood	Enhanced comfort (Chinese version GCQ): total comfort
7	Comfort Theory:	Long (2016)		the degree of comfort, negative	is patients	purification	and physical, psychological, sociocultural, environmental
8	A bundle of			emotions and compliance in	with diabetic	unit of a	dimensions. Decreased depression; Improved treatment
9	measures			haemodialysis patients with	nephropathy:	hospital	adherence (p<0.05).
10	named as			diabetic nephropathy	n = 60 (30 vs		
11	comfort care				30)		
12	Application						
13	category 2 -						
14	Interventions						
15	evaluated by						
16	instruments						
17	derived from	Shi et al.	China	To explore the effectiveness	Postoperativ	One	Enhanced comfort (Chinese version GCQ); Increased
18	Comfort Theory:	(2016)		of comfort care in patients	e patients	university	satisfaction. Decreased bladder spasm and incidence of
19	A bundle of			after electrodesiccation of	with prostatic	affiliated	urinary tract obstruction after blockage (p<0.05).
20	measures			the prostate	hyperplasia:	hospital	
21	named as				n = 90 (45 vs		
22	comfort care				45)		
23							
24	Application					One unit of	
25	category 2 -					Operation	
26	Interventions					and	
27	evaluated by					Anaesthesi	
28	instruments					ology and	
29	derived from	Ye et al.	China	To evaluate the effects of	Patients	and	Enhanced comfort (Chinese version GCQ): group II and
30	Comfort Theory:	(2016)		different degrees of semi	scheduled	Anaesthesi	group II than in the group I and group IV after 30° and 45°
31	Position			reclining position on comfort	for	ology and	semi-recumbent position; Improved pain: group IV than
32	intervention			and pain of patients after	laparotomy:	one unit of	group I, II, III after 15° and 60° semi-recumbent position
33				laparotomy in	n = 120 (30	General	(p<0.05).
34				postanaesthetic care unit	vs 30 vs 30	Surgery, at	
35				(PACU)	vs 30)	a university	
36						affiliated	
37						hospital	
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Study ID	Application category 2 - Interventions evaluated by instruments derived from Comfort Theory: Person-cantered care model	Author(s) (Year)	Country	Objectives	Patients receiving a curative course of radiation therapy: n = 194 (86 vs 108)	One radiotherapy unit in a major tertiary referral hospital	Study Design	Outcomes
116		Rose and Yates (2015)	Australia	To describe patients' responses to nursing care following the implementation of a person-cantered model			MMS	No significant difference in comfort (Radiation Therapy Comfort Questionnaire), anxiety, depression, QoL, satisfaction between two cohorts (p>0.05).
117		Liu and Wang (2015)	China	To study the effects of recumbent position changes on comfort and postoperative complications of patients after total hip replacement	Patients receiving total hip arthroplasty: n = 200 (100 vs 100)	One hospital unit of orthology	RCT	Enhanced comfort (Chinese version GCQ): Day 3 post surgery; No significant difference in joint dislocation complications (p>0.05).
118		Deng et al. (2015)	China	To explore the effect of a self-made bandage with three ends on preventing complications related to the use of pacemaker pouch	Patients implanted with permanent pacemakers: n = 120 (60 vs 60)	One hospital unit of cardiology	RCT	Enhanced postoperative comfort (Chinese version GCQ); Decreased incidence of pouch hematoma and pouch rupture (p<0.05).
119		Chen (2014)	China	To investigate the effect of a pressurized panties of inguinal region on patients' comfort	Patients receiving inguinal hernia surgery: n = 60 (30 vs 30)	One gastrointestinal surgical unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ) (p<0.05); Reduced waist and back pain (p<0.05); No significant difference in postoperative wound pain (p>0.05); Reduced occurrence of bleeding; Insignificant difference in swelling.

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1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments							
6	derived from	Hu et al.	China	To explore the effect of a	Elderly	One tertiary	RCT	Enhanced comfort (Chinese version GCQ); Increased
7	Comfort Theory:	(2014)		mattress for bed bathing	bedridden	hospital		satisfaction (p<0.05).
8	Dual-use air			and pressure sore	patients: n =			
9	mattress for bed			prevention for elderly	82 (41 vs 41)			
10	bathing and			bedridden patients				
11	pressure sore							
12	prevention							
13	Application							
14	category 2 -							
15	Interventions							
16	evaluated by							
17	instruments	Ni et al.	China	To compare the short-term	Liver cancer	One hepatic	RCT	Enhanced comfort (GCQ); Decreased complication,
18	derived from	(2013)		hepatectomy for liver cancer	patients: n =	surgical unit		duration of nausea/vomiting, paralytic ileus and duration
19	Comfort Theory:			managed with fast-track	160 (80 vs	of a		of hospital stay (p<0.05).
20	Fast-track			surgery or with conventional	80)	specialised		
21	surgery			surgery		hospital		
22	Application							
23	category 2 -							
24	Interventions							
25	evaluated by							
26	instruments							
27	derived from	Tang et al.	China	To explore the efficacy of	Patients with	One	RCT	Enhanced comfort (Chinese version GCQ); total comfort
28	Comfort Theory:	(2013)		comfort nursing care for	severe	hospital unit		and physical, psychological, sociocultural, environmental
29	A bundle of			patients with severe	hepatitis: n =	of		dimensions; Decreased adverse effects incidence
30	measures			hepatitis receiving artificial	80 (40 vs 40)	Epidemiolo		(p<0.05).
31	named as			liver plasmapheresis		gy		
32	comfort care							
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1	Application						
2	category 2 -						
3	Interventions						
4	evaluated by						
5	instruments						
6	derived from	Zhong	China	To explore the effectiveness	Patients with	One	Enhanced comfort (Chinese version GCQ): total comfort,
7	Comfort Theory:	(2013)		of comfort care in patients	auditory	hospital unit	physical and psychological dimensions; Increased
8	A bundle of			with auditory neuroma	neuroma: n	of	satisfaction (p<0.05).
9	measures			resected by posterior	= 80 (40 vs	Neurosurgery	
10	named as			suboccipital sigmoid sinus	40)		
11	comfort care			approach			
12	Application						
13	category 2 -						
14	Interventions						
15	evaluated by						
16	instruments						
17	derived from	Xu et al.	China	To observe the effect of	Patients	One	Enhanced comfort (Chinese version GCQ): total comfort
18	Comfort Theory:	(2013)		comfort nursing care on	receiving	hospital unit	and physical, psychological, sociocultural, environmental
19	A bundle of			patients receiving	ultrasound-	of Assisted	dimensions; Decreased anxiety; Increased satisfaction
20	measures			ultrasound-guided	guided	Reproductiv	(p<0.05).
21	named as			transvaginal oocyte	transvaginal		
22	comfort care			transvaginal oocyte retrieval	retrieval: n =		
23	Application				1469 (704 vs		
24	category 2 -				765)		
25	Interventions						
26	evaluated by						
27	instruments						
28	derived from	Yao et al.	China	To explore the application of	Maternal	One	Enhanced comfort (Chinese version GCQ); Decreased
29	Comfort Theory:	(2013)		comfort care on women	women: n =	university	anxiety; increased lactation (p<0.05).
30	A bundle of			during breast-feeding after	100 (50 vs	affiliated	
31	measures			C-section	50)	hospital	
32	named as						
33	comfort care						
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1	Application							
2	category 2 -							
3	Interventions							
4	evaluated by							
5	instruments							
6	derived from	Hu and Wang (2012)	China	To explore the effect of a dual-use medical cushion for bathing and preventing press sore	Bedridden patients: n = 66 (33 vs 33)	A tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction (p<0.01).
7	Comfort Theory:							
8	Dual-use air							
9	mattress for bed							
10	bathing and							
11	pressure sore							
12	prevention							
13	Application							
14	category 2 -							
15	Interventions							
16	evaluated by	He and Lv (2010)	China	To explore the effect of music therapy on comfort of critically ill patients	Critically ill patients: n = 157 (78 vs 79)	One hospital CCU	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Reduced anxiety and depression (p<0.05).
17	instruments							
18	derived from							
19	Comfort Theory:							
20	Music therapy							
21	Application							
22	category 2 -							
23	Interventions							
24	evaluated by	Chuntharapat et al. (2008)	Thailand	To determine the effects of using a yoga program during pregnancy on maternal comfort, labour pain and birth outcomes	Primigravid Thai women: n = 74 (37 vs 37)	Two public hospitals	RCT	Enhanced maternal comfort (maternal comfort questionnaire (MCQ)): at 2h after birth (p<0.05); Decreased pain (p<0.05); No significant differences in the first and fifth minute newborn Apgar scores, use of augmentation and pethidine (p>0.05).
25	instruments							
26	derived from							
27	Comfort Theory:							
28	Yoga							
29	Application							
30	category 2 -							
31	Interventions							
32	evaluated by							
33	instruments	Huang (2008)	China	To apply comfort care in needle removal of venipuncture	Hospitalized patients: n = 82	One hospital unit of general surgery	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Reduced pain (p<0.05).
34	derived from							
35	Comfort Theory:							
36	A bundle of							
37	measures							
38	named as							
39	comfort care							

Lower comfort score in observational group than those in control group ($p < 0.05$).

No statistically significant differences in comfort and satisfaction with the birth experience between groups which highlights the need to present comprehensive pain management options to women for labour and birth, such as N₂O.

Comfort scores at different times after surgery: a difference ($p < 0.05$) was seen within 24 hours after port placement: no difference ($p > 0.05$).

A peaceful death and a supported bereavement without regret.

1	Application							
2	category 3 -							
3	Descriptive or							
4	observational							
5	studies of							
6	services or							
7	practices							
8	underpinned by							
9	Comfort Theory:	Wan (2020)	China	To compare peripherally	Gastric	Oncology		
10	<i>Totally</i>			inserted central venous	cancer	surgical unit		
11	<i>implanted</i>			catheters (PICC) and totally	patients	at a		
12	<i>venous access</i>			implanted venous access	received	CCS		
13	<i>port vs</i>			port (TIVAP) of	chemotherap	teaching		
14	<i>Peripherally</i>			administrated chemotherapy	y: n = 142	hospital		
15	<i>inserted central</i>			in gastric cancer patients	(72 vs 70)			
16	<i>venous catheter</i>							
17	Application							
18	category 3 -							
19	Descriptive or							
20	observational							
21	studies of							
22	services or							
23	practices							
24	underpinned by							
25	Comfort Theory:	Robinson	USA	To determine whether a	nurses and	Veterans		
26	<i>A training</i>	(2019)		training module for nurses	social	affairs		
27	<i>module for</i>			would assist in the	workers: n =	Medical		
28	<i>nurses</i>			identification of signs and	17	Centres		
29	Application			symptoms of mental health				
30	category 3 -			issues in Operation				
31	Descriptive or			Enduring Freedom (OEF)/				
32	observational			Operation Iraqi Freedom				
33	studies of			(OIF) veterans				
34	services or	Bice and	USA					
35	practices	Bramlett						
36	underpinned by	(2019)						
37	Comfort Theory:							
38	<i>Learning</i>							
39	<i>comfort</i>							
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1	Application								
2	category 3 -								
3	Descriptive or								
4	observational								
5	studies of								
6	services or	Puchi et al.	Chile	To apply Kolcaba's comfort	Pneumonia	One			The theory's application was simple and could be used in
7	practices	(2018)		theory in the development of	patient: n = 1	Hospital at	Case study		the domiciliary context: an adequate assessment, a holistic
8	underpinned by			the NP care for an older		Home			view of the situation, the nursing care objectives,
9	Comfort Theory:			adult treated under Hospital					intervention and evaluation of these interventions through
10	<i>Home-based</i>			at Home					both internal and external behaviours. The comfort theory
11	<i>nursing process</i>								can be applied in the context of hospital at home and
12	<i>care</i>								facilitated development of the NP and the provision of
13	Application								holistic, patient-centred nursing care, incorporating family
14	category 3 -								into the care plan.
15	Descriptive or								
16	observational								
17	studies of								
18	services or	Zhang	China	To provide guidance for	patients with	One			
19	practices	(2018)		postoperative comfort care	gastric	general			Higher improved comfort at day1, day7 postoperative
20	underpinned by			of patients with gastric	cancer: n =	surgical unit	CCS		(p<0.05)
21	Comfort Theory:			cancer	144 (72 vs	at a cancer			
22	<i>Two different</i>				72)	hospital			
23	<i>tube feeding</i>								
24	<i>interventions</i>								
25	Application								
26	category 3 -								
27	Descriptive or								
28	observational								
29	studies of								
30	services or								
31	practices								
32	underpinned by	Awal khan	Pakistan	To explain the practical	Patient with	Unspecified	Case study		Actively participating in care related activities, reduction in
33	Comfort Theory:	(2017)		application of nominated	post				pain, mobilised with help, used to touch his residual limb
34	<i>Interventions of</i>			theory to critical scenario of	traumatic				confidently and looking relax, fast recovery and reduced
35	<i>physical,</i>			patient	loss of limb:				hospital stay as health seeking behaviours and institutional
36	<i>psychospiritual</i>				n = 1				integrity.
37	<i>and</i>								
38	<i>sociocultural</i>								
39	<i>context; position</i>								
40	<i>change</i>								
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Most patients were found to experience increased comfort and a decrease in pain and anxiety. Few patients who did not experience a decrease in pain intensity have expressed a change in the quality of pain (pain became dull instead of sharp) or a deeper sense of calm and relaxation. Almost all patients report increased relaxation, and most report increased satisfaction with the options and modalities offered.

James reported no further episodes of chest pain and was awaiting the results of pending blood work to rule out acute coronary syndrome. He was able to close his eyes and sleep. The Comfort Theory-based intervention of Quiet Time provided an improved standard of care and outcome for this patient as well as other cardiac patients. Explicit applications of comfort theory can benefit nursing practice.

1	Application							
2	category 3 -							
3	Descriptive or							
4	observational							
5	studies of							
6	services or	Lin et al.	China	To report the nursing care	Oral cancer	One	Case study	To assess the causes of respiratory failure and pain, and
7	practices	(2014)		for a patient with end-stage	patient: n = 1	hospital		symptom management to alleviate the physical discomfort,
8	underpinned by			oral cancer, with a long				providing a comfortable and warm environment to achieve
9	Comfort Theory:			history of self-injurious				peace and stability.
10	<i>Music therapy,</i>			behaviours				
11	<i>massage,</i>							
12	<i>position change</i>							
13	Application							
14	category 3 -							
15	Descriptive or							
16	observational							
17	studies of							
18	services or							
19	practices	Miki et al.	USA	To discuss how aspects of a	First-year	Idaho State	Service	Consider how less stressed and more relaxed in their
20	underpinned by	(2007)		holistic comfort theory were	and senior	University	description	affect. Further incorporation of the theory into the nursing
21	Comfort Theory:			adapted to create a	students: n =			curriculum is warranted.
22	<i>A fast-track</i>			taxonomic structure to apply	40			
23	<i>nursing</i>			its concepts to a fast-track				
24	<i>education</i>			nursing education program				
25	<i>program.</i>							
26	Application							
27	category 3 -							
28	Descriptive or							
29	observational							
30	studies of							
31	services or							
32	practices							
33	underpinned by							
34	Comfort Theory:	Katharine et	USA	To describe how Kolcaba's	Staff nurses,	One	Service	The hospital expanded its service recovery program and
35	<i>Institute-based</i>	al. (2006)		Comfort Theory was used	nursing	hospital	description	launched several points-of-care surveys, each showing
36	<i>comfort care</i>			by a not-for-profit New	leaders, and			that patient satisfaction scores are rising. Hospital leaders
37	<i>practice;</i>			England hospital to provide	the chief			are fully dedicated to supporting a comfort place. The
38	<i>massage,</i>			a coherent and consistent	nursing			institution's commitment to achieving a higher level of care
39	<i>guided</i>			pattern for enhancing care	officers			for patients/families and improving the organizational
40	<i>relaxation</i>			and promoting professional				culture became aligned around the focus of comfort. We
41				practice, as well as to serve				continue to examine how we can incorporate Comfort
42				as a unifying framework for				Theory in all dimensions of practice.
43				applying for Magnet				
44				Recognition Status				
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1	Application							
2	category 3 -							
3	Descriptive or							
4	observational							
5	studies of							
6	services or							
7	practices							
8	underpinned by							
9	Comfort Theory:	Wilson and		To define comfort, identify	Colon	One	Service	A foundational and holistic approach to comfort
10	<i>Interventions of</i>	Kolcaba	USA	comfort interventions, and	cancer	perianesthe	description	management, which is proactive, energized, intentional,
11	<i>physical,</i>	(2004)		discuss the importance of a	patient: n = 1	sia setting		and long-term for by patients and families in all settings.
12	<i>psychospiritual,</i>			goal for enhanced comfort in				
13	<i>sociocultural,</i>			patients in the				
14	<i>and</i>			perianesthesia setting				
15	<i>environmental</i>							
16	<i>context;</i>							
17	<i>Massage</i>							
18	<i>healing touch,</i>							
19	<i>music therapy,</i>							
20	<i>position change</i>							
21	Application							
22	category 3 -							
23	Descriptive or							
24	observational							
25	studies of							
26	services or	Panno et al.	USA	To help orthopaedic nurses	Elders	One acute	Service	The Theory of Comfort provides a holistic framework for
27	practices	(2000)		develop an awareness of	(Number of	care unit	description	nurses assure that all comfort needs are addressed.
28	underpinned by			the Acute care for elders	elders was			
29	Comfort Theory:			(ACE) model and	not			
30	<i>A holistic model-</i>			techniques to achieve	specified)			
31	<i>Acute care for</i>			desired outcomes in				
32	<i>elders</i>			hospitalized elders				
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1	Application						
2	category 3 -						
3	Descriptive or						
4	observational						
5	studies of						
6	services or						
7	practices						
8	underpinned by	Jones and	To present nursing	A couple	One		
9	Comfort Theory:	Krysa	interventions for the care	seeking	genetics	Case study	Achieve ease, relief, and transcendence.
10	<i>Interventions of</i>	(1998)	and comfort of individuals	preimplantati	and IVF		
11	<i>physical,</i>		and families seeking	on genetic	clinic		
12	<i>psychospiritual,</i>		Preimplantation Genetic	testing: n = 2			
13	<i>sociocultural,</i>		Testing (PGT)				
14	<i>and</i>						
15	<i>environmental</i>						
16	<i>context</i>						
17	Application						
18	category 3 -						
19	Descriptive or						
20	observational						
21	studies of						
22	services or						
23	practices						
24	underpinned by						
25	Comfort Theory:	Vendlinski	To describe a theory of				
26	<i>Interventions of</i>	and	comfort care that offers				
27	<i>physical,</i>	Kolcaba	definitions and a grid for the	Heart failure	One	Case study	Nurses can be comprehensive and consistent in assessing
28	<i>psychospiritual,</i>	(1997)	art of comfort care that are	patient: n = 1	hospice		comfort and in designing interventions to enhance comfort.
29	<i>sociocultural,</i>		relevant to hospice nursing		setting		Assessment is an ongoing process. Interventions are
30	<i>and</i>		practice				modified according to the needs being identified and the
31	<i>environmental</i>						feedback obtained. The framework for comfort care offers
32	<i>context;</i>						a theory-based foundation upon which to build patterned,
33	<i>massage, music</i>						individualized methods for the practice of comforting, the
34	<i>therapy, position</i>						essence of hospice nursing.
35	<i>change</i>						
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1	Application								
2	category 3 -								
3	Descriptive or			To present a framework for					
4	observational			holistic comfort care, with	Metastatic				
5	studies of			strategies to guide the	melanoma				
6	services or			interdisciplinary team	patient and				
7	practices			through the process of	post-				
8	underpinned by	Kolcaba	USA	implementing comfort care	coronary	One ICU	Case study	The practice will enable staff to empower patients and	
9	Comfort Theory:	and Fisher		designing comfort	artery			families to work through the dying process with optimal	
10	<i>Interventions of</i>	(1996)		measures, deciding on	bypass graft			comfort	
11	<i>physical,</i>			specific medical	surgery				
12	<i>psychospiritual,</i>			management, and assisting	patient: n = 2				
13	<i>sociocultural,</i>			the patient and family					
14	<i>and</i>			through the dying process					
15	<i>environmental</i>								
16	<i>context</i>								
17	Application								
18	category 3 -								
19	Descriptive or								
20	observational			To develop a framework for				The framework is dynamic, describing the essential	
21	studies of			gerontological nursing		One		phenomenon in strong gerontological nursing care,	
22	services or			practice that includes	Dementia	dementia		explaining what to observe and what to do based on those	
23	practices			comfort as a	patients: n =	unit at a	Service	observation, predicting successful outcomes of effective	
24	underpinned by	Kolcaba	USA	multidimensional construct	15	teaching	description	care, advocating for a gerontological nursing approach that	
25	Comfort Theory:	(1992)		for planning and evaluating		nursing		is warm, kind, and holistic.	
26	<i>Unit comfort</i>			nursing interventions		home			
27	<i>care practice;</i>								
28	<i>Art therapy,</i>								
29	<i>music therapy</i>								
30	Application								
31	category 4-			To find out which variables	Adult	Ten		Comfort score (Epilepsy Monitoring Unit Comfort	
32	Surveys using	Egger -	Austria	may be associated with	hospitalized	epilepsy		Questionnaire (EMUCQ)): 181.32±25.95 (83-235 points).	
33	questionnaires	Rainer et al.		comfort of patients in an	patients: n =	monitoring	CSS	Factors of comfort: gender (women had a total comfort	
34	derived from	(2022)		epilepsy monitoring unit	267	units		score 4.69 points higher than men), occupation (retired	
35	Comfort Theory							persons 28 points higher than high school students ≥ 18	
36								years); Insignificant: age, marital status, and educational	
37								levels.	
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Comfort scores: Total score: 60.12 ± 12.16 ; physiological: 11.40 ± 3.89 , psychological: 24.30 ± 8.36 , social: 13.70 ± 3.63 , environmental: 14.11 ± 2.34 . Factors of comfort: education level, family location, religious belief, skin condition, number of fistulas; Psychological comfort: educational level, family location, family income per capita, medical payment method, religious beliefs, skin condition, number of fistulas; Social comfort: education level, family location, family income per capita, medical payment methods, religious beliefs, skin conditions; Environmental comfort: education level, skin condition.

The proportions of nurses in comfort-care groups level: low: 18.2%, moderate: 60.3%, and high: 21.2%; Perception of post-surgical mobilization syndrome (PES) score: 4.75 ± 1.73 ; Symptom interference score: 4.54 ± 2.01 ; Factors of comfort: supportive care competence (0.864), caring attitude (0.605), perception of symptom interference (0.395), perception of PES (0.321), barriers to nausea/vomiting management (-0.343).

Comfort total score (HCQ-caregiver): data were not reported. Factors of comfort: employed family caregivers ($p=0.04$), those youngest ($p=0.04$), smokers ($p=0.04$), those with H1R2 GA or AA genotypes ($p=0.03$).

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166	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zeng et al. (2022)	China	To investigate the sleep quality and its influencing factors of patients with nasal packing after endoscopic sinus surgery for chronic sinusitis	Patients with chronic sinusitis using nasal packing after endoscopic sinus surgery: n = 360	One unit of Otorhinolaryngology in a university affiliated hospital	CSS
167	Application category 4- Surveys using questionnaires derived from Comfort Theory	Sayin Kasar et al. (2021)	Turkey	To determine the comfort level and influencing factors in caregivers of palliative care patients	Caregivers of palliative care patients: n = 102	One palliative care clinic of a teaching and research hospital	CSS
168	Application category 4- Surveys using questionnaires derived from Comfort Theory	Sarıtaş and Özdemir (2021)	Turkey	To determine how compliance with immunosuppressive therapy affected the well-being of liver transplant patients	Patients undergoing liver transplant surgery: n = 103	One liver transplant unit of a teaching hospital	CSS
169	Application category 4- Surveys using questionnaires derived from Comfort Theory	Demir and Bulbuloglu (2021)	Turkey	To investigate the effect of immunosuppression therapy on activities of daily living and comfort level after liver transplantation	Liver transplant patients: n = 148	One liver transplant unit of a teaching hospital	CSS

Comfort score (Chinese version Modified Kolcaba Comfort Scale): 66.8 ± 10.02 , sociocultural dimension: 18.17 ± 5.10 (12-15), spiritual psychological dimension: 21.56 ± 4.56 (12-12), environmental dimension: 12.43 ± 2.61 (8-6), physiological dimension: 14.68 ± 3.34 (22-8). Comfort level: moderate: 234 cases (65.0%), low: 126 cases (35.0%). Sleep quality score: 34.21 ± 5.36 . Sleep problems: mild: 63 cases (17.5%), moderate: 221 cases (61.4%), severe: 63 cases (17.5%). Pain score: 5.34 ± 1.54 . Pain level: mild: 52 cases (14.4%), moderate: 226 cases (62.8%), severe: 82 cases (22.8%). Correlation: comfort and sleep quality ($p < 0.05$).

Comfort (Turkish version End-of-Life Comfort Scale (Caregiver Family)): 109.6 ± 12.49 , from 86-146. Factors of comfort: the patient's performance status, the caregiver's age, their economic situation, the length of the caregiving period and receiving help in care (social support) ($p < 0.05$); Higher: 65 years of age, incomes were greater than their expenditures, care for the patient for 12 hours a day and received social support while providing care; Insignificant: patients' ESAS symptoms. Symptom score: appetite: 5.4, drowsiness: 5.2, fatigue: 4.9, pain: 3.

Comfort score (GCS): data were not reported. Factors of comfort: adherence status ($r = 0.543$, $p < 0.001$) (The patients who adhered to immunosuppressive therapy experienced higher levels of comfort).

Moderate comfort level (Turkish version GCQ): 3.65 ± 0.26 (3.07-4.29). Factors of comfort: independent level in ADL, length of hospital stay and the duration of immunosuppressive drug use ($p = 0.041$, $p = 0.026$).

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174	Application category 4- Surveys using questionnaires derived from Comfort Theory	Fowler et al. (2020)	USA	To explore patient perceptions of nurse-driven comfort interventions and satisfaction with care during the perioperative phase of surgical care	Ambulatory surgical patients: n = 48	One surgical unit of a nationally recognized, not-for-profit, comprehensive community non-Magnet hospital	Online survey
175	Application category 4- Surveys using questionnaires derived from Comfort Theory	Marques and Alves (2020)	Brazil	To identify clusters of nursing diagnoses and repercussions for patient comfort and survival	66 patients with cancer at EoL: n = 66	One palliative oncology care unit	Cohort study
176	Application category 4- Surveys using questionnaires derived from Comfort Theory	Kolcaba et al. (2020)	Brazil	To identify nursing diagnoses in hospitalized elderly patients in an ICU, and to categorize diagnoses according to the dimensions of comfort in Kolcaba's theory	Elderly patients: n = 103	One hospital ICU	CSS

High comfort level: the highest score of perceived most nursing interventions: connecting with the patient as a person; the lowest percentage of yes responses to comfort setting a collaborative pain goal (54%), and the highest percent of yes responses: the inclusion of family or caregivers (92%); Factors of comfort: encouragement of use of measures to prevent discomfort (p=0.00), providing a comfortable environment; High satisfaction score: 4.7±0.7; Forty-eight (79%) extremely satisfied; Factors of satisfaction: (a) medications/ treatments, (b) emotional support, (c) education or teaching, (d) listening, (e) connecting with a person (r: 0.62-0.85, p=0.00).

Three distinct groups and 23 nurse diagnoses were used: First: most prevalent diagnosis cluster related to less comfortable intestinal tract disorders and sleep; Second: neuropsychological characteristics, fatigue associated with lower survival; Third: functionality and perception.

In 26 titles and six domains of NANDA-I Taxonomy: Physical comfort dimension: 80.77% (Chronic confusion, Excess fluid volume, Impaired swallowing, Risk for electrolyte imbalance, Risk for imbalanced fluid volume, Risk for unstable blood glucose level, Dysfunctional gastrointestinal motility, Impaired gas exchange, Constipation, Impaired urinary elimination, Dysfunctional gastrointestinal motility, Hyperthermia, Risk for vascular trauma, Risk for aspiration, Risk for shock, Risk for bleeding, Impaired skin integrity, Decreased cardiac output, Risk for ineffective cerebral tissue perfusion, Impaired spontaneous ventilation, Ineffective breathing pattern); Sociocultural comfort dimension: 11.54% (Readiness for enhanced self-care, Impaired physical mobility, Impaired verbal communication); Environmental comfort dimension: 3.58% (Risk for infection); Psychospiritual comfort dimension: 3.58% (Anxiety).

1	Application							
2	category 4-							
3	Surveys using	Zeynep et	Istanbul	To determine the comfort	Patients	One		Comfort score (Perianesthesia Comfort Scale): 4.85±0.65.
4	questionnaires	al. (2020)		levels of patients regarding	undergoing	general	CSS	Factors of comfort: experience of surgery, being calm while
5	derived from			the pre-operative period in	elective	surgery clinic of a		waiting in the operating room in the preoperative period
6	Comfort Theory			operating room	surgery: n =	university		(p<0.05).
7					130	hospital		
8								Comfort score (Childbirth Comfort Questionnaire (CCQ)): data
9								were not reported. Significant relationship: physical labour
10								comfort (p=0.003), transcendence (p=0.023), family history
11								of labour difficulty (p=0.027), feelings about birth before
12	Application			To examine the effect of				labour birth (p=0.005) and traumatic childbirth
13	category 4-			labour comfort on traumatic				perceptions 2 weeks after childbirth; physical labour
14	Surveys using	Türkmen et	Turkey	childbirth perception,	Pregnant	One	Longitudinal	comfort (p=0.001), psychospiritual labour comfort
15	questionnaires	al. (2020)		posttraumatic stress	women: n =	delivery	study	(p=0.001), transcendence (p=0.001), primiparity (p=0.009),
16	derived from			disorder (PTSD), and	102	room		place of residence (p=0.044), and traumatic childbirth
17	Comfort Theory			breastfeeding after the				perceptions (p<0.001) and PTSD 4 weeks after childbirth.
18				fourth postpartum week				Consequences of comfort: physical labour comfort affected
19								traumatic childbirth perceptions 3 and 6 months after
20								childbirth (p=0.05), affected breastfeeding self-efficacy 4
21								weeks and 6 months after childbirth (p<0.05).
22								Comfort score (Chinese version Radiotherapy Comfort
23								Questionnaire (RTCQ)): from 85.84±8.30 to 104.44±9.71.
24								Factors of comfort: radiotherapy progress-the scores of
25								overall comfort and comfort in all dimensions of
26	Application				Nasopharyn			nasopharyngeal Carcinoma patients at different time points
27	category 4-				geal			were statistically significant (F= 9.152-260.826, p<0.05);
28	Surveys using	Zhang	China	To analyse the symptom	Carcinoma	Two tertiary	Longitudinal	symptom clusters (r=-0.194--0.892, p<0.05), physiological
29	questionnaires	(2020)		clusters and comfort of	patients	hospitals	study	comfort during T1-T6 (r=-0.214--0.883, p<0.05); fatigue
30	derived from			patients with	receiving			sleep emotion symptom cluster and the oral mucosa
31	Comfort Theory			nasopharyngeal carcinoma	radiotherapy:			symptom cluster with psychological comfort and
32					n = 153			environmental comfort during T1-T6 (r=-0.249--0.794,
33								p<0.05); oral mucosa symptom cluster, dysphagia
34								symptom cluster and social dimension comfort during T5-
35								T6 (r=0.163--0.184, p<0.05).
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1	Application								
2	category 4-								
3	Surveys using	Pang et al.	China	To investigate comfort level	Caesarean	One			Medium to high level of comfort (Chinese version GCQ):
4	questionnaires	(2020)		of caesarean women and	women: n =	maternity	CSS		79.70±7.82. Factors of comfort: per capita monthly income,
5	derived from			explore its influencing	154	ward			whether and analgesia before delivery. Moderate comfort level
6	Comfort Theory			factors					(Chinese version GCQ): 85.43±11.14, lowest item score in
7									environmental dimension comfort: (2.67±0.48).
8	Application				Pregnant				Moderate comfort level (GCQ): 129.82±12.66; State Trait
9	category 4-				women	One			Anxiety Inventory (STAI) subscale scores: 46.72±9.37,
10	Surveys using	Kizilkaya	Turkey	To investigate whether	receiving	Obstetrics			43.65±7.75. Fasting time: 13.16±2.38 hours for solid food,
11	questionnaires	and Gul		fasting time and anxiety	elective	and	CSS		10.57±2.12 hours for liquid food. Factors of comfort: STAI
12	derived from	(2019)		parameters affect pregnant	caesarean	Gynaecolog			scores, total fasting duration for solids; Insignificant: total
13	Comfort Theory			women's preoperative	section: n =	y Hospital			fasting duration for liquids; Factors of STAI score: thirst
14				comfort levels	110				sensation and mouth dryness.
15									Comfort score (Chinese version Surgical Posture Comfort
16	Application				Elderly	One			Questionnaire): 61.56±11.34. FRAIL Frailty Scale score:
17	category 4-				patients	operating			1.37±1.16 (33.9%) without frailty, 71 (40. 8%) with pre-
18	Surveys using	Li et al.	China	To identify the correlation	receiving	room of a			frailty, 40.8% (25.3%) with frailty. Negative significant
19	questionnaires	(2019)		between comfort related to	anal surgery:	general	CSS		correlation: comfort dimension and total comfort with frailty
20	derived from			the position during anal	n = 174	hospital			scale scores (r=-0.508, -0.347, -0.206, -0.263, -0.438,
21	Comfort Theory			surgery and the					p<0.05). Factors of comfort: age, body mass index,
22				preoperative frailty of elderly					exercise, preoperative comorbidities, preoperative
23				patient					weakness (p<0.05).
24									Comfort (Haemodialysis Questionnaire): 203.25±26.09,
25	Application				Patients	Two for-			from 144-258 (inconsistent maximum comfort score
26	category 4-				receiving	profit			reported in text and table indicating a low quality of report).
27	Surveys using	Estridge et	USA	To determine a potential	haemodialysi	dialysis	CSS		Factors of comfort: insignificant association: adherence to
28	questionnaires	al. (2018)		relationship between	s: n = 51	clinics			fluid restrictions, sex, whites and non-whites. Awareness of
29	derived from			comfort and fluid retention					comfort as a consideration for adherence to prescribed
30	Comfort Theory			(a proxy for adherence) in					treatment regimens may improve treatment adherence.
31				adults with end stage renal					
32				disease receiving					
33				haemodialysis					

184	Application category 4- Surveys using questionnaires derived from Comfort Theory	Gayoso et al. (2018)	Brazil	To verify the association between the level of comfort of the caregiver and sociodemographic variables related to caregiving, and the patient's functional status and symptoms	Informal caregivers of cancer patients in palliative care: n = 50	One outpatient clinic and home care of a tertiary hospital	CSS
185	Application category 4- Surveys using questionnaires derived from Comfort Theory	Mosleh (2018)	Jordan	To evaluate the impact of a cancer diagnosis on Jordanian cancer patients' health-related QoL and its relationship with social support and emotional status	Patients with cancer: n = 226	Outpatient clinics of a tertiary hospital (Number of clinics was not specified)	CSS
186	Application category 4- Surveys using questionnaires derived from Comfort Theory	Nural and Alkan (2018)	Turkey	To determine the factors affecting comfort and the comfort levels of patients hospitalized in the CCU	Patients in the CCU for at least 2 days: n = 119	One CCU of a state hospital	CSS
187	Application category 4- Surveys using questionnaires derived from Comfort Theory	Ramirez (2018)	USA	To assess therapists' comfort level in providing psychotherapy in a home-based setting and how therapeutic competency, therapeutic relationship, and advanced therapeutic training related to the comfort level	Psychotherapists who provided: n = 76	One non-profit home-based psychotherapy agency	CSS

Comfort (Holistic Comfort Questionnaire-caregiver (HCQ-caregiver)): 4.52 points.

Factors of comfort: better functional status of the patients, the Palliative Performance Scale (PPS) scores and the HCQ-caregiver (p=0.009); older caregivers who received helped in the care activities (p=0.018), physical comfort of caregivers and PPS (p=0.006), psycho-spiritual comfort and caregiver's age (p=0.012), psychospiritual comfort and patient's distress (p=0.022); Caregivers classified the functional status of the patients as 50 to 79% in 25 cases (50%), 80 to 100% in 14 cases (28%), 100% in 11 cases (22%), with a mean: 60% (20-100%).

Comfort score (HCQ): 4.25±0.055; Unsatisfactory QoL; Fatigue; Factors of comfort: high educational level, less rehospitalization, high anxiety and depression scores; Factors of QoL: social support, hospitalization readmission, being a non-smoker, anxiety and depression; Factors of functioning scores and symptom complaints: social support, anxiety and depression.

Comfort score (Turkish version GCQ): 3.22±0.33; Factors of comfort: age (r=-0.19, p=0.03), communication by nurses and physicians (p<0.05), sufficient communication by physicians, education level, age, and having a companion, having visitors (p<0.05); Insignificant: gender, place of residence, family structure, the information level of patients and families, being informed about procedures, and conditions causing concern in the intensive care.

Comfort score (Therapist Comfort Scale): 28.23±18.50. Positive relationship between: therapeutic relationship and comfort level, therapeutic training and comfort level, advanced therapeutic training and comfort level.

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188	Application category 4- Surveys using questionnaires derived from Comfort Theory	Ding et al. (2018)	China	To understand the comfort and its influencing factors of patients within 24 hours after gynaecological surgery	Patients receiving gynaecological surgery: n = 98	One unit of Gynaecology in a municipal hospital	Longitudinal study
189	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zhu et al. (2018)	China	To explore usefulness of the Comfort Scale in accelerated rehabilitation surgical care	Patients with gastric cancer receiving laparoscopic accelerated recovery surgery: n = 60	One unit of Gastrointestinal Surgery of a medical college hospital	Longitudinal study

Moderate comfort (Chinese version GCQ): 6 hours after surgery total: 82.59±0.75, physical dimension: 13.41±0.63, environmental dimension: 21.21±1.00, psychospiritual dimension: 19.44±0.49, sociocultural dimension: 19.29±0.44; 24 hours after surgery total: 81.21±1.42, physical dimension: 13.95±0.75, environmental dimension: 19.54±0.62, psychospiritual dimension: 28.75±0.51, sociocultural dimension: 18.47±0.62. comfort level at 24 hours after gynaecological surgery. Highest demand for physical comfort: at 6 hours after surgery. Highest demand for sociocultural comfort: at 24 hours after surgery. Factors of comfort: age, education, surgical methods, surgical procedures.

Comfort (Chinese version Modified general comfort questionnaire): 1 day after surgery: total: 66.39±15.08, physical dimension: 11.85±3.42, psychological dimension: 17.21±3.52, spiritual dimension: 18.32±4.63, sociocultural and environmental dimension: 19.01±3.51; 7 day after surgery total: 70.06±14.45, physical dimension: 13.85±4.15, psychological dimension: 18.41±3.96, spiritual dimension: 19.23±4.43, sociocultural and environmental dimension: 19.11±1.91; Factors of comfort: physiological dimensions: postoperative pain, time post operation: higher comfort at 7 days than those at 1 day after surgery, higher satisfaction at 7 days (58 (96.7%)) vs those at 1 day after surgery (42 (70%)), indwelling catheter causing fear and then affecting the time and frequency of patients' early ambulation, postoperative dry mouth and thirst, economic factors with psychological pressure.

190	Application category 4- Surveys using questionnaires derived from Comfort Theory	Shang and Fang (2018)	China	To investigate the comfort level and its influencing factors of patients after coronary artery intervention	Patients receiving percutaneous coronary intervention: n = 87	One unit of Cardiology of a tertiary hospital	CSS	Moderate comfort score (Chinese version GCQ): 73.64 ± 7.89 , physiological dimension: 12.90 ± 2.146 , social and cultural dimension: 17.06 ± 1.985 , environmental dimension: 17.29 ± 2.623 , psychological dimension: 26.40 ± 3.477 . Factors of comfort: physical dimension and overall comfort: residence, education level and payment methods (0.05)-living in cities higher than living in rural areas, senior high school and technical secondary school higher than junior college and above, junior high school and below.
191	Application category 4- Surveys using questionnaires derived from Comfort Theory	González Gómez et al. (2017)	Colombia	To determine the association between the sociodemographic factors and the dimensions of comfort present in patients hospitalized in the intensive and intermediate care units	Patients hospitalized in the intensive and intermediate care units: n = 160	Intensive and intermediate care units of four institutions (Number of units was not specified)	CSS	Comfort score (GCQ): data not reported. Type of comfort: transcendence in social, psychospiritual, and physical dimensions; tranquility in environmental dimension; Factors of comfort: being from a socioeconomic level above the middle and having secondary or higher education.
192	Application category 4- Surveys using questionnaires derived from Comfort Theory	Song et al. (2017)	China	To analyse the related influencing factors of comfort degree after permanent pacemaker implantation for elderly patients to provide evidence for improving patients' comfort degree	Elderly patients after permanent dual chamber pacemaker implantation: n = 80	One tertiary hospital	Longitudinal study	Comfort score (Chinese version GCQ): 70.16 ± 8.06 (53-92). Self-Rating Anxiety Scale(SAS) score: 32-78, 52.45 ± 9.20 , 27 normal cases, 53 with anxiety; Numeric Rating Scale (NRS) score: incision before sandbag compression: 0-4, 2.44 ± 0.11 , no pain: 1 case, pain: 79 cases; incision after sandbag compression: 1-5, 3.26 ± 0.87 , no pain: 0 case, pain: 80 cases; low back pain: 52 cases, no pain: 28 cases. Factors of comfort: anxiety, incision pain before and after sandbag compression, incidence of low back pain ($p < 0.05$).
193	Application category 4- Surveys using questionnaires derived from Comfort Theory	Li et al. (2017a)	China	To analyse the factors for the comfort of otolaryngology patients	Hospitalised patients: n = 82	One hospital unit of Otolaryngology Head and Neck Surgery	CSS	High comfort level (Chinese version GCQ) in social-culture dimension and low in mental, physical and environmental dimension. Number of people whose dimension scores are lower than X-Si and Xi-2Si: 12, 20, 11, 10 and 3, 0, 4, 3.

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194	Application category 4- Surveys using questionnaires derived from Comfort Theory	Li et al. (2017b)	China	To investigate the comfort of patients after haemodialysis temporary central venous catheterization	Patients on haemodialysis using temporary central venous catheterization: n = 74	One kidney centre	CSS
195	Application category 4- Surveys using questionnaires derived from Comfort Theory	Wen et al. (2017)	China	To observe the effect of comfort levels in patients during long-term video electroencephalographic (VEEG) monitoring on the monitoring effect	Patients with consecutive epilepsy: n = 168	One unit of Neurosurgery of a hospital	Longitudinal study
196	Application category 4- Surveys using questionnaires derived from Comfort Theory	Pehlivan et al. (2016)	Turkey	To examine the relationship between comfort and quality of life in breast cancer patients undergoing radiation therapy	Patients with breast cancer undergoing radiation therapy: n = 61	One Radiation Oncology Unit of a cancer hospital	Longitudinal study

Low comfort level (Chinese version GCQ): 61.73±14.49, lowest in physiological dimension, highest in environmental dimension. Factors of comfort: different income, medical insurance reimbursement methods, catheterization sites (p<0.05). Factors of psychological comfort: different ages, marital status (p<0.05), lower in unmarried, widowed and separated patients than married patients, higher in patients with neck catheterization than femoral static vein catheterization. Comfort before (video - electroencephalogram (VEEG) Monitoring Patient Comfort Scale) before VEEG: physiological: 2.87±1.04, psychological: 2.63±0.98, social: 2.40±1.04, environmental: 2.84±0.90, overall comfort: 2.69±1.04. Comfort score after VEEG: physiological: 2.06±1.04, psychological: 1.66±1.40, social: 1.89±0.57, environmental: 1.83±1.24, overall comfort: 1.86±1.19. Factors of comfort: 2 groups (t=4.011-6.353, p<0.05); blinks on eye movement artifacts, physical artifacts, chewing or swallowing artifacts, electrocardiogram artifacts (r=-0.84-0.85, all p<0.05); Insignificant: sweating, skin artifacts, electrocardiogram artifact (r=-0.204-0.158, p>0.05). Comfort (Radiation Therapy Comfort Questionnaire Turkish version (RT-CQ)): 3.75±0.61 (before radiation therapy), 3.75±0.61 (after radiation therapy). Factors of comfort: significant association: comfort and functional and general QoL, comfort and the symptom QoL (p<0.01) pain and symptom QoL (p<0.05); insignificant association: QoL (p>0.05), educational status, marital status, place of residence, duration of disease, stage of disease, previous treatments applied, type of surgery, being informed about radiation therapy and experiencing problems during the treatment period and comfort and QoL (p>0.05).

197	Application category 4- Surveys using questionnaires derived from Comfort Theory	Meneguín et al. (2016)	Brazil	To analyse the comfort of formal and informal caregivers to palliative care patients, identifying the variables associated with the difficulties for home care	Caregivers of palliative care patients: n = 50	One primary health care network of an interior city	CSS	Comfort score (GCQ): 235 points (202-263); Factors of comfort caregiver's report of some difficulty in care delivery to palliative care patients (OR=0.90; 95.0% CI 0.81-1.00); Significant: female participants with a partner, practicing of some religion, illiterate/ unfinished primary education
198	Application category 4- Surveys using questionnaires derived from Comfort Theory	Richards (2016)	USA	To evaluate reasons for the low use of hospice care among the terminally diagnosed members of this population, between the ages of 18 and 64	Military patients with terminal illness: n = 32	One military ambulatory care setting located in the North-eastern portion	CSS	No differences between groups in: knowledge of hospice care, attitudes and beliefs about hospice, distrust in the health care system, advanced care plans based on race.
199	Application category 4- Surveys using questionnaires derived from Comfort Theory	Hansen et al. (2015)	USA	To explore family relationships at the EoL and investigate associations among perceived comfort, relatedness states, and life closure	Hospice patients: n = 30	One large not-for-profit hospice	MMS	Hospice Comfort Questionnaire (HCQ): Cronbach's alpha: 0.86, Content validity: Verbal Rating Comfort Questionnaire and HCQ: r=0.66, p=<0.001. Factors of comfort: life closure (r=0.69, p=0.001), residing in an inpatient setting vs in the home setting.

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Application category 4- Surveys using questionnaires derived from Comfort Theory	Rondinelli et al. (2015)	USA	To examine the factors related to the nurse's comfort in fulfilling interventions during the perinatal loss, and to examine the comments related to barriers and facilitators to nurses' comfort reported in open-ended questions	Nurses who cared for parents and families during perinatal loss: n = 172	One large integrated healthcare system	Online survey
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Comfort score (a revised perinatal bereavement scale): 56.49±22.72. Comfort scale reliability: Cronbach's alpha=0.98. Factors of comfort: experience, number of perinatal loss cases cared for (r=0.374, p<0.001); Top five bereavement role components: discussing baby's gender, contacting social services, allowing time with the baby during the hospital stay, contacting spiritual advisor, and holding the baby (scores from 3.16 to 3.06 (range=0-4)); Five lowest bereavement role components: retrieving baby from the morgue, discussing autopsy and genetic testing with parents, discussing funeral options, the grief process, discussing with parents the option to bathe and dress their baby (scores from 1.81 to 2.6.).

Barriers and Facilitators to Comfort: Structure: organizational support, education on bereavement care, time and space with and for the grieving family, Knowing what to say, having supplies and materials to provide care; Process: experiential knowing, personal knowing, professional knowing, acknowledgment of diverse cultural and spiritual beliefs, not being alone when completing bereavement care.

Outcome: comfort, always difficult and uncomfortable, I am comfortable

201	Application category 4- Surveys using questionnaires derived from Comfort Theory	Twohig et al. (2015)	USA	To create a survey to capture the family experience in the surgical intensive care unit (SICU) based on Kolcaba's "Enhanced Comfort Theory"	ICU patients and their families: n = 331	One 14-bed closed surgical ICU in a 1,171-bed tertiary hospital	Online survey
202	Application category 4- Surveys using questionnaires derived from Comfort Theory	Karabulut et al. (2015)	Turkey	To determine patient satisfaction with pain management and comfort levels after undergoing open heart surgery	Patients who had undergone open heart surgery: n = 52	One cardiovascular surgery clinic of a Region Training-Re search	Longitudinal study

High satisfaction: high in quality of care provided to patients, communication and availability of nurses and doctors, explanations from staff, inclusion in decision making, the needs of patients being met, quality of care provided to patients, cleanliness of the unit. Length of stay: 13 days (range 1-91), 47% (17/ 36) 7 days or greater. "What is the best thing you would change about the SICU?" responses: lack of responsiveness to beeping machines, patient's access to the call bell and food, and the need for a liver transplant protocol for donors and recipients, the need for more patient mobility and wound care, ill-maintained family facilities (the waiting room and bathroom), more timely meetings for families, doctors and family involvement in rounds, comment on the negative attitude of staff. "What is the best thing about the SICU?" responses: positive attitude of staff toward patients (n = 18): caring, compassion, dedication and commitment to patients; nurses, doctors and other staff; Positive comments on patient care (n = 9): high quality of care, attentiveness, close monitoring and cleanliness of patient; Information and communication (n = 3): staff being available for and answering questions, and the quality and regularity of updates received. Other: cleanliness of the unit (n = 3), support in the form of 'special accommodation' or attitude that made 'a stressful time easier' for families (n = 2).

Comfort level (GCQ) at discharge: 3.16 ± 0.2 . Pain score: 7.07 ± 2.1 immediately after surgery, 6.71 ± 2.7 at first post-operative ambulation, 6.32 ± 2.4 at 24 hours before discharge, one patient: no pain at discharge: 4.57 ± 2.3 . High satisfaction in pain management: 80.8% patients. Insignificant difference: comfort level and pain rating at discharge ($p = -0.225$, $p > 0.05$).

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203	Application category 4- Surveys using questionnaires derived from Comfort Theory	Aktaş (2015)	Turkey	To investigate the prevalence and the affecting factors of dysmenorrhea and its effects on overall comfort among female university students	Female students: n = 200	One university	CSS
204	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zheng (2015)	China	To investigate comfort and its factors of patients receiving choledochoscope operation	Patients receiving choledochoscope surgery: n = 330	One unit of Hepatobiliary Surgery of one university affiliated hospital	CSS
205	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zhao et al. (2015)	China	To discuss the associated factors induced discomfort in gynaecological laparoscopic surgery patients	Patients receiving gynaecological laparoscopic surgery: n = 205	One women's and children's hospital	CSS
206	Application category 4- Surveys using questionnaires derived from Comfort Theory	Lamino et al. (2014)	Brazil	To assess the comfort of cancer patients' primary caregivers and verify the association between comfort and variables related to patients, the disease and the principal caregivers	Caregivers of patients with Karnofsky scores lower than 50: n = 88	One oncology outpatient clinic	CSS

Prevalence of dysmenorrhea: 84% of students; Comfort score (GCCQ) for students with dysmenorrhea: 2.57 ± 0.25 , without dysmenorrhea: 2.65 ± 0.23 ; Pain score (VAS): 5.78 ± 2.15 ; Moderate pain: 45.8% of students; Most common occurring symptoms: irritability (34.6%), fatigue (11.5%); Most commonly used methods for pain: analgesics (59%), heat application (56.5%), rest (71.4%). Factors of comfort: family history of dysmenorrhea, education about menstruation, frequency of menstrual cycle (p<0.05); use of the methods for management of dysmenorrhea.

Comfort score (Chinese version GCQ): 76.19 ± 3.99 , psychological domain: 2.56 ± 0.23 , physiological field: 1.98 ± 0.15 , social studies: 2.86 ± 0.22 , environment: 2.49 ± 0.15 ; VAS score: 45.43 ± 8.06 . Pain: grade 0: 12.1%, grade 1: 39.4%, grade 2: 37.6%, grade 3: 10.6, grade 4 and 5: 0.9%. Factors of comfort: room temperature, saline temperature, posture, moist skin, abdominal distention, nausea and vomiting, pain, anxiety, self-recumbent position, age, family economic level, medical payment (p<0.05). Insignificant: gender, occupation, education level, marital status, religious beliefs (p>0.05).

Comfort score (Chinese version GCQ): data were not reported. Factors of comfort: marital status, indwelling catheter, sleeping, sleep, nausea and vomiting (p<0.05).

Comfort score (GCQ): 203.9; Factors: age of the caregiver, care time, current occupation, caregivers who didn't have a paid job or leisure's activities; Factors of physical, environmental dimensions and spirituality: caregivers felt loved; Caregivers' GCQ scale: Cronbach's alpha: 0.814.

207	Application category 4- Surveys using questionnaires derived from Comfort Theory	Tuncer and Yucel (2014)	Istanbul	To determine the comfort and anxiety levels of women with breast cancer receiving radiotherapy	Women with breast cancer receiving radiotherapy at an early stage: n = 66	One radiation oncology breast polyclinic of a university hospital	CSS	Moderate comfort: Radiation Therapy Comfort Questionnaire (RTCQ): 3.73±0.31. Low anxiety: State Anxiety Inventory (SAI): 29.1±5.88, Trait Anxiety Inventory (TAI): 37.8±6.91. Factors of comfort: no differences regarding marital status, educational status, presence comorbidities, menopause status of the women, and history of cancer in the family (p>0.05). Comfort: Preanaesthesia Comfort Questionnaire Iranian version (PCQ-IR): 107.37±11.53, from 70-144. Factors of comfort: hope (p≤0.001, r=0.65), educational level and marital status (p≤0.01), university education, males, age between 18 and 37 years, duration of disease less than one month, and patients undergoing orthopaedic surgery (p≤0.05). Nurses (98%) conceptualized comfort as well-being. Two or more discomforts of the four contexts (physical, environmental, socio-cultural and psycho-spiritual) were observed by more than 50% of the nurses. More frequent discomforts identified by nurses: pain (100%), excessive noise (58.7%), feeling of displacement of home environment (76.7%), and anxiety (93.3%). Greater emphasis on physical discomforts, especially pain.
208	Application category 4- Surveys using questionnaires derived from Comfort Theory	Seyedfatemi et al. (2014)	Iran	To explore the relationship between comfort and hope in the preanesthetic stage in patients undergoing surgery	Surgical patients: n = 191	One teaching hospital	CSS	
209	Application category 4- Surveys using questionnaires derived from Comfort Theory	Álvares de Medeiros et al. (2014)	Brazil	To identify the perceptions of hospital nurses about the concept of comfort and discomfort that affect the elderly in the postoperative period	30 nurses: n = 30	One university hospital	CSS	

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210	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zheng (2013)	China	(1) based on comfort theory to construct a clinical nursing care and quality evaluation standard for AIDS patients so as to standardize nursing process and improve the quality of AIDS patients care. (2) to evaluate the clinical care of AIDS patients by the evaluation standard for AIDS patients, summarize and analyse effect factors, to improve the clinical care standard and quality evaluation system	AIDS patients: n = 105	One infectious disease hospital	MMS
211	Application category 4- Surveys using questionnaires derived from Comfort Theory	Li (2013)	China	To analyse the comfort and psychological needs of patients in thoracic surgery within 72 hours after operation	Patients after thoracic surgery: n = 120	One unit of Cardiothoracic Surgery of a hospital	Longitudinal study

Clinical care standard and care quality evaluation system for AIDS patients 4 dimensions: environmental comfort, physical comfort, psychological comfort, cultural comfort; 7 class- I indicators, 21 class- II indicators and 48 class-III indicators. Retest reliability: Pearson Correlation 0.853; Inter-rater reliability ICC: 0.987. Environmental comfort: 4.97-5.00, coefficient of variation: 0.00-0.03. Physical comfort: 4.55-4.95, coefficient of variation: 0.00-0.19. Psychological and spiritual comfort: 3.56-3.98, coefficient of variation: 0.08-0.32. Social and cultural comfort: 2.92-4.95, coefficient of variation: 0.14-0.29; Lowest score: constructing support system; Highest score: respecting the patient's religious belief. Low satisfaction level. Comfort score (Chinese version Nasal Packing Patient Comfort Questionnaire): 51.73±11.04, item: 2.75±0.92, physical dimension: 3.34±0.65, environmental dimension: 2.78±0.65, psychospiritual dimension: 3.45±0.93, sociocultural dimension: 3.63±0.73.

Medium and high comfort level(Chinese version GCQ) within 72 h after thoracic surgery. Severe pain and fatigue within 24 h after surgery: a high demand for companionship. Factors of comfort: postoperative time (p<0.01), higher on the second day after surgery in overall comfort and each dimension than those on the first day after surgery (p<0.05), higher on the third day after surgery in overall comfort and each dimension than those on the first and second day after surgery (p<0.05); gender, marital status, medical payment method and family economic status within 72 h after surgery (p<0.05)-higher comfort in unmarried than married patients, in retired patients than unemployed patients, in women than men, in those paid by the public fee than those who paid by themselves.

Study number	Application category	Author(s)	Country	Purpose	Participants	Setting	Study design	Findings
212	Application category 4- Surveys using questionnaires derived from Comfort Theory	Feng and Gu (2011)	China	To investigate the comfort of patients at 24h and 48h after hysterectomy and the factors affecting them, in order to provide a scientific basis for alleviating postoperative discomfort and improving patients' comfort	Patients after hysterectomy: n = 105	One unit of Obstetrics and Gynaecology of hospital	Longitudinal study	Medium-high comfort (GCQ): 81.77±10.92 at 24 h and 88.54±8.94 at 48 h after hysterectomy. Factors of comfort: lumbago, pain, inability to take a bath after surgery, indwelling catheter; worry about work, fatigue.
213	Application category 4- Surveys using questionnaires derived from Comfort Theory	Tanatwanit (2011)	Thailand	To explore and describe comfort as experienced by Thai older patients with advanced cancer in an academic medical-university hospital in Thailand	Thai old patients with advanced cancer: n = 111	One academic medical-university hospital	MMS	Moderate and high comfort (Hospice Comfort Questionnaire (HCQ-Patient)): 4.29±0.50; VRs: 6.25±2.89. Qualitative findings: Three domains: Discomfort, Comfort, and an additional domain. Four contexts of discomfort: physical (physiological (sleep disturbance and pain), psycho-social (worry and/ or fear about the illness and symptoms), socio-cultural (no reporting/ communication of existing discomfort), environmental (the setting-the patient's room and the restrooms). Four categories of comfort: Relief, Ease, Transcendence, and Inadequate comfort. Three main comfort providers: nurses, patients' relatives, and the patient him/ herself through health-seeking behaviors. An additional domain: intervening variables, nursing comfort care, nurses (including other healthcare personnel), improvement for comfort care, and comparison between the hospital and the (participant's) house.
214	Application category 4- Surveys using questionnaires derived from Comfort Theory	Schulling (2011)	USA	To explore the existence of comfort during labour in a sample of healthy, primigravid women experiencing a normal labour and birth	Primiparous women: n = 64	Three tertiary hospitals	Longitudinal study	Comfortscore (CCQ): T1: 33-67 (M: 54.48); T2: 32-69 (M: 55.68); highest subscale scores: ease occurring in environmental (4.79/ 5.00), Lowest subscale scores: relief occurring in psychospiritual (1.58/ 5.0); Pain scores: T1 (F=12.92, df=2, 50, p<0.001), T2 (F=13.61, df=2, 40, p<0.001). Most common measures: one-to-one continuous support (T1 n = 47; T2 n = 46), freedom of movement (T1 n = 43; T2 n = 42), massage (T1 n = 25; T2 n = 23); Factors of comfort: massage vs not use massage at T2 (t=-2.29, df=51, p<0.05), one-to-one support.

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215	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zhu et al. (2011)	China	To understand the correlation between living conditions and changes in the psychological status of family members of terminally ill elderly patients at home	Elderly dying patients: n =60, and their primary family caregivers: n = 60	One hospital at home bed	CSS
216	Application category 4- Surveys using questionnaires derived from Comfort Theory	Feng et al. (2011)	China	To understand the comfort and satisfaction of general surgical ICU patients 3 days after admission	Patients in general surgical ICU: n = 65	One General surgery ICU of a tertiary hospital	CSS
217	Application category 4- Surveys using questionnaires derived from Comfort Theory	Murray (2010)	USA	To describe and compare differences between special care unit nurses and oncology nurses' own definition of spirituality, comfort level in assessing and discussing spiritual needs, and the frequency of completing a spiritual assessment at patients' EoL	Nurses in intensive care and oncology: n = 33	Two oncology and special care units of a hospital	CSS
218	Application category 4- Surveys using questionnaires derived from Comfort Theory	Heard (2010)	USA	To determine the relationship between mindfulness, comfort, work satisfaction, and burnout in nurses	Nurses: n = 186	Four South Mississippi hospitals	CSS

Comfort score (Chinese version Dying Patient Comfort Questionnaire): 101.83±12.93 (73-133); Anxiety scores: family members 25-70 (39.85±11.23), and 50 (83.33%) higher than the norm (29.78±0.46). Factors of comfort: ADL of elderly dying patients living at home (r=0.348, p<0.01); anxiety of the family members (r=-0.372, p<0.01), patient's assessment of the severity of the disease (F=5.79, p=0.05); Insignificant: ages, educational levels, economic status, marital status (p>0.05), comfort of patient and the expression of the family members.

Moderate comfort level (Chinese version GCQ): 85.43±11.42, lowest item score in environmental dimension: comfort: (2.67±0.48). High satisfaction level. Correlation: comfort and satisfaction (r=0.407, p<0.01), among dimensions, except for the physiological dimension: highest in social and cultural dimension: (r=0.407, p<0.01).

Data clearly show that nurses on the oncology and special care units are aware of their spirituality and the necessity in addressing patients' spiritual care issues. Data revealed a great inconsistency in nurses addressing these needs and a desire for education in addressing spirituality issues with their patients and family members. Factors insignificant: ages, education level, or units worked.

Comfort score (Nurse Comfort Questionnaire (NCQ)): 175.27±12.38. Moderate levels of mindfulness; Average propensity to burnout; Average levels of nurse comfort and work satisfaction. Factors of comfort: different hospitals; Relationship: significant: nurse comfort and work satisfaction, nurse comfort and personal accomplishment component of burnout (p=0.018); Insignificant: nurse comfort and mindfulness, mindfulness and work satisfaction, nurse comfort and burnout.

1	Application								
2	category 4-								
3	219 Surveys using	Wu et al.	China	To investigate the comfort	Stroke	One			Comfort score (Chinese version stroke comfort
4	questionnaires	(2010)		level of stroke patients	survivors: n	geriatric unit	CSS		questionnaire, SCQ): lowest in the mental and
5	derived from				= 118	of hospital			psychological domain: 54.23±18.56. Factors of comfort:
6	Comfort Theory								age, level of education (p<0.05); Insignificant: gender, time
7									of onset hemiplegia, disease type.
8									Comfort score (Chinese version GCQ): lowest in physical
9									dimension at 24 h after aspiration biopsy: 15.13±2.09.
10	Application				Patients				Medium to high comfort level at 24 h after aspiration
11	category 4-				after				biopsy: 33.3±7.88. Symptoms with high need for care:
12	220 Surveys using	Ning (2010)	China	To investigate patients'	aspiration	One unit of	Longitudinal		backache and tiredness. Time difference of comfort: higher
13	questionnaires			comfort in 24h after kidney	biopsy in	Nephrology	study		comfort on each dimension at 12 hours after operation vs
14	derived from			aspiration biopsy	kidney: n =	of a hospital			at 6 hours after operation (p<0.05), higher comfort and
15	Comfort Theory				59				each dimension at 24 hours after operation vs at 6 hours
16									and 12 hours after operation (p<0.05). Comfort needs:
17									accomplishing needs, "I hope my family will accompany
18									me more" and "I am very unhappy when no one is with
19									me".
20	Application								Comfort score (Chinese version Renal Transplant
21	category 4-								Recipients Comfortable Scale): 66. 72±10. 15, mental:
22	221 Surveys using	Jiang et al.	China	To understand the comfort	Renal	One tertiary	CSS		2.42±0.22, physical: 2. 69±0.95, social: 2.72±0. 87,
23	questionnaires	(2009)		of renal transplant recipients	transplant	general			environmental 3.18±0.67. Factors of comfort: ages, family
24	derived from			in intensive care stage after	recipients: n	hospital			economic levels, various medical payment, serum
25	Comfort Theory			transplantation	= 92				creatinine levels of renal transplant recipients (p<0.05);
26									Insignificant: sexes, occupation, education, marriage
27									status, whether such as religion (p>0.05).
28									Moderate stress level of faculty: 169.19±43.834, n = 29;
29									Moderate stress level of students: 67.90±13.158, n = 125;
30									Most stressful situation for faculty: teaching responsibilities
31	Application								in both programs during the same semester, attending
32	category 4-				Faculty				meetings that take up too much time; Most stressful
33	222 Surveys using	McAfee	USA	To describe the stressors	(78.95%): n	Department			situations for students: lack of free time. Transcended stress
34	questionnaires	(2008)		and level of stress	= 30 and	of Nursing	Online		levels for faculty: supportive to students; Transcended
35	derived from			experienced by	students	at Lamar	survey		stress levels for students: successfully completed nursing
36	Comfort Theory			undergraduate students and	(48%): n =	University			courses.
37				faculty in a nursing program	137				Factor of stress: grades.
38				in southeast Texas					Faculty are encouraged to explore comfort strategies in
39									themselves and students to enhance learning and
40									performance resulting in higher grades, and success in the
41									program.
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223	Application category 4- Surveys using questionnaires derived from Comfort Theory	Kim and Kwon (2007)	South Korea	To quantify the comfort level and QoL of cancer patients, to identify the variables associated with comfort level and QoL, and to identify the relationship between comfort level and QoL	Cancer patients: n = 100	Four outpatient settings including university-based cancer centres and day-care chemotherapy units, four inpatient settings including a hospice unit and oncology units, and home settings that provided home care at two university hospitals	CSS
224	Application category 4- Surveys using questionnaires derived from Comfort Theory	Rassin et al. (2007)	Israel	To examine the personal characteristics and levels of comfort among women suffering from urinary incontinence	Women with urinary incontinence : n = 50	One urology or gynaecology clinic	CSS

Total comfort score: 61.50±12.02, sociocultural comfort: 71.05±16.81, physical comfort: 60.30±16.71 , psychosocial comfort: 57.65±16.81, environmental comfort: 62±16.86; QoL score: 46.34±20.76; Factors of comfort: comfort and all dimensions of QoL (r=0.549-0.811); patients graduated from primary school and graduated in sociocultural context (p=0.033), sites where the participants completed the questionnaire and total comfort (p=0.001); perception of a serious disease status; thought that they could be cured or incurable or would be worse (p=0.05), all contexts of comfort except the environmental context (p=0.074); insignificant association: age subgroup (p=0.140) , occupation subgroup (p=0.106), gender, marital status, religion, current treatment, time since initial diagnosis.

Medium-low comfort (UFCQ): 2.95±0.04 (1-6); Low levels of comfort items: 'I feel clean and fresh', 'finding a toilet in close proximity is a worrisome issue when I exit the house', 'I fear having sex due to the urinary incontinence problem'; Urinary incontinence frequency: several times a day (50%), once a day (19%),several times a week (31%); Urinary incontinence time: 5 months-25 years (4.54±9.2); Absorption control measures: pads (64.3%), diapers (14.3%), cotton (4.8%), did not report the use measures (16.7%); Treatments: performed pelvic muscle exercises (35%), medications such as Detrusitol (18.2%), Burch or TVT surgery (11.4%), no treatment (35.4%).

225	Application category 4- Surveys using questionnaires derived from Comfort Theory	Xiao et al. (2007)	China	To understand patients' comfort in acute rejection reaction after kidney transplantation	Patients with acute reject reaction adverse after kidney transplantati on: n = 22	One tertiary general hospital	CSS	Low Comfort score (Chinese version Kidney Transplant Recipient Comfort Scale): 56.91±6.74. Main discomforts in mental and psychological field: depression, anxiety, uncertainty, lack of confidence caused by the worry about the recovery of the disease; in physical discomforts: fatigue, pain, thirst, difficulty falling asleep, gastrointestinal discomfort, social dimension: lacking of knowledge about rehabilitation, understanding and empathy from others, worries about the economy. Factors of comfort: gender and the source of hospitalization expenses, worse in women vs men, and higher in medical insurance patients vs self-pay patients.
226	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zhu et al. (2007)	China	To understand the comfort status and influencing factors of patients within 72 hours after thoracic surgery	Postoperativ e thoracic patients: n = 123	One unit of Thoracic Surgery and Cardiothoracic Surgery of a Medical College Hospital	Longitudinal study	Medium-high comfort level (Chinese version GCQ) within 72h after thoracic surgery. Severe postoperative pain and fatigue: a high demand for companionship. Factors of comfort: postoperative time (p<0.01), gender, marital status, medical payment method, family economic status within 72h after surgery (p<0.05)-higher in female than male, in unmarried patients than married patients, in retired patients than those without jobs, in patients with public expenses than those with self-payment.
227	Application category 4- Surveys using questionnaires derived from Comfort Theory	Lee (2005)	China	To test the relationship between comfort, spirituality and QoL among long-term care facility residents in southern Taiwan	Residents: n = 99	Seven facilities in Kaohsiung city and Hsien	CSS	Moderate comfort (Short version GCQ): 103.94±12.04 (79-135 points). Factors of QoL: marital status, religion, family visit frequency, subjective health status; spirituality (β=0.33, p=0.56), family visit frequency (β=0.243), and subjective health status (β=0.41). Comfort had an indirect effect on quality of life, through its influence of spirituality while controlling demographic variables.

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228	Application category 4- Surveys using questionnaires derived from Comfort Theory	Zhu (2005)	China	To describe the comfort of postoperative thoracic patients in 24h, 48h, 72h respectively, and to analyse the factors that affect the comfort of postoperative thoracic patients within 72h	Postoperative thoracic patients: n = 123	One unit of Thoracic Surgery and Cardiothoracic Surgery of a Medical College Hospital	Longitudinal study
229	Application category 4- Surveys using questionnaires derived from Comfort Theory	Krenzischek et al. (2004)	USA	To test the content of the ASPAN Pain and Comfort Clinical Guideline, which included the domains of assessment, intervention, and outcomes	Perinaesthesia nurses: n = 215	Perinaesthesia settings (Number of settings was not specified)	CSS

Comfort score (Chinese version GCQ): 82.27±7.42 at 24h, 91.27±8.63 at 48h, 98.34±7.88 at 72h; Physical comfort score: 1.88±0.44 at 24h, 2.50±0.47 at 48h, 3.03±0.42 at 72h; Social comfort score: 3.00±0.18 at 24h, 3.13±0.20 at 48h, 3.26±0.17 at 72h; Environmental comfort score: 2.72±0.49 at 24h, 3.01±0.43 at 48h, 3.24±0.45 at 72h; Lowest ranked item: 'I hope kin to accompany me', 'i am unhappy when I am alone' within 72h. Comfort level: moderate at 24h, medium and high at 48h, high at 72h. Factors of comfort: postoperative time(p<0.01), incision pain, coughing pain, moving pain, throat pain, tiredness, insomnia, mouth and thirst, discomfort because of unbatch operation, worry about prognosis, worry about diagnosis, afraid to cough, worry about job and study, worry about economy, gender, marital status, occupation, medical insurance system, domestic economy; physiological comfort in 24h after surgery: gender, marital status; comfort in 48h after surgery: higher in retired patients vs unemployed patients; Insignificant difference: between employed patients and non-employed and retired patients. ASPAN Pain and Comfort Clinical Guideline has practical utility for perinaesthesia nurses in all settings: Instrument reliability: Cronbach's alpha 0.98 (high), clarity, usability and feasibility in all the perinaesthesia settings; Overall mean scores: 3.55 to 3.80 (high), Preoperative Phase mean: 3.55 to 3.68, PACU Phase I mean: 3.55 to 3.68, Phase II mean: 3.61 to 3.78, Phases II and III mean: 3.72 to 3.80.

Study	Application category	Survey type	Author(s)	Country	Purpose	Population	Design	Findings
230	Application category 4- Surveys using questionnaires derived from Comfort Theory	Schuling (2003)	USA	To determine if comfort exists during childbirth	Healthy primigravid women: n = 25	Three hospitals: one large university medical centre, one smaller regional medical centre, and one serving an ethnically and economically diverse population	Longitudinal study	Comfort scores (Childbirth Comfort Questionnaire (CCQ)): 33-66, Time 1 (M=54.48 [n = 62]), Time 2 (M=55.68 [n = 53]); CCQ Cronbach's alpha: Time 1: 0.69 , Time 2: 0.73 , Time 3: 0.5; Factors of comfort: pain scores of women who had epidural analgesia, women who did not have a second-degree perineal laceration (t=2.858, df=47, p=0.04); higher pain scores of women who used comfort measures; women who had a perineal laceration of any kind, education, income, hospital (F=3.05, df=3.56, p=0.04); other provider of support; Insignificant: using pain medication (intramuscular, intravenous or epidural) (t=0.729, df=60, p=0.09), using comfort measures, using an epidural; Most commonly used comfort measures: one-to-one continuous support, freedom of movement and massage.
231	Application category 4- Surveys using questionnaires derived from Comfort Theory	Dowd et al. (2002)	USA	To assess the psychometric properties and relationships among 8 measures of comfort, status of urinary frequency and incontinence, and QoL	Patients with urinary incontinence for more than 6 months: n = 47	One community	Longitudinal study	Comfort score: data was not reported. UIFCQ Cronbach's Alpha: Time 1: 0.74, Time 2: 0.83. Factors of comfort: UIFCQ and Bladder Function Questionnaire (BFQ) at Time 1 and 2 (r=0.51 & 0.59), UIFCQ and BFQ with Incontinence Impact Scale (IIQ) (r=0.54, 0.69, & 0.51, 0.66); UIFCQ and BFQ with urinary incontinence (UI) Amount (r=-0.32, -0.32, & -0.53, -0.47), with CUBS Limit (r=ns, -0.48 & -0.42, -0.47).
232	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Egger-Rainer et al. (2020)	Austria and Germany	To evaluate the psychometric properties of the newly developed Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ) according to the consensus-based standards for the selection of health measurements instruments (COSMIN) to assess changes in comfort-levels	Patients: n = 267	EMUs of ten centres (comprising 51 beds) with the research management wing at the Department of Neurology of a Medical University	Questionnaire psychometric test (reliability and validity): survey	EMUCQ items: n = 42. Items changes: removed two items. Internal consistency-Cronbach's α coefficient: subscales: 0.77-0.81, total score: 0.88. Final exploratory factor analysis with the 42-items (M=0.799, MSA-coefficients 0.5, Bartlett-Test p<0.001, Kaiser-Guttman Criterion: 13 factors (eigenvalues>1), 61.44% variance. Convergent validity: Spearman correlations ≥ 0.3 (p<0.05). Lower comfort at the end of the stay than at the beginning, in nonseizure-free patients than seizure-free patients. Interpretability: SEMs mean difference: >0.31, subscales (0.37-relief, 0.31-ease, 0.36-transcendence), total comfort scale >0.22.

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233	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Melo et al. (2020)	Brazil	To assess the psychometric properties of the Brazilian version General Comfort Questionnaire	Chronic patients undergoing kidney haemodialysis: n = 260	Three haemodialysis clinics	Questionnaire psychometric test (reliability and validity): survey
234	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Li and Wang (2020)	China	To develop and test its reliability and validity of a comfort scale for patients after nasal packing	Patients after nasal packing: n = 30 (pilot survey), n = 210 (formal survey); Experts in otolaryngology clinical and nursing education: n = 7	One otolaryngology unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey

Brazilian version GCQ items: n = 33. Items changes: 33 items remained, excluded 15 items (3, 4, 5, 6, 7, 18, 19, 20, 22, 24, 25, 27, 33, 35, 36, 39, 41, 42, 47), excluded items from factor analysis with commonality values 0.40, Cronbach's α : total GCQ: 0.805, factor 3 (environmental) items: 0.576 factor 4 (physical): 0.327. Cronbach's α : 48 items: 0.533 items: 0.80. Item-total correlations: factor 3: -0.366-0.382 factor 4: 0.132-0.196, factor 1: Cronbach's α : 0.764, factor 2 Cronbach's α : 0.707. KMO test: 0.815; P<0.001. Exploratory analysis of factors: 10 factors explained 71.14% variance. Scree plot test: four factors (psychosocial, sociocultural, environmental, and physical) explained 38.01% variance. Chinese version post-nasal packing comfort scale items: n = 30, Four dimensions: physical, psychospiritual, environmental, sociocultural. Items changes: first draft scale had 4 dimensions and 33 items, deleted 4 items, added 7 items, and modified 3 items, 30 items after two rounds of experts' comments. I-CVI: 0.786-0.98. S-CVI/Ave: 0.955. Cronbach's α : scale: 0.886, Each dimension: physical: 0.929, psychospiritual: 0.929, environmental: 0.867, and sociocultural: 0.820. Test-retest reliability: 0.938, each dimension: physical: 0.949, psychospiritual dimension: 0.959; environmental dimension: 0.896, sociocultural dimension: 0.907. Split-half reliability: 0.927, each dimension: 0.775-0.937. KMO value: 0.867. Exploratory factor analysis: 4 factors, 62.004% explanatory variance. Recovery rate and effective rate: both 100%. 95.24% patients fully understood items of scale, 47.6% had basic understanding of the items. Completion time: completed by oneself: 3-4 minutes, with assistant: 5 minutes.

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238	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Yucel et al. (2019)	Turkey	To determine psychometric characteristics of the Turkish version of the Nurse Comfort Questionnaire (NCQ)	Nurses: n = 30 (pilot survey), n = 275 (formal survey); Experts: n = 10	A university affiliated hospital in Izmir	Questionnaire cross-cultural adaption and test of reliability and validity: translation + experts consultation + survey
239	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Zhang and Wang (2019)	China	To develop a comfort scale for the patients after enterostomy and to test its reliability and validity	Patients after enterostomy: n = 310; Nursing experts: n = 15	One unit of Proctology of a hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + pilot survey

NCQ items: n = 39 (4-point Likert scale). Items changes: 48 items original questionnaire, removed 8 items (6, 14, 26, 32, 33, 34, 40, 41), excluded fifteenth item. I-CVI: 0.80-1, S-CVI: 0.99. Internal reliability coefficient: 40-item questionnaire (4-point Likert-type scale): 0.915. Cronbach's α : 0.859 for the first factor, 0.846 for second factor, 0.818 for third factor. Test-retest reliability: $r=0.93$, $P=0.000$. Correlation values: 40-item questionnaire (4-point Likert-type scale): 0.215-0.648. KMO: 0.891; 40-item questionnaire. Confirmatory factor analysis: model fit indices: $\chi^2=1.756$, RMSEA=0.053, RMR=0.183, IFI=0.859, GFI=0.832, AIC=1397.812. Comfort score: not significant results of two measurements of questionnaire ($t=1.88$, $P=0.06$), administered at a fifteen-day interval. Items of these version comfort scale for enterostomy patients: n = 35. Items changes: 28 items compiled and 16 items drawn from mature comfort scale, resulting in 44 items: deleted 3 items, modified expression of 2 items, 4 items were deleted which had low correlation with the total score, and the correlation coefficient with the total score is $r<0.4$, deleted factor 5 due to the number of factor orders <3 , remaining 35 items. Four dimensions: physical dimension, social dimension, environmental dimension physiological dimension. I-CVI: 0.80 to 1.00; S-CVI/UA: 0.80, S-CVI/Ave: 0.96. Cronbach's α coefficient: 0.937, each dimension: 0.802-0.923. Test-retest reliability: total: 0.846, each dimension: 0.735-0.826. Half-fold reliability: 0.926. Split-half reliability of each dimension: 0.816-0.910. Exploratory factor analysis: four factors, explained 52.584% variance. KMO: 0.921, Bartlett's sphericity: $\chi^2=5,363.833$.

initially determine the content validity of Epilepsy Monitoring Unit Comfort Questionnaire	Professional experts in EMU: n = 9	One EMU unit of Neurology at a medical university	Questionnaire e psychological test (reliability and validity) experts consultation for content validity
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243	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Artanti et al. (2018)	Indonesia	To assess the validity and reliability of the Shortened General Comfort Questionnaire (SGCQ) in Indonesian version	Patients with stage 5 chronic kidney disease undergoing haemodialysis: n = 71; Nursing experts in haemodialysis care: n = 3 (content validity)	One haemodialysis unit of a central hospital in Yogyakarta	Questionnaire psychometric test (reliability and validity): experts consultation + survey	Indonesian version SGCQ items: n = 28. I-CVI: 1, S-CVI: 1. Cronbach's alpha: 0.769, range: 0.7-0.95.
244	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Zhang et al. (2018)	China	To develop and test a Chinese Immobilization Comfort Questionnaire (ICQ) among patients post total knee arthroplasty	Hospitalized patients post total knee arthroplasty: n = 20 (pilot), n = 126 (formal survey); Nursing experts: n = 6; Experts in English and Orthopaedic: n = 4	One unit of Orthopaedics of a hospital	Questionnaire cross-cultural adaption and test of reliability and validity: translation + experts consultation + survey	Chinese version ICQ items: n = 20. Items changes: from 1 dimension with 20 items to 4 dimensions with 20 items. Four dimensions: physical comfort, psychological comfort, social comfort and environmental comfort. CVI: 0.889, from 0.76-1.00, item-total correlation: P<0.01. Cronbach's alpha coefficient: 0.894, physical comfort: 0.874, psychological comfort: 0.992, social comfort: 0.824, environmental comfort: 0.893. Test-retest correlation coefficient: 0.842, each dimension: 0.738, 0.932, 0.672 and 0.759 (P<0.01). Discrimination validity: significant differences between high and low groups (P<0.05). Criterion validity: scores of each dimension and total score of ICQ positively correlated with GCQ score (P<0.01). Exploratory factor analysis: 4 common factors, explain 71.3% variance. KMO=0.9. Completion time: 3 to 5 minutes.

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Application category 5 - Questionnaires development or adaption based on Comfort Theory	Pinto et al. (2016)	Portugal	To provide an accurate and sensitive instrument to assess the spiritual comfort of Portuguese palliative care patients	patients with an incurable, chronic and progressive illness in palliative care: n = 141	Acute medical-surgical settings in a central hospital (medicine, general surgery, vascular surgery, neurosurgery, pulmonology and day hospital for chemotherapy)	Questionnaire development and test of reliability and validity: translation + survey	Portuguese version end of life spiritual comfort questionnaire items: n = 20, 1-6 Likert (1: 'Strongly Disagree' to: 'Strongly Agree'). Items changes: removed 8 items: 10, 11, 12, 19, 22, 25. Internal consistency: 0.84. Factor analysis: five factors. Concurrent validity: Spearman's correlation: 0.74 (P=0.000). Factor analysis: 57.307% variance, α values: 0.43-0.84. Item-total correlation α values: 0.59-0.678. Five themes: physical, psychological, social, spiritual, social, environmental dimensions.
Application category 5 - Questionnaires development or adaption based on Comfort Theory	Marques et al. (2016)	Portugal	To analyse the psychometric properties of the Holistic Comfort Questionnaire - Family (HCQ-F) for the Portuguese population and assess the level of comfort among caregivers of people with advanced chronic disease	Caregivers of people with advanced chronic disease: n = 314	Two hospitals	Questionnaire revalidation in different populations: survey	Portuguese version HCQ-C items: n = 18. Items changes: 31 items eliminated, 18 items remained. Cronbach's $\alpha=0.795$. KMO: 0.797, Bartlett's test of sphericity: 2029.780 (p<0.0001). Factor analysis: 3 factors: relief, ease, and transcendence, explained 52.43% variance. Comfort score: 4.23 \pm 0.33. Comfort level: highest in Ease in the psychospiritual context: 'My God is helping me' (5.11 \pm 1.27), lowest in Ease in the psychospiritual context: caregivers are 'afraid of what is next' (3.01 \pm 1.90). higher in Relief (4.57 \pm 1.02), lower in Ease (3.57 \pm 1.15).

translates the General Comfort Questionnaire (GCQ) in English language to Spanish (S-GCQ) and examine the psychometric properties of the S-GCQ

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252	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Paiva et al. (2015)	Brazil	To perform a cross-cultural adaptation and to assess the psychometric properties of the Portuguese (Brazil) version of the Holistic Comfort Questionnaire-caregiver (HCQ-caregiver) in a sample of family caregivers (FCs) of palliative care (PC) cancer patients	Family caregivers of palliative care patients with advanced cancer: n = 150; Experts: n = 3	One outpatient clinic and one inpatient ward of palliative care in the Cancer Hospital of Barretos	Questionnaire cross-cultural adaption and test of reliability and validity: translation + experts consultation + survey	Portuguese Brazil version HCQ-Caregiver items: n = 49. Items changed: 24 required changes. Cronbach's α : 0.858, ICC: 0.951. Retest reliability: after 2-4 days (n = 24, ICC=0.95, 95%CI 0.989-0.998), after 5-7days (n = 26; ICC=0.927, 95%CI 0.838-0.967). Ceiling effect: 19 items, 4 responses rates >90%. Moderate-to-strong correlation: HCQ-Caregiver and QoL. HCQ-caregiver and WHOQOL-Brief dimension and WHOQOL-SRPB global spirituality dimension correlation coefficient: overall QoL (r=0.688, p<0.01), physical dimension (r=0.415, p<0.01), psychological dimension (r=0.570, p<0.01), social dimension (r=0.561, p<0.01), environmental dimension (r=0.619, p<0.01), global spirituality (r=0.639, p<0.01). Completion time: 7.33 \pm 1.64. HCQ-caregiver comfort score: 214.7 \pm 22.5 from 130-261. Caregiver score: very bad or bad (median=202.5; p25th-p75th=181.1-225.5), fair (median=222; p25th-p75th=206-235), and good or excellent (median=231; p25th-p75th=214-244.5). Factors of comfort: insignificant difference between inpatient and outpatient. Significant: in the median (p25th-p75th) HCQ-caregiver (F=0.001). Greater in FCs better self-perception of emotional health.
253	Application category 5 - Questionnaires development or adaption based on Comfort Theory	(Xu et al., 2014)	China	To form the Operation Position Comfort Questionnaire (OPCQ) and evaluate its reliability and validity	Patients undergoing lithotomy surgery: n = 30 (pilot), n = 120 (formal survey); Experts: n = 6	One unit of Obstetrics and Gynaecology at a medical college hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	Chinese OPCQ items: n = 27. Items changes: original 30 items: deleted 2 items, reworded some items, deleted 1 item, leaving 27 items. I-CVI: 0.8-1.0, S-CVI/Ave: 0.96. Cronbach's coefficient: total: scale: 0.86, each dimension: 0.76-0.88. Factor analysis: 5 factors, explained 60.40% variance. KMO: 0.83, 5 factors explained variance: 20.48%, 16.82%, 13.36%, 6.34%, 4.78%. Item understanding: 117 (97.5%) participants fully understood, 3 (2.5%) participants basically understood. Completion time: 2-4 minutes, 5 minutes with assistance.

Application
category 5 -
Questionnaires
development or
adaption based
on Comfort
Theory

Cheng
(2013)

China

To develop a Comfort
Questionnaire for patients
with Head and Neck
Neoplasms undergoing
radiotherapy

Patients with
head and
neck cancer
undergoing
radiation
therapy: n =
180 (pilot), n
= 200
(formal
survey);
Nursing
experts: n =
21

Radiotherap
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Chinese version RCQ items: n = 29. Items changes: from original 38 items to: added 9 items, deleted 30 items, integrated 2 items into 1 item, modified 13 items, deleted 7 items. Four dimensions: physical, psychospiritual, sociocultural, environmental. CVI: 0.885. Split half: 0.914, four factors: 0.534-0.933. Cronbach's α : 0.851, four dimensions: 0.634-0.917. Criterion validity: 0.788. KMO: 0.832, cumulative contribution rate: 73.503%. Correlation coefficients of four factors and total: 0.855, 0.697, 0.534, 0.786 (P<0.01). Completion time: 12 minutes. Comfort scores: physical comfort: 4.04 \pm 12.06, sociocultural comfort: 4.04 \pm 0.48, environmental comfort: 3.50 \pm 0.59, psychospiritual comfort: 2.82 \pm 0.59, physical comfort: 2.37 \pm 0.73. Comfort scores at stages of radiotherapy: early stage: 92.95 \pm 9.241, middle stage: 88.77 \pm 12.790, late stage: 82.37 \pm 11.851 (P early-middle, P early-to-late <0.001, P middle-late <0.05) (F=12.33, P<0.001). 8 common discomfort items: dry mouth, dryness of mucus in pharynx, dry throat and larynx, decreased taste, worrying about disease recurrence, pain of the throat and larynx, loss appetite. Factors of comfort: times of radiotherapy (P<0.001), family accompanying, educational level, accompanied diabetes.

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Application category 5 - Questionnaires development or adaption based on Comfort Theory	Wang et al. (2013)	China	To develop a Radiotherapy Comfort Questionnaire (RCQ) for patients with head and neck neoplasms and to test its reliability and validity	Patients with head and neck cancer undergoing radiation therapy: n = 180 (pilot); Experts: n = 21	One radiotherapy unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey
Application category 5 - Questionnaires development or adaption based on Comfort Theory	Huang et al. (2013)	China	To test the reliability and validity of the Chinese version Comfort Scale for patients receiving total knee arthroplasty	Patients at 72hours post knee arthroplasty: n = 94; Experts in English and Orthopaedic: n = 7	One Orthopaedic unit of a university affiliated hospital	Questionnaire cross-cultural adaption and test of reliability and validity: translation + experts consultation + survey

Chinese version RCQ items: n = 29. Item changes: 58 items in first round of consultation, initially formed 36 items, deleted 7 items. CVI: 0.885. Four dimensions: physical comfort, psychospiritual comfort, sociocultural comfort, and environmental comfort. Items understanding: 93.3% patients completely understood, 6.7% basically understood. Cronbach's α coefficient: 0.851, physical comfort: 0.897, psychospiritual comfort: 0.634, sociocultural comfort: 0.635, and environmental comfort: 0.778. Homogeneity coefficient: 0.914, physical comfort: 0.933, spiritual comfort: 0.534, sociocultural comfort: 0.630, environmental comfort: 0.872. Good discriminant validity: significant difference in comfort level of patients at different stages of radiotherapy. Exploratory factor analysis: 4 common factors, cumulative contribution rate: 73.50%. Completion time: 12 minutes. Factors of comfort: 3 stages of radiotherapy. Comfort scores: before radiotherapy: 92.95 ± 9.24 , during radiotherapy 87.33 ± 12.79 , after radiotherapy 82.37 ± 11.85 . Chinese version GCQ (not specified number of items). Item changes: changed the comprehensible items to intuitive and easy-to-understand items, and modified the items with overlapping meanings. Cronbach's α : 0.881, each dimension: 0.800-0.946. CVI: 0.730. KMO: 0.710. Cumulative variance contribution rate of four common factors: 72.56%. Comfort score: 3.26-0.50. dimension scores from high to low: environmental physical, psychological, social comfort. Factors of comfort: age, marital status, family per capita monthly income, medical payment (all $P < 0.01$). Insignificant: gender.

257	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Zhao and Yan (2011)	China	To develop maintenance haemodialysis patients comfort scale and evaluate its reliability and validity	Patients with end-stage renal disease receiving maintenance haemodialysis: n = 100, n = 30 (pilot survey); Nursing experts: n = 8	One unit of Blood Purification in a general hospital	Questionnaire development and test of reliability and validity: translation + experts consultation + survey	Chinese version maintenance haemodialysis comfort scale (MHCS) item n = 28. Item change: modified items 1, 9, and 10 of the original scale, deleted items 12, 27, 20, and 21 of the original scale, added patient characteristics items. Revision principle: opinion of expert group, characteristics of maintenance haemodialysis patients, cultural background of country, results of pre-investigation. Content reliability-CVI: 0.883. Internal consistency-Cronbach's α coefficient: overall scale: 0.883, each dimension: 0.879-0.930. Retest reliability: overall scale: 0.944, each dimension: 0.817-0.924. Four factors were extracted: psychological comfort, physical comfort, social comfort, environmental comfort (eigenvalue>1): explain 68.758% variance. KMO value: 0.867.
258	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Chen et al. (2010)	China	To develop a chemotherapy comfort scale suitable for evaluating the comfort of Chinese chemotherapy patients	Chemotherapy patients: n = 20, n = 30 (pilot survey); Experts: n = 5, n = 15	One hospital oncology unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation/ Delphi + pilot survey	Items of Chinese version Chemotherapy Comfort Scale: n = 40. 4 dimensions: physical (9 items), psychospiritual (10 items), sociocultural (9 items) and environmental (12 items). Item changes: from original 31 items to final 40 items: added 10 items, added 10 items, deleted 7 items, added 2 items, modified 11 items, deleted 2 items. Cronbach's α : 0.916, physical dimension: 0.812, psychospiritual dimension: 0.713, sociocultural dimension: 0.635, environmental dimension: 0.876. CVI: 0.976. Expert authority coefficient: 0.91 \pm 0.07, coordination coefficient W of expert opinions: 0.419 (P<0.01). Questionnaire response rate: 100.00%.
259	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Alves-Apostolo et al. (2007)	Portugal	To develop and evaluate the psychometric characteristics of the Psychiatric Comfort Scale (PICS) in hospitalized psychiatric patients	Psychiatric inpatients: n = 49, n = 273 (a 2nd study); Portuguese nurse experts in psychiatric nursing: n = 5 (content validity)	Three psychiatric hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	PICS items: n = 38. Items changes: 98 item version (5-point Likert from 1 to 5): 51 item version, elimination of 4 items (5, 6, 8 and 31), 9 items excluded (4, 12, 13, 28, 36, 40, 41, 44, 49). Cronbach's α coefficient: total scale 0.89, subscales: 0.75-0.90. Concurrent validity: comfort dimensions correlated positively with well-being, with positive experiences of suffering, negatively with the remaining dimensions of suffering. Criterion validity: Total Comfort correlates negatively with Total Suffering (r=-0.55), logical well-being (r=0.47), positively with the positive experiences of suffering (r=0.59): moderate to high values. Factor analysis: 3-factor: relief, ease and transcendence, explained 38.54% variance.

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260	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Dowd et al. (2006)	USA	(1) What is the preliminary internal consistency reliability of the Healing Touch Comfort Questionnaire HTCQ? (2) What is the correlation between the number of HT sessions and comfort level?	Healing Touch (HT) recipients: n = 56	Private healing touch practices either in their homes or in settings where they volunteered	Questionnaire psychometric test (reliability and validity): survey	HTCQ items: n = 35. Cronbach's α coefficient = 0.94. Comfort level: higher in more than 4 healing touch treatments than fewer than 4. 13.7 points higher in 5 or more healing touch treatments than received 1 to 4 treatments. Comfort seems to increase slightly as the number of treatments increases until about 20 treatments. Then, comfort levels off and may decline, although treatments beyond 20 treatments are scarce (5 questionnaires).
261	Application category 5 - Questionnaires development or adaption based on Comfort Theory	Zhu et al. (2006)	China	To develop a Chinese version of Kolcaba's General Comfort Questionnaire	Patients 48 hours after thoracic surgery: n = 20 (pilot), n = 123 (second round); Nursing experts: n = 5	One unit of Thoracic Surgery at a medical college hospital	Questionnaire cross-cultural adaption and test of reliability and validity: translation + experts consultation + survey	Shortened Chinese version GCQ: n = 30 (30-120 points). Items changed: removed 1 item, added 1 item, added 2 items. Cronbach's α : 0.92, subscale: 0.53-0.85. Comfort mean: 91.27 \pm 8.63; the lowest score was in physical subscale: 2.50 \pm 0.47; the highest score was in psychological subscale: 3.26 \pm 0.35.

1 Primiparous
2 normally
3 labouring
4 women: n=
5 25 (pilot), n=
6 64; Women
7 experienced
8 labour and a
9 vaginal birth:
10 n= 10 (face
11 validity for
12 the
13 Childbirth
14 Comfort
15 Questionnaire
16 (CCQ));
17 Expert nurse-
18 midwives: n=
19 10;
20 Obstetrician/
21 gynaecologist
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Application
category 5 -
Questionnaires
development or
adaption based
on Comfort
Theory

Schuiling
and
Kolcaba
(2002)

USA

To describe the
development of an
instrument that enables
quantification of a women's
level of comfort during
childbirth

Unspecified
setting

Questionnaire
development
and test of
reliability and
validity:
experts
consultation
+ survey

CCQ item 14. Items changes: added the item 'The pain of
the contractions motivates me to be strong'. Internal
consistency Cronbach's α coefficient: 0.71 during pilot phase.

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Application category 5 -
Questionnaires development or adaption based on Comfort Theory

263

Novak et al. (2001)

USA

To test several formats of end-of-life comfort instruments for patients and closely involved caregivers

End of life patient and caregiver dyads: n = 38

Two hospice agencies

Questionnaire
psychometric test (reliability and validity): survey

Phase I: six-item Likert EoL questionnaire and vertical TC line. Cronbach's α : 6 Likert EoL comfort questionnaire for patients: 0.98, for caregivers: 0.97. Test-retest reliability with 20 minutes interval: vertical TC line for patients: 0.64, and for caregivers: 0.79. External validity: association between six-item Likert EoL questionnaire and vertical TC line for patients: 0.45 (first administration) and 0.48 (second administration) and for caregivers: 0.44 (first administration) and 0.50 (second administration). Association of the six-item Likert response set questionnaire between patients and families: 0.41. Association for the vertical TC line between patient and families: 0.33. Comfort score: caregivers' questionnaires: 231 \pm 29, TC line: 8 \pm 2; patients' questionnaires: 253 \pm 27, TC line: 8 \pm 2. Phase II: four-item Likert response set questionnaire and horizontal TC line. Cronbach's α of four-item Likert response set questionnaire: patient questionnaire: 0.83, caregiver questionnaire: 0.89. Test-retest reliability of TC line with 20 minutes interval: 0.61 for caregivers, 0.42 for patients. External validity: association between four-item Likert response set questionnaire and horizontal TC line for patients: 0.31 (first administration) and 0.49 (second administration), for caregivers: 0.35 (first administration) and 0.52 (second administration). Association for the four-item response set questionnaire between patient and families: 0.31. Associations for the horizontal TC line between patient and families: 0.10. Comfort scores: caregiver and patient questionnaires: 153 \pm 17 (range: 49-196, moderately high), caregivers' TC line: 7 \pm 1, patients' TC line: 7.4 \pm 1.8.

Application category 6 -
Qualitative studies interpreted by Comfort Theory

264

Washington et al. (2021)

USA

To better understand the challenges faced by cancer family caregivers who receive services from outpatient palliative care teams

Family caregivers: n = 39

One palliative care outpatient

Reflective qualitative study

Seven themes: need to understand, need for self-efficacy, need to derive meaning, need for informal support, need for formal support, need for resources, need for self-care.

1	Application							
2	category 6 -							
3	Qualitative							
4	studies	Berntzen et al. (2020)	Norway	To explore in depth	Adult ICU	One adult	Secondary	Three themes: Being deprived of a functioning body, Being
5	interpreted by			discomfort in intensive care	survivors: n	ICU at a	qualitative	deprived of a functioning mind, and Being deprived of
6	Comfort Theory			as experienced by patients	= 18; critical	teaching	analysis	integrity.
7				and attended to by critical	care nurses:	hospital		
8				care nurses	n = 13			
9	Application							
10	category 6 -							
11	Qualitative	Melo et al. (2020)	Brazil	To analyse the benefits of	Nursing	One tertiary	Descriptive	Three thematic categories: "Auriculoacupuncture as a
12	studies			auriculoacupuncture in	professional	hospital	qualitative	measure of comfort", "(Dis) Physical and psychospiritual
13	interpreted by			nursing professionals	s: n = 33		study	comfort and performance in assisting COVID-19", and,
14	Comfort Theory			working in the COVID-19				"From organizational support to individual commitment to
15				pandemic in the light of				health".
16				Katherine Kolcaba's Theory				
17	Application			of Comfort				
18	category 6 -							
19	Qualitative	Oliveira et al. (2020)	Brazil	To reveal the Comfort needs	Hospitalized	One	Descriptive	Physical: Symptom Relief; Daily Life Activities; Hygiene
20	studies			as perceived by hospitalized	elders: n =	teaching	qualitative	and personal care; Diet; Sleep and rest. Environmental:
21	interpreted by			elders, using Kolcaba's	11	hospital	study	superior in hospital services environment than in the
22	Comfort Theory			theory				elders' home. Sociocultural: family bonds were found to
23								become more distant, triggering feelings of missing one's
24								family and isolation. Psychospiritual: spirituality and
25	Application							religiosity stood out.
26	category 6 -							
27	Qualitative	Osundina (2019)	USA	To examine nurses' lived	Nurses	Long-term	Phenomenol	Nurses' experiences: being emotionally drained, being part
28	studies			experiences of comfort care	caring for	care	ogical study	of a peaceful transition, feeling ambivalent regarding use of
29	interpreted by			among residents at the EoL	patients	facilities: n		pain medication at the EoL, and being vigilant at
30	Comfort Theory			in long-term care facilities	during EoL:	= 3		recognizing which comfort measures to implement at the
31					n = 13			EoL.
32	Application							
33	category 6 -							
34	Qualitative	Benedett et al. (2018)	Brazil	To identify the strategies	Primiparous	Home	Collective	Women are exposed to various situations of (dis)comforts
35	studies			that mothers undertake	lactating		subject	during the breastfeeding period. The breastfeeding
36	interpreted by			while looking for comfort	women: n =		discourse	practice represents physical and emotional efforts to
37	Comfort Theory			during the breastfeeding	24			women. The woman establishes strategies aiming to
38				period				promote the comfort, although they do prioritize their
39								child's welfare.
40	Application							
41	category 6 -							
42	Qualitative	Bergström et al. (2018)	Sweden	To describe and analyse the	Patients: n =	Preoperativ	Qualitative	Comfort measures to ensure the patient's needs of relief,
43	studies			nurse anaesthetist's comfort	12; Nurse	e environmen	study	ease and transcendence in the physical, psycho-spiritual,
44	interpreted by			measures in the	anaesthetist	t at a		environmental and socio-cultural contexts.
45	Comfort Theory			preoperative context on the	s: n = 11	teaching		
46				basis of the Comfort Theory		hospital		

1	Application							
2	category 6 -							
3	Qualitative							
4	studies	Simes et al.	Australia	To identify factors that	University	One school	Explorative	Four themes: Personal barriers, Human resource barriers,
5	interpreted by	(2018)		influence nursing educator	lecturers: n =	of nursing	qualitative	Structural barriers, and Suggestions to address barriers.
6	Comfort Theory			comfort in the use of	Registered	at one	study	
7				simulation	nurses: n = 4	university		
8								
9						One		
10						rooming-in,		
11						one natural		
12	Application			To analyse the contribution		Birth		
13	category 6 -			of clinical nursing care to the		Centre, one		
14	Qualitative	Figueiredo	Brazil	mother who has recently	Postpartum	Post-	Qualitative	Nursing offers administration of medications,
15	studies	et al. (2018)		given birth with immediate	women: n =	Anaesthetic	study	guidelines and non-pharmacological measures for pain
16	interpreted by			postpartum pain based on	30; Nurses:	Care Unit		relief.
17	Comfort Theory			the Kolcaba's Theory of	n = 3	and one		
18				Comfort		Obstetric		
19						Emergencie		
20						s in a public		
21						maternity		
22						hospital		
23	Application			To reflect on the subjectivity				The adoption of the comfort theory for the delivery of
24	category 6 -			of puerperal care and the				clinical nursing care allows an individual, human and
25	Qualitative	Mendonça	Brazil	transcendence of being a	Pregnant	One	Reflective	ethical approach, since it incorporates the needs pointed
26	studies	et al. (2018)		mother in the light of the	woman: n =	maternity	qualitative	out by the individual, which contributes to the attention
27	interpreted by			Comfort Theory	1	hospital	study	being personalized and removed from the mechanistic care,
28	Comfort Theory							that is attached to protocols or even to theoretical
29								orientations but that do not come to life in the contact with
30	Application			To explore the comfort of	Patients with	One Head		the patient.
31	category 6 -			the patients with nasal	nasal	and Neck		Four level-1 themes and sixteen level-2 themes: physical
32	Qualitative	Guan et al.	China	packing after nasal	packing after	Surgical		discomfort: discomfort in nose, head, eye, month, face,
33	studies	(2018)		endoscopic surgery from the	nasal	unit at a		ear, sleep, get and movement; psychological discomfort:
34	interpreted by			perspective of patients	endoscopic	teaching	Phenomenol	sense of unwellness and anxiety, sociocultural discomfort:
35	Comfort Theory				surgery: n =	hospital	ogical study	discomfort in the role of patients and bad relationship,
36					16			environmental discomfort: dry, noise and bad air in the
37								ward.
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<p>determine which ception of personal nfort patients name in the ntext of their spitalization in an strian Epilepsy Monitoring</p>	<p>progressive disease: n = 15</p>	<p>surgery, neurosurger y, pneumology and vascular surgery</p>	
<p>explore how traditional d new models of care et patients' needs cording to patient and ff experiences</p>	<p>Epilepsy patients: n = 12</p>	<p>Epilepsy monitoring unit at one hospital</p>	<p>Qualitati study</p>
	<p>Patients and staff members: n = 10</p>	<p>One accident and emergency unit</p>	<p>Case stu</p>

Study ID	Application category	Author(s)	Country	Aim	Population	Setting	Method	Intervention
279	Qualitative studies interpreted by Comfort Theory	Ponte et al. (2014)	Brazil	To describe the contribution of clinical nursing care to the environmental comfort of women with Acute Myocardial Infarction, based on the Comfort Theory and mediated by the research-care approach To report the experience of using the Care Research Method based on Kolcaba's Theory of Comfort, reinforcing the importance of conducting research to enable the interaction between subject and researcher with positive outcomes for the researched person	Women with acute myocardial infarction: n = 9	Coronary care unit and emergency care unit at a heart hospital	Qualitative study	Intervention: managing equipment noises, reducing conversations in the room, and controlling excessive lightning, unpleasant odors, and the temperature.
280	Qualitative studies interpreted by Comfort Theory	de Azevedo Ponte and de Fátima da Silva (2014)	Brazil	To analyse the application of Kolcaba's Theory of Comfort for nursing research, education, practice and leadership	Women with acute myocardial infarction: n = 9	One hospital	Qualitative study	The research, which involved the Care Research Method and Kolcaba's Theory of Comfort, made the integration and proximity between researcher and cared-researched patient possible, and provided immediate results that brought comfort through the implementation of care, according to the individual needs presented.
281	Literature review and discussion about Comfort Theory use	Auyezkhankey et al. (2022)	Kazakhstan	To identify strategies used by palliative care professionals that enhance timely hospice referrals	Inapplicable	Inapplicable	Literature review and discussion paper	Wide application: paediatric care, perinaesthesia nursing, perinatal nursing; institution-level application, comfort measures: guided imagery, quiet time interventions, warm blanket, hand massage, therapeutic touch, music therapy; comfort questionnaires.
282	Literature review and discussion about Comfort Theory use	Tanay (2021)	USA	A book chapter without a clearly reported aim	Inapplicable	Inapplicable	Systematic review	Reported in themes, findings from the literature indicate that providing training and healthcare staff education, nurse-led strategies, patient and family teaching, academic education and research, and specialist support are current strategies used to enhance timely referrals of patients for hospice care.
283	Literature review and discussion about Comfort Theory use	Kolcaba (2020)	USA		Inapplicable	Inapplicable	Literature review and discussion book chapter	Comfort care model: hospice care, discipline-level application, difficult health care situations, institution-level application, wide application.

Page	Application category	Author(s)	Country	Objective	Search strategy	Study selection	Study type	Findings
284	Literature review and discussion about Comfort Theory use	Luo et al. (2020)	China	To review the comfort assessment tools, factors and nursing care measures for patients with high flow nasal cannula (HFNC)	Inapplicable	Inapplicable	Literature review	Comfort care model: intensive care, comfort questionnaires, wide application.
285	Literature review and discussion about Comfort Theory use	Liu et al. (2020)	China	To summarize the literature on the comfort theory used in hospice care	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, comfort questionnaires.
286	Literature review and discussion about Comfort Theory use	Wang et al. (2020)	China	To review the evaluation indicators for comfort care	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, comfort questionnaires, wide application.
287	Literature review and discussion about Comfort Theory use	Glose and Diggle-Fox (2019)	USA	To critically appraise and present research findings pertaining to sexuality in older adults and to translate these findings into useful processes and tools that can be used to support comfort in sexuality and sexual wellbeing of older adults	Inapplicable	Inapplicable	Literature review	Comfort care model: elderly care, wide application.
288	Literature review and discussion about Comfort Theory use	Su et al. (2019)	China	To review effective comfort interventions for patients after endoscopic retrograde cholangiopancreatography (ERCP) in light of holistic nursing and evidence-based nursing	Inapplicable	Inapplicable	Literature review	Comfort care model: surgical care.

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289	Application category 7 - Literature review and discussion about Comfort Theory use	Huster (2018)	USA	To analyse the complexities of a lack of communication leading to a pursuit of futile treatment to care for patients and to examines methods for nurses and the healthcare system to reconcile the inadequacies found in the care of the lung cancer patient population	Inapplicable	Inapplicable	Literature review and discussion paper	Institution-level application, comfort measures: advocating, communicating, supporting hope.
290	Application category 7 - Literature review and discussion about Comfort Theory use	Faria et al. (2018)	Portugal	To identify comfort needs and measures of the patient admitted in ICUs	Inapplicable	Inapplicable	Integrative review	Comfort needs concern essentially physical and psychosocial context and the comfort measures more frequently adopted are aim to relieve suffering and promote a peaceful atmosphere.
291	Application category 7 - Literature review and discussion about Comfort Theory use	Lorente et al. (2018)	Spain	To analyse the psychometric properties and the utility of instruments used to measure	Inapplicable	Inapplicable	Psychometric review	Comfort questionnaires
292	Application category 7 - Literature review and discussion about Comfort Theory use	Pinto et al. (2017)	Portugal	To provide a conceptually adequate definition of comfort as a foundation for knowledge development, having in mind an evaluation of comfort as an outcome	Inapplicable	Inapplicable	Concept analysis	Comfort questionnaires.

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298	Application category 7 - Literature review and discussion about Comfort Theory use	Pinto et al. (2016a)	Portugal	To analyse the elements that characterize comfort in nursing scientific literature	Inapplicable	Inapplicable	Systematic review	Comfort measurement tools: 20 tools were reviewed.
299	Application category 7 - Literature review and discussion about Comfort Theory use	Marshall (2016)	USA	To develop an evidence-based practice guideline for doctoral-prepared NPs working in long-term care facilities	Inapplicable	Inapplicable	Literature review	Comfort care model: long term care.
300	Application category 7 - Literature review and discussion about Comfort Theory use	Pinto et al. (2016b)	Portugal	To discuss the “Impaired Comfort” nursing diagnosis	Inapplicable	Inapplicable	Literature review and discussion paper	When the patient has impaired comfort, the nursing intervention should be specific to the etiological factor.
301	Application category 7 - Literature review and discussion about Comfort Theory use	Astuti (2016)	Indonesia	To identify the effectiveness of the use of Quiet Time Intervention in cardiac patient	Inapplicable	Inapplicable	Literature review	Comfort care model: cardiac care, comfort measures: quiet time interventions.
302	Application category 7 - Literature review and discussion about Comfort Theory use	Ponte and Silva (2015)	Brazil	Identify measures of comfort as a result of nursing care in the articles published by Brazilian nurses, taking into account the foundations of the theory of comfort Katharine Kolcaba	Inapplicable	Inapplicable	Integrative review	The care shown as comfort in publications of nurses in Brazil were more present in the physical context, being the satisfaction of pain relief care more referred to between the articles. However, care also was present in the sociocultural context, and environmental psychospiritual.

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Number	Application category 7 - Literature review and discussion about Comfort Theory use	Author(s)	Country	Objective	Applicability	Applicability	Publication type	Findings
307	Application category 7 - Literature review and discussion about Comfort Theory use	Yan and Zhao (2012)	China	To systematically elaborate on comfort including definition, development of comfort nursing theory, clinical practice, research, and related problems	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, perinaesthesia nursing, comfort measures: massage.
308	Application category 7 - Literature review and discussion about Comfort Theory use	Doolin et al. (2011)	USA	To provide advanced practice nurses with the best available evidence for implementation of policies and procedures to allow family presence during cardiopulmonary resuscitation (CPR) in the acute care environment	Inapplicable	Inapplicable	Literature review and discussion paper	Best practices, comfort care model: comfort of nurses.
309	Application category 7 - Literature review and discussion about Comfort Theory use	Kolcaba (2010)	USA	To introduce the theorist, overview of the theory, and application of the theory in practice	Inapplicable	Inapplicable	Literature review and discussion book chapter	Best practices, best practices.
310	Application category 7 - Literature review and discussion about Comfort Theory use	Shi (2010)	China	To introduce the comfort theory including founder and process of theory development, content, meta-paradigm concepts, and application of the tidal care model in nursing practice	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, perinaesthesia nursing, comfort questionnaires, wide application.
311	Application category 7 - Literature review and discussion about Comfort Theory use	March and McCormack (2009)	Canada	To examine how a modification in the theoretical framework of Kolcaba's theory of comfort can guide the thinking and work of other healthcare disciplines	Inapplicable	Inapplicable	Literature review and discussion paper	Institution-level application.

1									
2	Application								
3	category 7 -								
4	Literature review	Ice (2007)	USA	To extend/ modify Kolcaba's	Inapplicable	Inapplicable	Theory	Wide application.	
5	and discussion			s Comfort Theory utilizing			derivation		
6	about Comfort			theory derivation method by			method		
7	Theory use			Walker and Avant (2005)					
8									
9	Application								
10	category 7 -								
11	Literature review	Kolcaba	USA	To provide a blueprint for	Inapplicable	Inapplicable	Literature	Alternative and complementary therapies, best policies,	
12	and discussion	(2003)		application of Comfort			review and	comfort care model, comfort measures: art therapy,	
13	about Comfort			Theory in practice,			discussion	cognitive strategies, guided imagery, healing touch, music	
14	Theory use			education, research, and			book chapter	therapy, massage, comfort questionnaires, wide	
15				quality improvement				application	
16									
17									
18	Application								
19	category 7 -								
20	Literature review	Kolcaba	USA	To define holistic comfort	Inapplicable	Inapplicable	Literature	Comfort care model: perinaesthesia nursing, comfort	
21	and discussion	and Wilson		congruent with the			review and	measures: structured information programs, therapeutic	
22	about Comfort	(2002)		standards, present a			discussion	use of self.	
23	Theory use			framework of comfort care			paper		
24				for perinaesthesia nursing					
25				practice and research that is					
26				easy to understand and					
27				implement, and discuss how					
28				application of the framework					
29	Application			can be satisfying for					
30	category 7 -			patients, nurses, and					
31	Literature review	Koehn	USA	administrators	Inapplicable	Inapplicable	Literature	Alternative and complementary therapies, comfort care	
32	and discussion	(2000)		To propose the use of			review and	model: child birth care, acupressure, acupuncture, music	
33	about Comfort			Kolcaba's theory of holistic			discussion	therapy/prayer.	
34	Theory use			comfort to explain and			paper		
35				predict how alternative					
36				therapies are especially well					
37				suited for relieving					
38				discomfort associated with					
39				the labouring process					
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19 ACE: Acute Care for Elders; ADL: Activities of Daily Living; AECOPD: Acute Exacerbation Chronic Obstructive Pulmonary Disease; AIC: Akaike Information Criterion; AML: Acute
myocardial infarction; BFQ: Bladder Function Questionnaire; CABG: Coronary Artery Bypass Grafting; CCQ: Childbirth Comfort Questionnaire; CCS: Case Controlled Study;
20 CCU: Critical Care Unit; CG: Control Group; CPR: Cardiopulmonary Resuscitation; CSS: Cross-sectional study; CUBS: Compromised Urinary Bladder Syndrome; EMU: Epilepsy
Monitoring Unit; EMUCQ: Epilepsy Monitoring Unit Comfort Questionnaire; EoL: End of life; ERAS: Enhanced Recovery After Surgery; ERCP: Endoscopic Retrograde Cholangial
21 Pancreatography; ERS: Early Response Service; FCs: Family Caregivers; GCQ: General comfort questionnaire; GCS: General Comfort Scale; GFI: Goodness of Fit Index; HAG:
Heat Application Group; HCQ: Hospice Comfort Questionnaire; HCQ-C: Holistic Comfort Questionnaire-Caregiver; HCQ-F: Holistic Comfort Questionnaire-Family; HFNC: High
22 Flow Nasal Cannula; HSBs: Health seeking behaviours; HT: Healing Touch; HTCQ: Healing Touch Comfort Questionnaire; ICQ: Immobilization Comfort Questionnaire;
ICU: Intensive care unit; ICVI: Item Content Validity Index; IFI: Incremental Fit Index; IIQ: Incontinence Impact Scale; KMO: Kaiser-Meyer-Olkin; MAS: Measurement System
23 Analysis; MCQ: Maternal Comfort Questionnaire; MG: Massage Group; MHCS: Maintenance Haemodialysis Comfort Scale; MMS: Mixed methods study; MSL: Maxillary Sinus
Lift; NCQ: Nurse Comfort Questionnaire; NP: Nursing Process; NVAS: Number Visual Analog Scale; OEF: Operation Enduring Freedom; OIF: Operation Iraqi Freedom; OPCQ:
24 Operation Position Comfort Questionnaire; OVCF: Osteoporotic Vertebral Compression Fracture; OWLS: Oxford Worries about Labour Scale; PACU: Postanaesthetic Care Unit;
PC: Palliative Care; PCA: Patient-Controlled Analgesic; PCI: Percutaneous Coronary Intervention; PCQ: Perianesthesia Comfort Questionnaire; PCS: Perioperative Comfort
25 Scale; PES: Post-Embolisation Syndrome; PGT: Preimplantation Genetic Testing; PHRCS: Post Hip Replacement Comfort Scale; PICC: Peripherally Inserted Central Catheter;
PICS: Psychiatric In-patients Comfort Scale; PKP: Percutaneous Kyphoplasty; PMR: Progressive Muscle Relaxation; PPCQ: postpartum Comfort Questionnaire; PSQI: Pittsburgh
26 Sleep Quality Index; PTSD: Posttraumatic Stress Disorder; QoL: Quality of life; RCQ: Radiotherapy Comfort Questionnaire; RCT: Randomized controlled trial; RMR: Root Mean
Square Residual; RMSEA: Root Mean Square Error of Approximation; RTCQ: Radiation Therapy Comfort Questionnaire; SCQ: Stroke Comfort Questionnaire; Shortened GCQ:
27 Shortened General Comfort Questionnaire; SCVI: Scale Content Validity Index; S-GCQ: Spanish-General Comfort Questionnaire; SICU: Surgical Intensive Care Unit; STAI-
YI: State-Trait Anxiety Inventory; TACE: Trans-Arterial Chemoembolization; TC: Total Comfort; TCM: Traditional Chinese Medicine; TCS: Thermal Comfort Scale; TIVAP: Totally
28 Implanted Venous Access Port; UIFCQ: Urinary Incontinence and Frequency Comfort Questionnaire; VA: Veterans Administration; VAS: Visual Analog Scale; VEEG:

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Line 1-2, Page 1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Line 3-33, Page 1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Line 79-88, Page 2
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Line 89-96, Page 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	L124 Page 3 Not registered
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Line 146-160, Page 4
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Line 109-131, Page 3
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Line 123-124, Page 3. Supplemental table S1.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Line 132-145, Page 3-4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Line 161-177, Page 4
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Line 167-177, Page 4
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not appraised

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Line 179-193 Page 4-5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Supplemental table S3
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not appraised
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Supplemental table S3.
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Line 202-362, Page 5-13. Figure 2-4, Table 1.
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	Line 363-442, Page 13-15
Limitations	20	Discuss the limitations of the scoping review process.	Line 443-451, Page 15
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Line 452-463, Page 15
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Line 468-470, Page 15

JB1 = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JB1 guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: 10.7326/M18-0850.

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The application of Comfort Theory in healthcare promoting adults' comfort: A scoping review

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Primary Subject Heading:	Nursing
Secondary Subject Heading:	Palliative care, Evidence based practice
Keywords:	Adult palliative care < PALLIATIVE CARE, PAIN MANAGEMENT, Systematic Review, COMPLEMENTARY MEDICINE

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The application of Comfort Theory in healthcare promoting adults' comfort: A scoping review

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Keywords: Comfort care, Comfort interventions, Comfort questionnaires, Comfort Theory, Patient comfort

Word count: 4544.

ABSTRACT

Objectives To categorise and synthesize the international literature on the application of Comfort Theory in research and practice aiming to promote adults' comfort.

Design Scoping review

Data sources Databases of MEDLINE, CINAHL, APA PsycInfo, Embase, AMED, Web of Science, Scopus, The Cochrane Library, JBI EBP database, CNKI, Wan Fang; grey literature of Google Scholar, Baidu Scholar, The Comfort Line since 1991 were searched between 25/11/2021 – 10/01/2022 and 13/10/2022 - 17/10/2022, and updated between 27/12/2023 - 04/01/2024:

Methods This scoping review was conducted following the Joanna Briggs Institute guidance. Two reviewers selected papers and extracted data independently. A thematic synthesis and a descriptive analysis were provided.

Results The review included 359 papers. Approximately two thirds (n = 216, 60.2%) were published since 2017. The majority of papers (n = 316, 88.0%) originated from China, USA, Turkey, Brazil, and Portugal. The use of Comfort Theory was dominated in a range of hospital settings (n = 263). Seven categories of application were identified: 1) interventions underpinned by Comfort Theory as the theoretical framework, 2) interventions evaluated by instruments derived from Comfort Theory, 3) descriptive or observational studies of services or practices underpinned by Comfort Theory, 4) surveys using questionnaires derived from Comfort Theory, 5) questionnaires

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development or adaption based on Comfort Theory, 6) qualitative studies interpreted by Comfort Theory, and 7) literature reviews and discussion about Comfort Theory use. The most commonly evaluated intervention was music therapy (n = 31), and the most commonly used questionnaire was General Comfort Questionnaire (n = 109).

Conclusions Kolcaba's Comfort Theory has been largely used in interventions and assessments across a wide range of contexts, providing a set of options for practitioners. However, quantifying evidence is needed through further systematic reviews and continuous development of Comfort Theory is warranted based on the categorisation by this review.

Strengths and limitations of this study

- The robust methodology of JBI scoping reviews was employed appropriately.
- The literature search and selection were highly comprehensive and systematic.
- Three hundred and fifty-nine included papers were synthesized categorically.
- The large number and broad scope of review undermined an in-depth analysis.
- Findings generalisation was limited by not including publications in other languages.

INTRODUCTION

Comfort is a universal concept understood across different disciplines and cultures [1]. In healthcare, comfort is central to patients' experience and serves as a primary goal of practice. Enhanced comfort is a positive, affirmative, and desired health outcome [2-4]. Historically, several nursing theorists have defined comfort such as Florence Nightingale's environment theory and Janice Morse's nursing process theory [5]. These nursing theorists' perspectives informed the concept analysis published in 1991 [6, 7] upon which the Comfort Theory was developed by American nursing researcher Dr. Katherine Kolcaba [6, 8, 9].

According to Kolcaba, comfort is "the immediate experience of being strengthened through having the needs for relief, ease, or transcendence met in four contexts: physical, psychospiritual, environmental, and sociocultural contexts" [9 P14]. The three types of comfort needs within four contexts form a 12-cell taxonomic structure (TS) structure. General Comfort Questionnaire (GCQ) was developed based on the TS structure to measure patients' comfort level [10]. Kolcaba's Comfort Theory proposes that comfort can be enhanced by three types of comfort measures [2, 11].

Kolcaba first defined comfort concept systematically. Existing reviews show that Comfort Theory is most widely known for its systematization and projection among the different theorists [12-14], and is most frequently described use in guiding practice [15]. However, evidence on how to use Comfort Theory in guiding research and practice remains limited. A systematic examination and synthesis of Comfort Theory application is needed. First, expanding the use of Kolcaba's theory from nursing care in gerontology where it was developed to other contexts or disciplines requires tests and adaptations research [7]. Second, comfort theory needs to be tested because it was developed through concept analysis drawing upon existing concepts and theories, which is an up-bottom inductive process instead of a bottom-up inductive process from qualitative studies [6]. Third, operationalising the TS constructs in application might be problematic. For example, *ease* and *transcendence* could be less practiced and poorly tested because they might be less presented by patients before their *relief* is

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addressed. Furthermore, the four contexts are intertwined and often inseparable in assessment and interventions.

Comfort assessments and interventions are complex practices [16, 17]. Comfort is dynamic, varying, individualized [14], multidimensional [18], with inherent properties of change over a short period of time [19, 20]. Individuals' experience of comfort can be influenced by a variety of factors including patients' personal strategies, the unique role of family, staff actions and behaviours, and factors within the clinical environment [18]. Nurses reported that they had difficulties to assess the patient to fulfil their comfort needs [21]. Comfort care practices are hindered by the lack of effective experimental studies and the difficulty in assessing outcomes [14].

We conducted a scoping review to produce an evidence base about how this important theory has been applied in comfort enhancement practice or research for adults in an international scope. A scoping review can also be helpful precursors to systematic reviews on more focused questions in relation to the theory use [22]. The proposed scoping review in this document differs from the existing reviews by focusing on the documents reporting the application of Comfort Theory by Kolcaba rather than other theorists, and in different age groups [23], employing a more systematic methodology on a broader scope than others [12, 13].

OBJECTIVES

Our scoping review aimed to categorise and synthesize the international literature on the application of Kolcaba's Comfort Theory in research and practice aiming to promote adults' comfort. The specific objectives were: 1) to categorise the practice or research applying Comfort Theory based on purpose and study design/ methods; 2) to identify the characteristics of Comfort Theory use in interventions, measurement, and interpretation of comfort experience; and to determine 3) if further systematic reviews are feasible to evaluate the effectiveness of Comfort Theory for guiding comfort practice and research.

METHODS

Study design

We conducted this scoping review following the Joanna Briggs Institute (JBI) guidance [24, 25]. The choice of the JBI framework was underpinned by the consideration that it is an advanced guidance to the collective work by Arksey and O'Malley, 2005, Scoping studies: towards a methodological framework [26] and Levac, Colquhoun, 2010, Scoping studies: advancing the methodology [27] and therefore has the least deficiencies as a methodological framework for scoping reviews [24, 25, 28]. In line with the JBI framework, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting checklist was used for the report of this review [24, 29].

Search strategy and paper selection

A three-step search was conducted between 25th November 2021 and 10th January 2022, with an update search for new papers from 13th October 2022 to 17th October 2022. A further update search on seven main databases was conducted between 27th December 2023 and 4th January 2024 after the manuscript was peer reviewed. The first step was an initial limited search on MEDLINE and CINAHL on the following terms: patient comfort, comfort care, comfort intervention, comfort measurement, Comfort

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Theory, Kolcaba. This initial search was then followed by an analysis of the text words contained in the title and abstract of retrieved relevant papers, and of the index terms used to describe the articles. A second search using all identified keywords and index terms was then undertaken across all included databases: MEDLINE (EBSCOhost), CINAHL (EBSCOhost), APA PsycInfo (EBSCOhost), Embase (Elsevier), AMED (EBSCOhost), Web of Science, Scopus, Cochrane Library, JBI EBP Database, CNKI (China National Knowledge Infrastructure), and Wan Fang. Grey literature was sought from Google Scholar, Baidu Scholar, and The Comfort Line. A brief description of each source with rationale for selection is provided in Supplemental Table S1. Thirdly, the reference list of papers that were included in the review was scanned for additional papers. The reviewers contacted key authors of primary studies or reviews for further information, including Dr. Katherine Kolcaba, Dr. April Bice, and Dr. Sebnem Cinar Yucel. A journal reviewer (librarian) also offered four potential records. The full strategies of update search are listed in online supplemental table S2. The review protocol can be accessed on request.

Papers written in English and Chinese were included as the research team is proficient in the two languages. The majority of papers published in the widely used international databases are written in English so that the consideration of papers in English allows the most extent of coverage on papers met the inclusion criteria. Databases mainly covering publications in Chinese were searched to scope evidence from the context of China. Papers published from 1991 to present were included as the first publication regarding Comfort Theory is in 1991 [6, 7].

Following the search, all identified articles were imported into the software Endnote X9 (Clarivate Analytics, PA, USA). After removing duplicates, two reviewers (YL, YZ and CC) initially screened the title and abstract of each paper against the inclusion criteria and exclude those were considered to be completely irrelevant respectively. Following the screening of title and abstracts, the full text of the potentially relevant papers was retrieved and reviewed in detail in software NVivo (QSR International, MA, USA) by two reviewers (YL, YZ, CC, CY and JG) independently. Any disagreements that arose between the two reviewers at each stage of the study selection process were solved through discussion with the third reviewer (YL) to achieve final consensus.

The results of search and the process of paper selection were documented and presented in a PRISMA-ScR flow diagram [30] with the reasons for exclusion. A narrative description was written aligns with the flow diagram to demonstrate the selection process.

Inclusion and exclusion criteria

This scoping review included adult participants who aged 18 and older, and who could be patients, their family members, and healthcare professionals (HCPs), from any geographic location and any settings. The broad context was not limited to any particular countries or health systems while it had to be in healthcare settings where all the activities whose primary purpose was to promote, restore or maintain health.

The review sought any types of paper reporting the application of Comfort Theory developed by Kolcaba, including quantitative studies, qualitative studies, or mixed methods studies (MMS), literature reviews, meta-analyses or synthesis, guidelines, website reports, and grey literature [31]. The work could be an intervention to enhance comfort, an instrument to measure comfort level, qualitative interpretations of comfort experience or any other type of activity utilising the Comfort Theory. The review only

considered papers that clearly indicated that Kolcaba's Comfort Theory was used, with cited recognisable references.

Data extraction

The full text of included papers was imported into the software NVivo (QSR International, MA, USA) for data extraction. After close reading of each paper, relevant data were coded based on the charting form (see supplemental table S3) by one reviewer (YZ or CC) and then checked by a second reviewer (YL or CC). Discrepancies and uncertainties of data extraction were solved through discussions within the review team.

To ensure a standardised data extraction consistently carried out on each source, data items were defined for this review: a) *Study participants* included the group or individuals investigated or cared for, social demographic and/ or clinical characteristics of the participants, and sample size; b) *Interventions* were defined as the care or measures provided to enhance comfort; c) *Outcomes* referred to the variables or items evaluated before and/ or after interventions to show the effects of interventions; d) *Comfort measurement* was the assessment or evaluation of comfort via a specific tool or approach; e) *Setting* referred to the specific location where the study was conducted such as a unit of hospital or an institution while f) *Country of origin* referred to which country the study was conducted; g) Any other key information related to the review questions and objectives will be extracted as "Other key findings".

Data synthesis

Following data extraction, codes of relevant data generated from the included papers were then grouped into categories or themes as following: year of publication, country, settings, participants, study design, categories of application in research or practice. Year of publication was divided into the last five years and years earlier. Countries were further grouped according to World Health Organization (WHO) regions system [32]. Settings were grouped into different types of institutions, and those in a hospital were further grouped based on the typical classification of hospital units. Participants were categorised into healthy people and patients, the latter were further categorised in accordance with The International Classification of Diseases and Related Health Problems (ICD-11) [33]. The typology of theory application was established based on study design or methodology and the purpose of using Comfort Theory by authors of included papers. Some synthesized results were visualised in figures or maps, such year of publication and country distribution. A descriptive narrative was provided accompanying the tables to demonstrate how the findings relate to the review objectives.

Patient and public involvement

No patients or public were involved in the study.

RESULTS

The entire PRISMA-ScR flow chart is shown in Figure 1. The initial search yielded 16,167 results. Removing duplicates and applying the eligibility criteria resulted in a total of 1,483 articles. At the end of study selection, 359 papers were included in the review, and information about the characteristics of Kolcaba's Comfort Theory application were properly extracted (see supplemental table S4). The excluded fulltexts during update are listed in Supplemental Table S5.

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3 223 **Year of publication**

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5 224 The publication year of one document was unknown and the remaining 358 papers
6 225 were published between 1992 – 2023 (Figure 2). The number of papers published
7 226 annually increased steadily since 1996 with fluctuations in between. The largest
8 227 number of publications within a year was 39 in 2017. Approximately two thirds of the
9 228 papers (n = 216, 60.2%) were published since 2017.

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11 229 **Country of origin**

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13 230 The included 359 documents reported the application of Kolcaba’s Comfort Theory in
14 231 28 countries or regions (Figure 3) covering Western Pacific (n = 161), Americas (n =
15 232 115), South-East Asia (n = 7), Europe (n = 68), and Eastern Mediterranean (n = 8).
16 233 Whereas many countries published one or two papers, the majority of papers (n = 316,
17 234 88.0%) originated from the following five countries: China (n = 155), USA (n = 84),
18 235 Turkey (n = 37), Brazil (n = 25), and Portugal (n = 15).

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20 236 **Settings**

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22 237 As reported in the 359 papers retrieved, the studies or practices applying Kolcaba’s
23 238 Comfort Theory were carried out largely in hospitals (n = 263), followed by a range of
24 239 settings comprising: nursing home (n = 8), university (n = 7), hospice or palliative clinic
25 240 (n = 5), online (n = 4), community (n = 4), home (n = 3) and others (n = 21). In the
26 241 documents specifying unit of hospital (n = 192), Comfort Theory was mainly applied in:
27 242 surgical wards (n = 63), internal units (n = 61), critical care units (n = 22), obstetrics
28 243 and gynaecologic units (n = 16), outpatient (n = 19), operating room (n = 6), and
29 244 emergency (n = 5).

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31 245 **Participants**

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33 246 Participants included in the studies or practices applying Comfort Theory were
34 247 dominated by those with neoplasms (n = 55), followed by genitourinary diseases (n =
35 248 30), circulatory diseases (n = 30), pregnancy, childbirth or the puerperium (n = 26),
36 249 surgical or post-surgical status (n= 25), healthy people (n = 23), digestive diseases (n
37 250 = 19), palliative care (n = 18), nervous diseases (n = 12), musculoskeletal or connective
38 251 tissue diseases (n = 10), respiratory diseases (n = 7), mental, behavioural or
39 252 neurodevelopmental disorders (n = 6), and injury, poisoning or certain other
40 253 consequences of external causes (n = 5).

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42 254 **Study design**

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44 255 The included 359 papers adopted a range of study design or methodology with a
45 256 domination of interventional studies, comprising: randomised controlled trial (RCT) (n
46 257 = 83), quasi-experimental study (n = 60), cross-sectional study (CSS, n = 52),
47 258 literature review (n = 40), questionnaire development or adaption (n = 34, including
48 259 questionnaire development (n = 15), questionnaire cross-cultural adaption (n = 8),
49 260 questionnaire psychometric test (reliability and validity) (n = 7), questionnaire
50 261 revalidation (n = 2), questionnaire validation feasibility study (n = 2)), qualitative study
51 262 (n = 21), longitudinal study (n = 16), MMS (n = 15), case study/ report (n = 13),
52 263 service description (n = 10), reflective study (n=7), case controlled study (CCS, n =
53 264 6), and cohort study (n = 2).

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55 265 **Categories of application in research/ practices**

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57 266 Based on the study design and/ or methods as well as the purpose of using Kolcaba’s
58 267 Comfort Theory by authors of the 359 papers, theory application was synthesized into

268 seven categories, which is presented in Table 1 and Figure 4. A detailed categorisation
269 with participants is available in Supplemental Table S6.

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Table 1 Seven categories of Comfort Theory application in healthcare (n = 359)

Theory application category	N	Year of publication	Country of origin	Setting	Design/ methods
Interventions underpinned by Comfort Theory as the theoretical framework	56	2018 - 2023: n = 25, 1992 - 2017: n = 31.	USA: n = 24, China: n = 20, Turkey: n = 6, Portugal: n = 3, Indonesia: n = 2, Canada: n = 1.	Hospital: n = 45, Others: n = 11	Quasi-experimental study: n = 29, RCT: n = 18, MMS: n = 9.
Interventions evaluated by instruments derived from Comfort Theory	96	2018 - 2022: n = 61, 1992 - 2017: n = 35.	China: n = 72, Turkey: n = 16, Iran: n = 4, USA: n = 1, Australia: n = 1, Thailand: n = 1, Malaysia: n = 1.	Hospital: n = 42, Nursing home: n = 2, School: n = 1	RCT: n = 65, Quasi-experimental study: n = 29, MMS: n = 1, CSS: n = 1.
Descriptive or observational studies of services or practices underpinned by Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19	USA: n = 19, China: n = 10, Pakistan: n = 2, Brazil: n = 1, Chile: n = 1, Singapore: n = 1.	Hospital: n = 25, Others: n = 2	Case study: n = 13, Service description: n = 10, CCS: n = 6, Quasi-experimental study: n = 2, MMS: n = 2, Cohort study: n = 1.
Surveys using questionnaires derived from Comfort Theory	71	2018 - 2023: n = 29, 1992 - 2017: n = 42.	China: n = 29, USA: n = 15, Turkey: n = 12, Brazil: n = 7, Korea: n = 2, Austria + Germany: n = 1, Colombia: n = 1, Jordan: n = 1, Iran: n = 1, Israel: n = 1, Thailand: n = 1.	Hospital: n = 66, Others: n = 1	CSS: n = 51 (in which online survey: n = 5), Longitudinal study: n = 16, MMS: n = 3, Cohort study: n = 1.
Questionnaires development or adaption based on Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19.	China: n = 12, Austria + Germany: n = 4, Brazil: n = 4, Portugal: n = 4, Turkey: n = 4, USA: n = 3, Spain: n = 2, Indonesia: n = 1.	Hospital: n = 28, Others: n = 6	Questionnaire development: n = 15, Questionnaire cross-cultural adaption: n = 8, Questionnaire psychometric test (reliability and validity): n = 7, Questionnaire revalidation in populations: n = 2, Questionnaire validation

Theory application category	N	Year of publication	Country of origin	Settings	Design/ methods
Qualitative studies interpreted by Comfort Theory	21	2018 - 2023: n = 13, 1992 - 2017: n = 8.	Brazil: n = 8, USA: n = 4, Australia: n = 1, Austria: n = 1, China: n = 1, Norway: n = 1, Portugal: n = 1, Sweden: n = 1, Wales: n = 1, Indonesia: n = 1, Ecuador: n = 1.	Hospital: n = 7 Others: n = 7	feasibility study: n = 2. Qualitative study: n = 6, Descriptive qualitative study: n = 5, Phenomenological study: n = 3, Reflective qualitative study: n = 2, Case study: n = 2, Explorative qualitative study: n = 1, Collective subject discourse: n = 1. Secondary qualitative analysis: n = 1.
Literature reviews and discussion about Comfort Theory use	47	2018 - 2023: n = 19, 1992 - 2017: n = 27.	USA: n = 18, China: n = 11, Portugal: n = 7, Brazil: n = 5, Canada: n = 2, Indonesia: n = 1, Kazakhstan: n = 1, Spain: n = 1, Turkey: n = 1.	N/A	Literature review: n = 23 (which included: integrative review: n = 4, concept analysis: n = 3, systematic review: n = 2, theory derivation method: n = 1, scoping review: n = 1, psychometric review: n = 1.), Literature review and discussion paper: n = 11, Literature review and discussion as a book chapter: n = 6, Reflection: n = 6, Literature review and discussion as a slide presentation: n = 1.

CCS: case-controlled study; CSS: cross-sectional study; MMS: mixed methods study; N/A: Not applicable; RCT: randomized controlled trial; USA: United states of America. The sum for column of year was 358 as one document had not this information.

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271 **Application category 1: Interventions underpinned by Comfort Theory as the**
272 **theoretical framework**

273 Of the 359 papers, 56 (15.6%) reported interventions using Comfort Theory as the
274 theoretical framework, including: music therapy (n = 13), massage (n = 8), health
275 education (n = 8), position intervention (n = 7), therapeutic touch (n = 6), guided
276 imagery (n = 6), cold and hot therapy (n = 6), aromatherapy (n = 5), coaching (n = 3),
277 Traditional Chinese medicine (TCM) (n=3), progressive muscle relaxation (PMR) (n =
278 2), cognitive strategies (n = 2), positive connotation (n = 2), pet visit (n = 1), silent
279 therapy (n = 1), mindfulness (n = 1), still point induction (n = 1), and Robusta coffee (n
280 = 1). Many studies reported an effective improvement in comfort (n = 40), satisfaction
281 (n = 9), quality of life (QoL) (n = 1), and well-being (n = 1); and a significant reduce in
282 pain (n = 10), anxiety (n = 8), depression (n = 4), stress (n = 3); and symptoms such
283 as sleep quality (n = 3) and urine leakage (n = 2).

284 **Application category 2: Interventions evaluated by instruments derived from**
285 **Comfort Theory**

286 The largest number of papers (n = 96, 26.7%) reported interventions that did not apply
287 Comfort Theory as the theoretical framework but were evaluated using instruments
288 derived from Comfort Theory. The common comfort measures evaluated in this group
289 included: TCM (n = 13), health education (n = 11), music therapy (n = 11), position
290 intervention (n = 7), massage (n = 5), exercise (n = 4), cold and hot therapy (n = 3),
291 foot reflexology (n = 2), PMR (n = 2), therapeutic touch (n = 2), guided imagery (n = 2),
292 shower (n = 1), doll intervention (n = 1), labour dance (n = 1), paradoxical intention
293 therapy (n = 1), aromatherapy (n=1), art therapy (n=1), yoga (n = 1). The commonly
294 used questionnaires to measure comfort before and/ or after interventions included
295 Chinese version GCQ (n = 67), Turkish version GCQ (n = 9), Turkish version
296 Paranaesthesia Comfort Questionnaire (n = 5), English version GCQ (n = 3) and
297 Turkish version Postpartum Comfort Scale (n = 3). Many studies reported the
298 intervention had an effective enhancement in comfort (n = 92), satisfaction (n= 19),
299 and QoL (n = 5); a significant reduce in pain (n = 31), anxiety (n = 20), depression (n
300 = 6), length of hospital stay (n = 11), costs (n = 3); and improvement in symptoms such
301 as constipation (n = 7), nausea and vomiting (n = 4), sleep quality (n = 4), loss of
302 appetite (n = 4), swelling (n = 3), and difficulty urinating (n = 3).

303 **Application category 3: Descriptive or observational studies of services or**
304 **practices underpinned by Comfort Theory**

305 Thirty-four (9.5%) papers reported a description of a specific service or practice
306 applying Comfort Theory, and some of which were case-level (n = 4), unit-level (n = 8)
307 and institution-wide level (n = 2). The following comfort measures were reported in this
308 group: music therapy (n = 7), position change (n = 6), massage (n = 6), aromatherapy
309 (n = 3), and healing touch (n = 2). Comfort was evaluated (n = 9), with some comfort
310 related variables: pain (n = 3), anxiety (n = 2), depression (n = 1), satisfaction (n = 3),
311 QoL (n = 1); and symptoms such as sleep quality (n = 1), delirium (n = 1) and nausea
312 and vomiting (n = 1).

313 **Application category 4: Surveys using questionnaires derived from Comfort**
314 **Theory**

315 The second large group was surveys investigating comfort level and associated factors
316 in different populations (n = 71, 19.8%). Sociodemographic factors such as education
317 level (n = 19), age (n = 18) and gender (n = 15) were often reported to be influential to
318 comfort. The relationship between comfort and the following variables were examined:

pain (n = 9), satisfaction (n = 9), anxiety (n = 6), QoL (n = 5), depression (n = 2), length of hospital stay (n = 2), stress (n = 1), and perceived nursing caring, social support and emotion-focused coping (n = 1). In these surveys comfort was often measured by Chinese version GCQ (n = 25), Turkish version GCQ (n = 6), and Childbirth comfort questionnaire (n = 3).

Application category 5: Questionnaires development or adaption based on Comfort Theory

There were 34 (9.5%) papers that reported questionnaire development or adaptation for measuring comfort among different groups, with tests of reliability and validity. The main questionnaire that was translated and adapted was GCQ (n = 9), followed by Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ) (n = 4), Immobilization Comfort Questionnaire (ICQ) (n = 2), Radiotherapy Comfort Questionnaire (RTCQ) for patients with head and neck neoplasms (n = 2), and Holistic Comfort Questionnaire – Family (HCQ-F) (n = 2).

Application category 6: Qualitative studies interpreted by Comfort Theory

A small group of papers (n = 21, 5.8%) reported a qualitative study understanding comfort needs, factors of comfort and comfort measures. The main theory application in category 6 were that the authors of studies mapped their findings onto the four contexts depicted in Comfort Theory: physical comfort (n = 14), psychospiritual comfort (n = 14), sociocultural comfort (n = 13), and environmental comfort (n = 9).

Application category 7: Literature reviews and discussion about Comfort Theory use

The last group was literature reviews and discussion papers or book chapters (n = 47, 13.1%), that summarised the use of Comfort Theory mainly surrounding the following topics: comfort care models (n = 23), comfort measures (n = 14), wide application (n = 11), questionnaires (n = 10), institution-level application (n = 5), best practices (n = 5), alternative and complementary therapies (n = 4), comfort needs (n = 3), and the usefulness of nursing theory (n = 2). The common care model using Comfort Theory discussed in category 7 included: palliative and hospice care (n = 9), paranaesthesia nursing (n = 5), childbirth care (n = 4), cardiac care (n = 3), elderly care (n = 3), and nursing in critical care (n = 1).

DISCUSSION

To our knowledge, this is the first comprehensive review mapping the international literature regarding the application of Kolcaba's Comfort Theory in healthcare to generate an evidence base for research and practices with an aim to promote adults' comfort. In addressing the three objectives, our review identified that the included papers reported seven categories of Comfort Theory application across different healthcare contexts for comfort enhancement over the past three decades. An overview of each category was provided with amount, scope and characteristics of evidence, based on which our review has identified some pitfalls of the theory application and priorities for further reviews and studies.

Our findings show that Kolcaba's Comfort Theory was applied in a wide range of contexts, among which the most common context was a patient in a crisis or critical situation such as suffering cancer or receiving a surgery in a hospital. Patients with such crisis have evident and complex comfort needs that healthcare practitioners need to assess and deliver interventions to improve comfort. Integrating a crisis concept or construct [34], into the Comfort Theory might be a useful step for the continuous development of the theory, specifying the characteristics of high comfort needs.

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367 Within the seven categories of application identified by our review, Kolcaba's Comfort
368 Theory was most often used in informing or evaluating interventional studies to
369 enhance comfort in different hospital units (category 1, 2 and 3). How effective the
370 theory in guiding these interventions requires quantifying effects through further
371 systematic reviews, particularly for commonly used specific measures such as music
372 therapy, TCM, message, position change and guided imagery, which addressed our
373 third objective. Furthermore, most of the comfort measures being tested were identified
374 as coaching or comfort food for the soul according to the typology by Kolcaba [9] and
375 they are considered important as an 'expert' nurse [2]. However because the authors
376 of included studies did not name these measures in Kolcaba's typology, it was not easy
377 for us to differentiate the two types on some measures suggesting issues in theory
378 operationalisation.

379 A second main use of Kolcaba's Comfort Theory lied in quantitatively measuring
380 comfort needs and levels in different contexts and cultural groups, as one outcome of
381 interventions (category 1 and 2) or for relationship tests with other variables (category
382 4). Although a small number of questionnaires were developed and adapted to
383 particular groups (category 5), GCQ was largely used across contexts and cultures;
384 such a broad application of scales developed from a middle range theory indicates the
385 need for a further systematic review to evaluate how reliable and valid that Kolcaba's
386 comfort questionnaires in measuring comfort of patients with different characteristics
387 internationally.

388 The category having the smallest number of publications was using Kolcaba's Comfort
389 Theory in explaining qualitative findings exploring comfort experiences of different
390 individuals (category 6). The included qualitative studies did not explicitly report
391 revisions or modifications of Kolcaba's Comfort Theory, but we found that the three
392 types of comfort defined by Kolcaba were less identified in these studies compared to
393 the four contexts. In terms of the contexts, environment was less reported compared
394 to other three. In addition, it was often difficult in our data extraction to differentiate
395 between physical and psychospiritual, between psychospiritual and sociocultural
396 comfort. Therefore we recommend a further meta synthesis on the 21 included
397 qualitative studies to examine the TS structures of comfort.

398 An increasing interest in applying and developing the theory can be seen from the
399 increasing trend of publications over time and from the hot discussion and reflection
400 on the theory. However, one major limitation in the Comfort Theory application across
401 the seven categories was considered as not informing and reporting the theory use
402 transparently. Many studies retrieved in our review did not clearly describe how the
403 Comfort Theory was used in guiding their research or practice. Limited information
404 could be extracted on how the theory was adapted in different contexts according to
405 the guidance that when a middle range theory is applied directly into practices in
406 specific context, it needs to be adapted or modified to situation-specific theories [35,
407 36]. An informed use of theory that provided the framework for the research and a clear
408 description of theory use to guide practice provides a means by which other studies
409 using the same theory can be used to build the body of scientific knowledge, thus
410 advancing best practices in healthcare [37]. More informed use of theory can
411 strengthen improvement programmes and facilitate the evaluation of their
412 effectiveness [38]. Explicit descriptions of using theory to guide practice promise a
413 substantive step toward meeting the mandate for making a difference for society
414 through theory guidance [15].

415 **Future research**

416 Based on the evidence base generated in our review, more research is needed to
417 further test and explore the effects of Comfort Theory in guiding different types of
418 research and practice that aim to promote comfort. More rigorous studies are required
419 to develop comfort questionnaires derived from Comfort Theory for comfort
420 assessment among different races or ethnicities. Further quantitative or qualitative
421 systematic reviews can be conducted to answer more focused questions in relation to
422 the effectiveness of theory use in guiding interventions, developing instruments, and
423 interpreting qualitative findings. How the theory is used in research and practice need
424 to be more explicit and informed.

425 **Limitations**

426 Our literature search may have introduced selection bias and missed relevant articles.
427 By restricting our inclusion to studies written in English and Chinese, we may
428 undermine the global generalisability of our findings, especially in terms of the lack of
429 studies written in other languages. We excluded literature from non-adult groups, thus
430 limiting the application of results to adults' healthcare practice. We did not formally
431 assess the quality of included studies, as we respected the scoping review approach
432 but we took a critical stance in the overall quality of evidence based on study design
433 and methodology.

434 **CONCLUSIONS**

435 Kolcaba's Comfort Theory has been used largely in interventions and assessments for
436 a range of participants in hospital settings. A variety of holistic comfort measures and
437 questionnaires have been proposed and tested for adults' comfort enhancement
438 offering many options for healthcare practitioners, researchers, patients and public
439 members. The overview of evidence and categorisation of Comfort Theory application
440 can serve as the first step in enabling stringency in the field as well as inspire further
441 exploration, and thereby support for the needed growing research interest in comfort
442 care. Nevertheless, there are still several issues that deserve further research by the
443 scientific community in order to match the quality of scientific evidence to the
444 undeniable complexity inherent in comfort theory use in guiding research and practice.

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452 **Ethical approval**

453 Approval of IRB exemption for this study was granted by Shanghai Ethics Committee
454 for Clinical Research (approval number: SECCR/ 2022-111-01) because we
455 conducted a scoping review following the JBI and PRISMA-ScR guideline.

456 **Contributors**

457 YL conceptualized the study, drafted the protocol and wrote the manuscript. YZ and

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CC performed searches, study selection and data extraction, supervised by YL. For update search, YL conducted searches, and YL, CY and JG completed the paper selection and data extraction. YZ formed tables. CC created figures. All authors have read and approved the final manuscript.

Patient consent for publication

Not applicable.

Competing interests

None.

Data Sharing Statement

All data relevant to the study are included in the article or uploaded as supplementary information.

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Figures

Figure 1 The PRISMA-ScR flow chart

Figure 2 Number of publications per year (n=358)

Legend: One included paper's year of publication was unknown. Each blue bar shows the number of publications (on the top of bar, vertical axis) in a year between 1992-2023 (horizontal axis). The dotted curved line is an exponential trendline showing the number of publications rose at increasingly higher rates.

Figure 3 Number of publications by country (n=359)

Legend: The blue bar shows the number of publications (vertical axis) in each country (horizontal axis) ranking from high to low, corresponding to the size of bubble summing up the number of publications in different countries within each region on the world map based on WHO regions system.

Figure 4 Number and percentage of papers in each category of application (n=359)

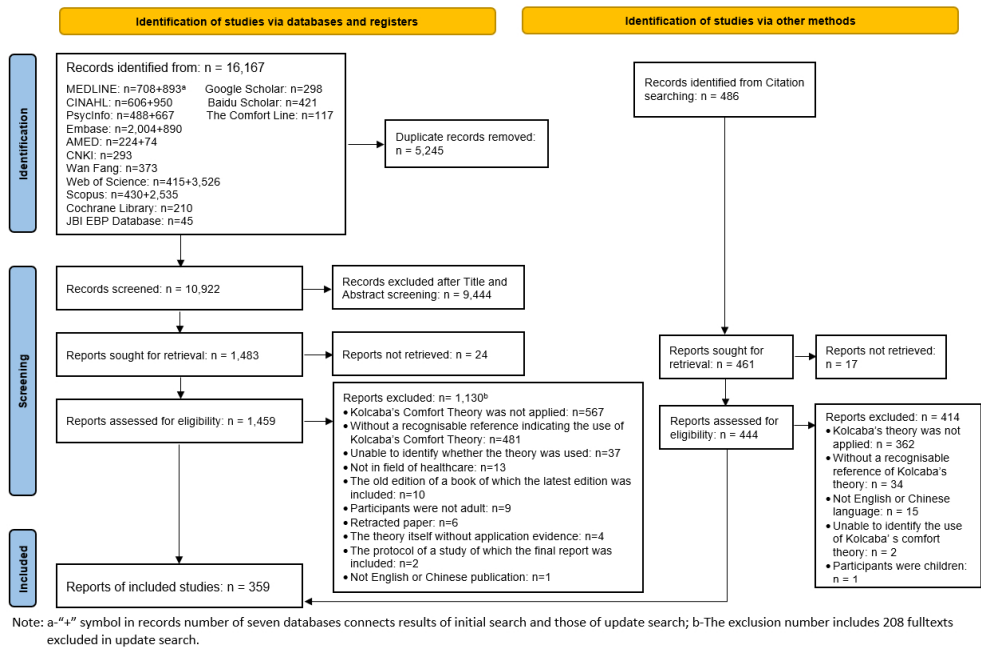


Figure 1 The PRISMA-ScR flow chart

441x294mm (72 x 72 DPI)

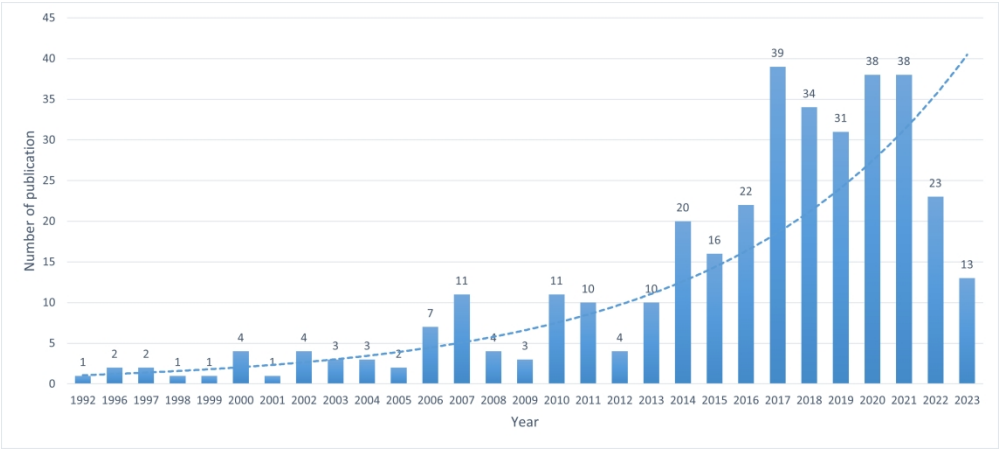


Figure 2 Number of publications per year (n=358)
One included paper’s year of publication was unknown. Each blue bar shows the number of publications (on the top of bar, vertical axis) in a year between 1992-2023 (horizontal axis). The dotted curved line is an exponential trendline showing the number of publications rose at increasingly higher rates.

632x283mm (130 x 130 DPI)

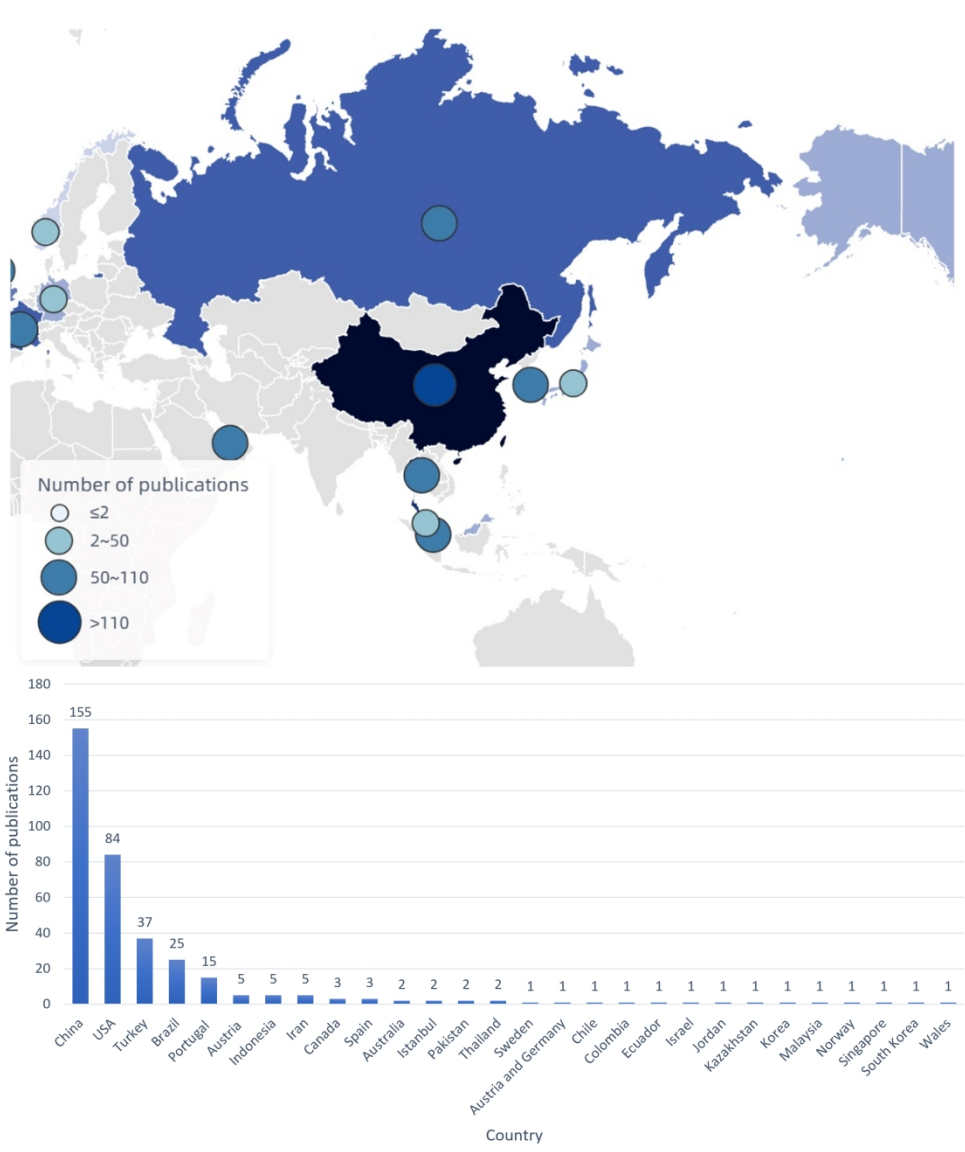


Figure 3 Number of publications by country (n=359)
The blue bar shows the number of publications (vertical axis) in each country (horizontal axis) ranking from high to low, corresponding to the size of bubble summing up the number of publications in different countries within each region on the world map based on WHO regions system.

1220x1411mm (57 x 57 DPI)

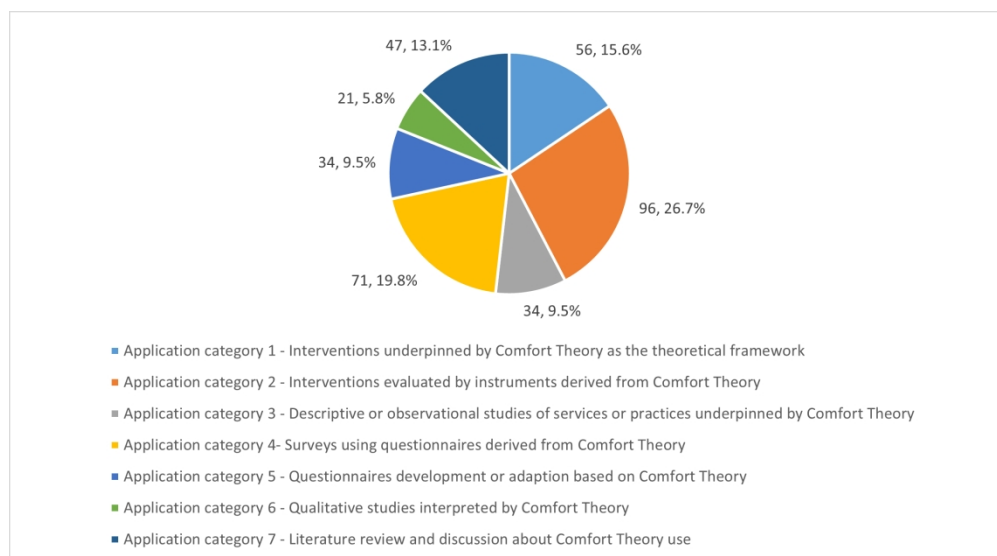


Figure 4 Number and percentage of papers in each category (n=359)

481x265mm (130 x 130 DPI)

Supplemental Table S1 The sources on Comfort Theory Application searched and rationale for inclusion (n=14)

Source	Rationale for selection
Medline with Full Text (EBSCOhost)	MEDLINE is the world's best-known medicine and clinical science database, covering literature in the fields of medicine, nursing, dentistry, as well as coverage in the areas of allied health, biological and physical sciences, humanities and information science from 1950 to the present. As the work of transfer related to clinical science and nursing it should be included in MEDLINE.
CINAHL Plus with Full Text (EBSCO host)	CINAHL (Cumulative Index of Nursing and Allied Health Literature) provides authoritative coverage of full text literature related to midwifery, nursing, occupational therapy, physiotherapy, podiatry, health education and other related subject areas. As transfer practice involved nursing practitioners, this database was chosen.
APA PsycInfo (EBSCOhost)	PsycINFO is the key database for psychology and related subjects. It contains references and abstracts for journal articles, books, book chapters and dissertations. This database was included as literature regarding the experiences and psychological aspects in the process of transfer were targeted by this review.
AMED - The Allied and Complementary Medicine Database (EBSCOhost)	AMED (Allied and Complementary Medicine Database) covers a selection of journals in complementary medicine, palliative care and several professions allied to medicine including physiotherapy, occupational therapy, podiatry and rehabilitation. As transfer involves palliative care, this database was selected.
Embase (Elsevier)	Embase covers human medicine and related biomedical research including drugs, toxicology, clinical medicine, biotechnology, health affairs, psychiatry and forensic medicine.
Web of Science (core collection)	Web of Science provides references, and in many cases abstracts, for peer-reviewed scholarly journal articles in the sciences, social sciences, arts and humanities. It was chosen because of such a comprehensive coverage of literature.
Scopus	Scopus is the largest abstract and citation database of peer-reviewed literature in the fields of science, technology, medicine, social sciences, and arts and humanities. This database was included

Source	Rationale for selection
	as it would cover literature about transfer in relation to medicine, social sciences and humanities.
Cochrane Library	The Cochrane Library is a collection of databases that contain different types of high-quality, independent evidence to inform healthcare decision-making. This online library was selected for grey literature.
The JBI EBP Database	The JBI EBP Database provides the latest research and evidence-based guidelines regarding patient care, treatment options, and interventions. It provides 5,000+ up-to-date Evidence Summaries, Recommended Practices and Best Practice Information Sheets across 30+ specialty Nursing and Allied Health fields. This database was chosen for its coverage on latest nursing evidence because Comfort Theory has been classified as a nursing theory.
CNKI	China National Knowledge Infrastructure (CNKI) is the largest source of China-based information resources covering journal articles, doctoral and master's theses, conference papers, newspapers, reference books, patents, standards, and international literature resources in medicine and health, industry, agriculture, economy education, humanity and social science, etc. Therefore, it was selected as a major source of sources based in China.
Wan Fang	Wanfang Data is an affiliate of the Chinese Ministry of Science & Technology, providing access to a wide range of database resources, serving as a gateway to Chinese culture, medicine, business, science, engineering, etc. It was chosen to retrieve literature published in Chinese.
Google Scholar	Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. It was included to search for any types of sources regarding using Kolcaba's Comfort Theory.
Baidu Scholar	Baidu Scholar (http://xueshu.baidu.com) is a free academic resource search platform of Baidu. It is dedicated to contributing resource retrieval technology and big data mining analysis capabilities to academic research and optimizing academic resources. It provides

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Source	Rationale for selection
The Comfort Line	The website was selected because it provides free access to a huge amount of Chinese and foreign literature (with an index of over 400 million literature resources).
	TheComfortLine (<u>The Comfort Line</u>) is a website introducing the Comfort Theory by Dr. Kolcaba, and offering many downloadable articles, videotapes and slides that explain the Comfort Theory, define the concepts, offer, and demonstrate how the theory should be used in practice. The website was chose because it is a useful site for grey literature regarding the theory under investigation.

For peer review only

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Enseignement Supérieur (ABES).

Supplemental Table S2. Application of Comfort Theory Scoping Review Search Strategies

MEDLINE (EBSCOhost)

Date of Update Search: 5 January 2024

Number of results: 893

Search	Search Terms	Results
1	(MH "Patient Comfort")	619
2	"patient* comfort*"	6,629
3	"comfort*"	64,308
4	"discomfort*"	76,555
5	"patient* discomfort*"	3,889
6	"physical comfort"	433
7	"spiritual comfort"	54
8	"psychological comfort"	144
9	"psychospiritual comfort"	4
10	"social comfort"	80
11	"sociocultural comfort"	4
12	"environment* comfort"	96
13	"holistic comfort*"	23
14	"pregnancy discomfort*"	193
15	"family comfort"	30
16	"family discomfort"	9
17	"families* comfort"	4
18	"families* discomfort"	2
19	"staff comfort"	48
20	"health professional* comfort"	1
21	"healthcare professional* comfort"	1
22	"caregiver* comfort"	35
23	"caregiver* discomfort"	4
24	"carer* comfort"	0
25	"carer* comfort"	59
26	"carer* discomfort"	1
27	"family caregiver* comfort"	2
28	"family caregiver* discomfort"	16,243
29	"family member* comfort"	5
30	"family member* discomfort"	0
31	"family member* discomfort"	3,033
32	"comfort* practice*"	15
33	"comfort* care"	1,017
34	"comfort* interaction*"	19
35	"comfort* support*"	73

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Search	Search Terms	Results
36	"comfort* intervention*"	37
37	"comfort* enhancement*"	9
38	"comfort* promotion*"	5
39	"comfort* alteration*"	1
40	"altered comfort"	9
41	"comfort* experience*"	147
42	"comfort* environment*"	311
43	"comfort scale*"	382
44	"comfort questionnaire*"	166
45	"General Comfort Questionnaire"	60
46	"GCQ"	100
47	"comfort level"	2,164
48	"comfort evaluation*"	108
49	"comfort measurement*"	16
50	"comfort assessment*"	150
51	OR/1-50	137,417
52	"comfort theory"	52
53	"comfort theories"	3
54	"Kolcaba"	69
55	AU "Kolcaba"	49
56	CR "Kolcaba"	62
57	"Kolcaba* comfort theory"	17
58	"Kolcaba* theory"	15
59	"Kolcaba* theories"	3
60	"Kolcaba* theory of comfort"	11
61	(MH "Nursing Theory")	6,193
62	"nursing theory"	6,964
63	"nursing theories"	3,929
64	(MH "Psychological Theory")	14,519
65	(MH "Social Theory")	540
66	"theory"	526,329
67	"theories"	79,765
68	"conceptual framework*"	18,040
69	"theoretical framework*"	19,175
70	OR/52-69	610,910
71	51 AND 70	2,526
72	71 AND Publication Date: 19910101-20241231	2,422
73	72 AND Language: -Chinese or English	2,358
74	73 AND (Age: -aged 80 and over OR young adult: 19-24 years OR aged: 65+ years OR middle aged: 45-64 years OR adult: 19-44 years OR all adult: 19+ years)	893

CINAHL (EBSCOhost)

Date of Update Search: 31 December 2023)

Number of results: 950

Search	Search Terms	Results
1	(MH "Comfort")	4,724
2	"discomfort*"	22,329
3	"comfort*"	32,862
4	"physical comfort"	1,962
5	(MH "Spiritual Comfort (Saba CCC)")	1
6	"spiritual comfort"	54
7	"psychological comfort"	67
8	"psychospiritual comfort"	2
9	"social comfort"	46
10	"sociocultural comfort"	5
11	"environment* comfort"	32
12	"holistic comfort*"	28
13	(MH "Pregnancy Discomforts")	506
14	"pregnancy discomforts")	511
15	"patient* comfort*"	2,297
16	"patient* discomfort*"	1,047
17	"family comfort*"	26
18	"family discomfort*"	1
19	"families* comfort*"	3
20	"families* discomfort*"	351
21	"staff comfort"	39
22	"health professional* comfort"	2
23	"healthcare professional* comfort"	3
24	"caregiver* comfort"	28
25	"caregiver* discomfort"	3
26	"carer* comfort"	53
27	"family caregiver* comfort"	17,852
28	"family caregiver* discomfort"	1,063
29	"family member* comfort"	5
30	"family member* discomfort"	1,011
31	"carer* discomfort"	19
32	(MH "Comfort Care (Saba CCC)")	1
33	"comfort* care"	711
34	(MH "Comfort Alteration (Saba CCC)")	1
35	"comfort* alteration*"	2
36	(MH "Altered Comfort (NANDA)")	2

Search	Search Terms	Results
37	"altered comfort"	12
38	(MH "Physical Comfort Promotion (Iowa NIC)")	976
39	"physical comfort promotion"	2
40	(MH "Psychological Comfort Promotion (Iowa NIC)")	993
41	"psychological comfort promotion"	2,087
42	"comfort* promotion"	8
43	"comfort* practice*"	12
44	"comfort* interaction*"	9
45	"comfort* support*"	56
46	"comfort* intervention*"	39
47	"comfort* enhancement*"	4
48	"comfort* experience*"	78
49	"comfort* environment*"	131
50	"comfort scale*"	196
51	(MH "Comfort Level (Iowa NOC)")	4
52	"comfort level"	1,730
53	(MH "General Comfort Questionnaire")	51
54	"General Comfort Questionnaire"	67
55	"GCQ"	31
56	"comfort questionnaire*"	164
57	"comfort evaluation*"	427
58	"comfort measurement*"	4
59	"comfort assessment*"	68
60	OR/1-59	53,427
61	"comfort theory"	77
62	"comfort theories"	2
63	"Kolcaba"	102
64	AU "Kolcaba"	52
65	"Kolcaba* comfort theory"	29
66	"Kolcaba* theory of comfort"	19
67	"Kolcaba* theory"	26
68	"Kolcaba* theories"	8
69	(MH "Nursing Theory")	4,597
70	"Nursing Theory"	5,888
71	"Nursing Theories"	2,735
72	(MH "Theory")	7,126
73	"Theory"	141,745
74	"Theories"	23,802
75	"conceptual framework*"	59,728
76	"theoretical framework*"	15,325

Search	Search Terms	Results
77	OR/61-76	203,131
78	60 AND 77	2,553
79	78 AND Publication Date: 19910101-20241231	2,518
80	79 AND (Language: -Chinese OR English)	2,424
81	80 AND (Age: -aged 80 and over OR young adult: 19-24 years OR aged: 65+ years OR middle aged: 45-64 years OR adult: 19-44 years OR all adult: 19+ years)	950

APA PsycINFO (EBSCOhost)

Date of Update Search: January 01, 2024

Number of results: 667

Search	Search Terms	Results
1	"comfort"	6,491
2	"discomfort"	5,280
3	MM "Physical Comfort"	824
4	"physical comfort"	1,450
5	"spiritual comfort"	19
6	"psychological comfort"	39
7	"psychospiritual comfort"	2
8	"social comfort"	54
9	"sociocultural comfort"	1
10	"environment* comfort"	16
11	"holistic comfort"	1
12	"pregnancy discomfort*")	5
13	"patient* comfort*"	143
14	"patient* discomfort*"	32
15	"family comfort"	5
16	"family discomfort*"	2
17	"families* comfort*"	407
18	"families* discomfort*"	1
19	"staff comfort"	11
20	"health professional* comfort"	3,241
21	"healthcare professional* comfort"	1,206
22	"caregiver* comfort"	2
23	"carer* comfort"	14
24	"family caregiver* comfort"	1,208
25	"comfort* practice*"	8
26	"comfort* care"	115
27	"comfort* interaction*"	11
28	"comfort* support*"	6

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Search	Search Terms	Results
29	"comfort* intervention*"	6
30	"comfort* enhancement*"	1
31	"comfort* promotion*"	276
32	"comfort alteration"	8
33	"altered comfort"	44
34	"comfort* experience*"	40
35	"comfort* environment*"	37
36	"comfort scale*"	132
37	"comfort questionnaire*"	51
38	"General Comfort Questionnaire"	8
39	"GCQ"	26
40	"comfort level"	272
41	"comfort evaluation*"	22
42	"comfort measurement*"	2
43	"comfort assessment*"	43
44	OR/1-43	11,222
45	"comfort theory"	6
46	"comfort theories"	110
47	"Kolcaba"	5
48	AU "Kolcaba"	3
49	"Kolcaba* theory of comfort"	5
50	"Kolcaba* comfort theory"	2
51	"Kolcaba* theory"	1
52	"Kolcaba* theories"	1
53	"nursing theory"	308
54	"nursing theories"	23
55	"theory"	215,366
56	"theories"	66,770
57	"conceptual framework*"	7,611
58	"theoretical framework*"	10,590
59	OR/45-58	257,753
60	44 AND 59	1,043
61	60 AND Publication Date: 1991-2024	973
62	61 AND (Language: -Chinese OR English)	963
63	62 AND (Age: -aged 80 and over OR young adult: 19-24 years OR aged: 65+ years OR middle aged: 45-64 years OR adult: 19-44 years OR all adult: 19+ years)	667

Embase

Date of Update Search: January 4, 2024

Number of results: 890

Search	Search Terms	Results
1	'comfort':ab,kw,ti,de AND [embase]/lim	51,223
2	'discomfort':ab,kw,ti,de AND [embase]/lim	90,876
3	'physical comfort'/mj	1
4	'spiritual comfort'	73
5	'psychological comfort'	196
6	'psychospiritual comfort'	3
7	'social comfort'	107
8	'sociological comfort'	0
9	'sociocultural comfort'	3
10	'environment* comfort'	118
11	'holistic comfort'	24
12	'pregnancy discomfort*'	26
13	'patient comfort'/mj	704
14	'patient* comfort*'	13,559
15	'patient* discomfort*'	5,655
16	'family comfort'	60
17	'family discomfort'	25
18	'families* comfort'	8
19	'families* discomfort'	1
20	'staff comfort'	115
21	'health professional* comfort'	2
22	'healthcare professional* comfort'	2
23	'caregiver* comfort'	66
24	'caregiver* discomfort'	7
25	'carer* comfort'	2
26	'carer* discomfort'	0
27	'family caregiver* comfort'	2
28	'family caregiver* discomfort'	0
29	'family member* comfort'	8
30	'family member* discomfort'	0
31	'comfort* practice*'	27
32	'comfort care'/mj	3
33	'comfort* care'	2,846
34	'comfort* interaction*'	23
35	'comfort* support*'	100
36	'comfort* intervention*'	52
37	'comfort* enhancement*'	9
38	'comfort* promotion*'	7
39	'comfort alteration'	1
40	'altered comfort'	11
41	'comfort* experience*'	203
42	'comfort* environment*'	424

Search	Search Terms	Results
43	'comfort scale*'	657
44	'comfort questionnaire*'	216
45	'general comfort questionnaire'	65
46	'gcq'	143
47	'comfort level*'	5,205
48	'comfort evaluation*'	119
49	'comfort measurement*'	24
50	'comfort assessment*'	209
51	OR/1-50	142,751
52	'comfort theory':ab,kw,ti	55
53	'comfort theory'	56
54	'comfort theories':ab,kw,ti	4
55	'comfort theories'	4
56	'kolcaba':ab,kw,ti	64
57	'kolcaba':au	49
58	'kolcaba* comfort theory'	0
59	'kolcaba* comfort theories'	0
60	'kolcaba* theory of comfort'	0
61	'kolcaba* theories of comfort'	0
62	'kolcaba* theory'	1
63	'kolcaba* theories'	0
64	'nursing theory'	7,135
65	'nursing theories'	409
66	'theory'	536,399
67	'theories'	86,116
68	'conceptual framework'	50,445
69	'conceptual framework*'	51,450
70	'theoretical framework*'	19,948
71	#52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70	646,909
72	#51 AND #71 #51 AND #71 AND ([chinese]/lim OR [english]/lim) AND ([adult]/lim OR [young adult]/lim OR [middle aged]/lim OR [aged]/lim OR [very elderly]/lim) AND [humans]/lim AND [embase]/lim AND [1991- 2024]/py	1,989
73		890

AMED (EBSCOhost)

Date of Update Search: January 01, 2024

Number of results: 74

Search	Search Terms	Results
1	(ZU "comfort")	2
2	"comfort"	1,262
3	"discomfort"	1,282
4	"physical comfort"	20
5	"spiritual comfort"	7
6	"psychological comfort"	7
7	"psychospiritual comfort"	2
8	"sociological comfort"	0
9	"social comfort"	2
10	"sociocultural comfort"	2
11	"environment* comfort"	1
12	"holistic comfort"	6
13	"pregnancy discomfort*"	1
14	"patient* comfort*"	86
15	"patient* discomfort*"	30
16	"family comfort"	2
17	"family discomfort*"	2
18	"families* comfort*"	1
19	"families* discomfort*"	20
20	"staff comfort"	2
21	"health professional* comfort"	472
22	"healthcare professional* comfort"	127
23	"caregiver* comfort"	23
24	"caregiver* discomfort"	7
25	"carer* comfort"	6
26	"carer* discomfort"	1
27	"family caregiver* comfort"	204
28	"family caregiver* discomfort"	66
29	"family member* comfort"	561
30	"family member* discomfort"	558
31	"comfort* practice*"	184
32	"comfort* care"	74
33	"comfort* interaction*"	2
34	"comfort* support*"	6
35	"comfort* intervention*"	2
36	"comfort* enhancement*"	2
37	"comfort* promotion*"	1

Search	Search Terms	Results
38	"comfort alteration"	1
39	"altered comfort"	11
40	"comfort* experience*"	4
41	"comfort* environment*"	5
42	"comfort scale*"	18
43	"comfort questionnaire*"	7
44	"General Comfort Questionnaire"	194
45	"GCQ"	2
46	"comfort level"	83
47	"comfort evaluation*"	3
48	"comfort measurement*"	1
49	"comfort assessment*"	5
50	OR/1-49	2,496
51	"comfort theory"	3
52	"comfort theories"	3
53	"Kolcaba"	11
54	AU "Kolcaba"	11
55	"Kolcaba* theory of comfort"	11
56	"Kolcaba* comfort theory"	2
57	"Kolcaba* theory"	2
58	"Kolcaba* theories"	0
59	(ZU "nursing theory")	3
60	"nursing theory"	32
61	"nursing theories"	6
62	"theory"	5,592
63	"theories"	1,323
64	"conceptual framework*"	416
65	"theoretical framework*"	362
66	OR/51-65	7,166
67	50 AND 66	74
68	67 AND Publication Date: 19910101-20241231 AND (Language: -Chinese OR English)	74

BMJ Open: first published as 10.1136/bmjopen-2023-077810 on 10 October 2024. Downloaded from <http://bmjopen.bmj.com/> on June 8, 2025 at Agence Bibliographique de l'Enseignement Supérieur (ABES).
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Scopus

Date of Update Search: January 02, 2024

Number of results: 3526

Search	Search Terms	Results
	((TITLE-ABS-KEY (comfort)) OR (TITLE-ABS-KEY (discomfort)) OR (TITLE-ABS-KEY (physical AND comfort)) OR (TITLE-ABS-KEY (spiritual AND comfort)) OR (TITLE-ABS-KEY (psychological AND comfort)) OR (TITLE-ABS-KEY (psychospiritual AND comfort)) OR (TITLE-ABS-KEY (social AND comfort)) OR (TITLE-ABS-KEY (sociological AND comfort)) OR (TITLE-ABS-KEY (sociocultural AND comfort)) OR (TITLE-ABS-KEY (environment* AND comfort)) OR (TITLE-ABS-KEY (holistic AND comfort)) OR (TITLE-ABS-KEY (pregnancy AND discomfort*)) OR (TITLE-ABS-KEY (patient* AND comfort*)) OR (TITLE-ABS-KEY (patient* AND discomfort*)) OR (TITLE-ABS-KEY (family AND comfort)) OR (TITLE-ABS-KEY (family AND discomfort)) OR (TITLE-ABS-KEY (families*AND comfort)) OR (TITLE-ABS-KEY (families* AND discomfort)) OR (TITLE-ABS-KEY (staff AND comfort)) OR (TITLE-ABS-KEY (health AND professional*AND comfort)) OR (TITLE-ABS-KEY (healthcare AND professional* AND comfort)) OR (TITLE-ABS-KEY (caregiver* AND comfort)) OR (TITLE-ABS-KEY (caregiver* AND discomfort)) OR (TITLE-ABS-KEY (carer* AND discomfort)) OR (TITLE-ABS-KEY (family AND caregiver* AND comfort)) OR (TITLE-ABS-KEY (family AND caregiver* AND discomfort)) OR (TITLE-ABS-KEY (comfort* AND practice*)) OR (TITLE-ABS-KEY (comfort* AND care)) OR (TITLE-ABS-KEY (comfort* AND interaction*)) OR (TITLE-ABS-KEY (comfort* AND support*)) OR (TITLE-ABS-KEY (comfort* AND intervention*)) OR (TITLE-ABS-KEY (comfort* AND enhancement*)) OR (TITLE-ABS-KEY (comfort* AND promotion*)) OR (TITLE-ABS-KEY (comfort AND alteration)) OR (TITLE-ABS-KEY (altered AND comfort)) OR (TITLE-ABS-KEY (comfort*AND experience*)) OR (TITLE-ABS-KEY (comfort* AND environment*)) OR (TITLE-ABS-KEY (comfort AND scale*)) OR (TITLE-ABS-KEY (comfort AND questionnaire*)) OR (TITLE-ABS-KEY (general AND comfort AND questionnaire)) OR (TITLE-ABS-KEY (gcq)) OR (TITLE-ABS-KEY (comfort AND level*)) OR (TITLE-ABS-KEY (comfort AND evaluation*)) OR (TITLE-ABS-KEY (comfort AND measurement*)) OR (TITLE-ABS-KEY (comfort AND assessment*))) AND (TITLE-ABS-KEY-AUTH (comfort AND theory) OR TITLE-ABS-KEY (comfort AND theories) OR TITLE-ABS-KEY(kolcaba) OR AUTH (kolcaba) OR TITLE-ABS-KEY (kolcaba* AND comfort AND theory) OR TITLE-ABS-KEY (kolcaba* AND theory AND of AND comfort)) AND (LIMIT-TO (LANGUAGE, "English") OR LIMIT-TO (LANGUAGE, "Chinese")) AND (LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "MEDI") OR LIMIT-TO (SUBJAREA, "ENVI") OR LIMIT-TO (SUBJAREA,"PSYC") OR LIMIT-TO (SUBJAREA, "NURS") OR LIMIT-TO (SUBJAREA,"ARTS") OR LIMIT-TO (SUBJAREA, "MULT") OR LIMIT-TO (SUBJAREA, "HEAL") OR LIMIT-TO (SUBJAREA, "PHAR") OR LIMIT-TO (SUBJAREA, "DENT") OR LIMIT-TO (SUBJAREA, "IMMU") OR LIMIT-TO (SUBJAREA, "NEUR"))	3,526

Web of Science
Date of Update Search: January 01, 2024
Number of results: 3526

Search	Search Terms	Results
1	TS=(comfort)	106,868
2	TS=(discomfort*)	61,753
3	TS=(physical comfort)	8,706
4	TS=(spiritual comfort)	701
5	TS=(psychological comfort)	3,096
6	TS=(psychospiritual comfort)	25
7	TS=(social comfort)	7,268
8	TS=(sociological comfort)	90
9	TS=(sociocultural comfort)	131
10	TS=(environment* comfort)	27,532
11	TS=(holistic comfort*)	976
12	TS=(pregnancy discomforts)	1,105
13	TS=(patient* comfort*)	28,980
14	TS=(patient* discomfort*)	31,838
15	TS=(family comfort)	4,952
16	TS=(family discomfort)	2,202
17	TS=(families* comfort)	1,777
18	TS=(families* discomfort)	616
19	TS=(staff comfort)	2,297
20	TS=(health professional* comfort)	1,640
21	TS=(healthcare professional* comfort)	568
22	TS=(caregiver* comfort)	1,186
23	TS=(caregiver* discomfort)	588
24	TS=(carer* comfort)	174
25	TS=(carer* discomfort)	74
26	TS=(family caregiver* comfort)	521
27	TS=(family caregiver* discomfort)	193
28	TS=(family member* comfort)	929
29	TS=(family member* discomfort)	394
30	TS=(comfort* practice*)	12,239
31	TS=(comfort* care)	17,734
32	TS=(comfort* interaction*)	8501
33	TS=(comfort* support*)	17,082
34	TS=(comfort* intervention*)	9,434
35	TS=(comfort* enhancement*)	1,528
36	TS=(comfort* promotion*)	961
37	TS=(comfort alteration)	439

Search	Search Terms	Results
38	TS=(altered comfort)	1,171
39	TS=(comfort* experience*)	19,884
40	TS=(comfort* environment*)	33,985
41	TS=(comfort scale*)	10,400
42	TS=(comfort questionnaire*)	7,575
43	TS=(General Comfort Questionnaire)	868
44	TS=(GCQ)	
45	TS=(comfort level*)	23,739
46	TS=(comfort evaluation*)	13,124
47	TS=(comfort measurement*)	10,500
48	TS=(comfort assessment*)	10,541
49	OR/1-48	
50	TS=(comfort theory)	3,572
51	TS=(comfort theories)	3,572
52	AU=(Kolcaba)	
53	TS=(Kolcaba)	
54	TS=(Kolcaba* comfort theory)	30
55	TS=(Kolcaba* theory of comfort)	30
56	TS=(Kolcaba* theory)	32
57	TS=(Kolcaba* theories)	32
58	OR/50-57	3,613
59	49 AND 58	3,603
60	59 AND (2024 or 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 or 2009 or 2008 or 2007 or 2006 or 2005 or 2004 or 2003 or 2002 or 2001 or 2000 or 1999 or 1998 or 1997 or 1996 or 1995 or 1994 or 1993 or 1992 or 1991) (Publication Years)	3,599
61	60 AND (English or Chinese) (Languages)	3,526

Supplemental table S3. Data extraction charting form for Comfort Theory Application

Author, year	Country of origin	Aim	Study participants	Setting	Design/methods	Interventions	Outcomes	Comfort measurement	Other key findings

Supplemental Table S4. An overview of included papers reporting the application of Comfort Theory (N=359)

NO.	Category of theory application	Authors (Year)	Country	Aim	Participants	Settings	Study design/ methods	Key findings
1	Application category 1: Virtual reality glasses and mobile-assisted education group	Bal and Kulakaç (2023)	Turkey	To examine the effect of comfort theory-based nursing care on pain and comfort in women	Women undergoing hysterosalpingography: n=126 (42 vs 42 vs 42)	Obstetric outpatient clinics of a public hospital	RCT	The comfort theory-based nursing care (virtual reality glasses and mobile-assisted education group) was effective in increasing women's comfort with painful invasive procedures such as hysterosalpingography and reducing pain.
2	Application category 1: A multimodal, multidisciplinary, evidence-based EPC programme	Liu et al. (2023)	China	To develop and implement a multimodal, multidisciplinary, evidence-based EPC programme underpinned by Kolcaba's comfort theory for patients undergoing elective neurosurgery and to conduct an RCT to assess the feasibility, effectiveness and safety of this EPC programme	Patients admitted for elective neurosurgery: n=110	Department of Neurosurgery of Xi'an International Medical Center	RCT	The primary outcome is patient satisfaction and comfort measured by the Chinese Surgical Inpatient Satisfaction and Comfort Questionnaire.
3	Application category 1: Labour support	Unutkan and Balci Yangin (2023)	Turkey	To examine the effects of nursing care structured according to Kolcaba's theory on duration, pain, and comfort of childbirth	Women: n=46 (21 intervention vs 25 control)	The gynaecology outpatient clinics of a university hospital	RCT	The women in the intervention group had shorter latent and active phases, lower pain scores, and higher levels of birth comfort.
4	Application category 1: Nursing comfort care integrating with the	Rustam et al. (2021)	Indonesia	To investigate the effect of nursing comfort care integrating with the daily Islamic rituals on comfort among mechanically ventilated Muslim patients	Mechanically ventilated Muslim patients: n=56 (28 vs 28)	ICUs of three public hospitals	Pretest-posttest with control group design	Nursing comfort care integrated with daily Islamic rituals increased comfort (CQMVP) in Muslim patients while receiving mechanical ventilation. This nursing comfort care program can be recommended to use in practice.

	daily Islamic rituals							
5	Application category 1: Comfort management plan for high flow nasal cannula	Luo (2021)	China	To construct a comfort management plan for high flow nasal cannula, to improve patient comfort, reduce concurrency, shorten the length of ICU stay, reduce reinsertion and test the effectiveness of management rate and mortality rate, improve patient satisfaction and other aspects	Patients using high flow nasal cannula after extubated: n = 102 (51 vs 51)	One ICU at a tertiary hospital	MMS	Increased comfort after intervention 24h, 48h (p<0.05); Improved satisfaction (p<0.05); No significant decrease in duration of ICU stay (p>0.05).
6	Application category 1: Music therapy, reposition, therapeutic backrub, training	Doe (2021)	USA	To determine if the implementation of assessments combined with the use of non-pharmacologic comfort measures would reduce the narcotic dose and increase the patients' comfort levels in post-cardiopulmonary surgical intensive care	Patients post cardiopulmonary surgery: n = 105 (23 vs 82)	One cardiopulmonary surgical ICU	Quasi-experiment study	Enhanced comfort: pre intervention (M=3.05, SD=2.66) vs post intervention (M=5.27, SD=3.28) (p=0.000); Decreased in narcotic dose from comparative (M=6.61, SD=8.83) to implementation (M= 2.47, SD=4.46) (p=0.000).
7	Application category 1: Heat application, massage	Türkmen and Oran (2021)	Turkey	To determine the effects of sacral massage and heat application on the perceptions of labour pain and comfort level in pregnant women	Primiparous pregnant women: n = 90 (30 vs 30 vs 30)	One delivery room of a public hospital	Quasi-experiment study	Enhanced comfort (p<0.05); Reduced pain (p<0.05). Childbirth Comfort Questionnaire (CCQ) scores: heat application group (HAG): 31.06±3.46, CG: 27.66±3.85; physical comfort scores: HAG: 13.16±1.89, control group (CG): 11.03± 1.80); relief comfort level score: HAG: 11.23±1.43, CG: 10.00±2.01); transcendence comfort level scores: HAG: 19.83±2.37, CG: 17.66±2.15; Pain score: during 4-5 cm of cervical dilation: HAG: (4.56±0.67), massage group (MG), (5.03±1.06), CG (5.23±0.72); during 6-7 cm of cervical dilation: HAG (6.80±0.7), MG (7.30±0.8), CG (7.70±0.5).
8	Application category 1: Ear acupoint	Jiang (2021)	China	To explore the effect of ear acupoint burying bean on delivery	Women using epidural labour	One maternity ward of a women	RCT	GCQ scores after intervention: Intervention group: 83.11±7.86 vs Control group: 80.88±9.86; Enhanced comfort after

	burying bean therapy			outcome, urination, anxiety, depression, pain and comfort of women using epidural labour analgesia	analgesia: n = 208 (105 vs 103)	and children hospital		intervention (p<0.05); No significant difference in anxiety and depression between two groups (p>0.05).
9	Application category 1: Interventions of environmental context	Wang et al. (2021)	China	To improve patients' comfort and satisfaction by reducing noise	Patients receiving colorectal surgery: n = 568 (287 vs 281)	One colorectal surgical unit	Quasi-experimental study	Reverse results presented in table and main text: comfort, QoL, nursing satisfaction (indicating a low quality of study).
10	Application category 1: Interventions of four contexts: environmental, physical, psychospiritual, and sociocultural, music therapy, silent therapy, aromatherapy	Yang (2021)	China	To explore the effects of comfort care on patients undergoing gynaecological surgery	Patients undergoing gynaecological surgery: n = 92 (46 vs 46)	One preoperational waiting room at a tertiary general hospital	MMS	Enhanced comfort after intervention (p<0.05): intervention group: 92.52±6.42 vs control group: 83.41±9.42; Decreased anxiety (p<0.05); Increased satisfaction (p<0.05).
11	Application category 1: Modified inspiratory position in bronchoscopy	Lian (2021)	China	To evaluate the effect of modified inspiratory position in bronchoscopy with moderate sedation	Patients receiving moderate sedation bronchoscopy: n = 124 (62 vs 62)	One bronchoscopy room in a tertiary general hospital	MMS	Enhanced comfort (p<0.001); Increased healthcare professionals' satisfaction (p<0.05).
12	Application category 1: Inhaler aromatherapy	Kasar et al. (2020)	Turkey	To examine the effects of inhaler aromatherapy on the level of pain, comfort, anxiety, and cortisol during trigger point injection in individuals with	Patients: n=66 (22 vs 22 vs 22)	The Algology Polyclinic of a university hospital	RCT	Lavender oil inhalation was found to reduce pain and anxiety during trigger point injection and to improve patient comfort (GCQ), but it did not affect the saliva cortisol level.

				myofascial pain syndrome				
13	Application category 1: Music listening	Uzamere-Ogbeide (2020)	USA	To determine if or to what degree the implementation of music listening sessions, when compared with no music, reduced agitation in adult dementia	Patients with dementia-related agitation associated with Alzheimer's disease: n = 10	One urban assisted living facility	Quasi-experimental study	Significant decrease in agitation (p=0.000): before intervention (65.3 or 93.2%) vs after intervention (23.7 or 33.8%).
14	Application category 1: Education program on EoL care	Hare (2020)	USA	To develop a project guided by Kolcaba's theory on caring	Nurses: n = 36	One CCU	Quasi-experimental study	92% staff nurses provided care to dying patients; Extended knowledge.
15	Application category 1: Training	Kacaroglu Vicdan (2020)	Turkey	To determine the effect of training in accordance with the Comfort Theory to haemodialysis patients	Haemodialysis patients: n = 68 (34 vs 34)	One haemodialysis unit of a teaching university hospital	RCT	Increased comfort (p<0.001).
16	Application category 1: Interventions of four contexts: environmental, physical, sociocultural, music therapy	Xiong (2020)	China	To explore the effect of two double-tube drainage in patients with enterocutaneous fistula	Patients with enterocutaneous fistula: n = 79 (40 vs 39)	One gastrointestinal surgery unit of a tertiary hospital	Quasi-experimental study	Higher GCQ scores after intervention: intervention group: 89.65±10.91 vs control group: 75.31±9.04; Enhanced comfort (p<0.05).
17	Application category 1: Comfort nursing based on Roy adaptive model, massage, music therapy, position intervention,	Luo (2020)	China	To investigate comfort and factors of comfort, develop comfort care measures, and build a comfort care plan based on Roy adaptive model	Pituitary adenoma patients: n = 121 (60 vs 61)	One neurosurgery unit	MMS	Comfort scores after intervention: Intervention group: 95.12±8.68 vs Control group: 83.78±10.11; Enhanced comfort (p<0.05); Significant decrease in anxiety and depression: intervention group higher than control group (p<0.05); Improved satisfaction (p<0.05): intervention group: 71.66% vs control group: 11.48.

	positive verbal communication							
18	Application category 1: Interventions of environmental context	Chen et al. (2020)	China	To evaluate the effects of a quiet surgical unit	Surgical patients and clinicians: n = 84 (not specified number in each group)	One surgical unit	Quasi-experimental study	Improved satisfaction (p<0.05) from 85.7 to 94.8; Decreased noise level (p<0.05) from 66.0 to 59.0 dB(A).
19	Application category 1: Mindfulness-based intervention	Wang et al. (2019)	China	To evaluate the effectiveness of a modified short-term mindfulness-based intervention on improving the mindfulness, comfort, and ambulation ability of stroke survivors undergoing inpatient rehabilitation	Stroke survivors: n = 50 (25 vs 25)	Rehabilitation Medicine Unit and Neurology unit	Quasi-experimental study	Enhanced comfort (p<0.05); No significant difference in environmental subscale, Berg Balance Scale, 10-Meter Walk Test, and Functional Ambulation Classification scale (p>0.05).
20	Application category 1: Interventions of three contexts: physical, psychospiritual, sociocultural	Xiong et al. (2019)	China	Investigating the effects of comfort care on symptoms, gastric motility, and mental state of patients with functional dyspepsia	Patients with functional dyspepsia: n = 100 (50 vs 50)	One gastroenterology unit	RCT	Significant reduction in symptoms: comfort care group: 8.3±2.4 vs routine nursing group: 10.2±2.4 (p<0.001); Significant decrease in anxiety: comfort care group: 41.1±7.2 vs routine nursing group: 46.3±6.9, (p<0.001); Significant decrease in depression: comfort care group: 42.5±6.9 vs routine nursing group: 47.3±6.4 (p=0.001).
21	Application category 1: Interventions of environmental context	Liu et al. (2019)	China	To discuss the effect of the noise management in cardiac unit	Cardiac patients	One cardiology unit at a tertiary hospital	Quasi-experimental study	Decreased noise level at daytime and nighttime (Z=-13.0, -12.8, p<0.01).
22	Application category 1: Aromatherapy	Stallings-Welden et al. (2018)	USA	To determine effectiveness of aromatherapy compared with standard care for postoperative	Ambulatory surgical patients: n = 221 (108 vs 113)	One 537-bed teaching hospital	RCT	Effectiveness: the aromatherapy group: 100% vs the standard care group: 67%.

				and post discharge nausea and vomiting in ambulatory surgical patients				
23	Application category 1: Robusta coffee	Susanti et al. (2018)	Indonesia	To evaluate the effects of Robusta coffee as an alternative for oral hygiene media in increasing the comfort level	Patients with head neck cancer undergoing radiotherapy: n = 32 (16 vs 16)	One central hospital	Quasi-experimental study	Significant increase in comfort level (p<0.05): before intervention: 5.4 vs after intervention: 6.4.
24	Application category 1: Guided imagery	Coelho et al. (2018)	Portugal	To evaluate the effects of guided imagery on the comfort of patients in palliative care	Palliative care patients: n = 26	One palliative care unit of a hospital	Quasi-experimental study	Enhanced comfort (p=0.001); Decreased heart rate (p=0.001) and respiratory rate (p=0.001); Reduced pain (p=0.001).
25	Application category 1: APP of transitional care model	Zhang (2018)	China	To develop and evaluate an APP of a transitional care model in relieving pain, improving comfort, meeting the needs of care of lung cancer patients with pain	Lung cancer patients with pain: n = 396 (195 vs 191)	One oncology unit	MMS	GCQ scores after discharge 1 month: intervention group:85.54±11.24 vs control group: 62.43±13.54; Enhanced comfort after intervention (p<0.05); Decreased pain after intervention (p<0.05).
26	Application category 1: A web-based application for monitoring comfort	Pinto et al. (2017)	Portugal	To introduce a web-based application for monitoring comfort in patients receiving palliative care	Patients receiving palliative care: n=7	Two hospitals providing home care visits	A pilot design to assess the feasibility and acceptability of the developed app	Phases I and II: the knowledge about monitoring comfort; Phase III: 11 self-reported items (pain, tiredness, drowsiness, nausea, lack of appetite, shortness of breath, depression, anxiety, fear of the future, peace and the will to live); Phase IV: 117 messages retrieved. Participants considered the app simple, easy to use and useful.
27	Application category 1: Warmed blanket	Parks et al. (2017)	USA	To assess the difference in the level of comfort between psychiatric inpatients who received a warmed blanket and psychiatric inpatients who did not receive a warmed blanket	Psychiatric patients: n = 37 (21 vs 16)	One acute psychiatric adult unit	Quasi-experimental study	Comfort score: experimental group 7.29 vs control group 6.81.
28	Application category 1: Environmental comfort,	Su and Dong (2017)	China	To explore the influence of comfort care model in the postoperative conscious patients with	Patients intubated post Level four	One ICU	Quasi-experimental study	Enhanced comfort (p<0.05); Improved nursing satisfaction (p<0.05); Increased compliance behaviour (p<0.05)

	music therapy, position intervention			tracheal intubation in ICU	surgery: n = 264 (127 vs 137)			
29	Application category 1: Online end-of-life care education	Tyler (2017)	USA	To implement and test the effectiveness of an end-of-life care educational program	Registered nurses: n = 34	One CCU in an acute care hospital	Quasi-experiment study	Improved knowledge: from pretest (68% - 100% correct answers) to post-test (93%-100% correct answers).
30	Application category 1: Training	Aksoy Derya and Pasinlioğlu (2017)	Turkey	To determine the effect of nursing care based on comfort theory on women's postpartum comfort levels after C-sections	Women after C-sections: n = 100 (50 vs 50)	One birth clinic of a teaching hospital	Quasi-experiment study	Enhanced comfort, physical (p=0.000), psychospiritual (p=0.249), and sociocultural subdimension (p=0.001): experiment group:138.70±8.79 vs control group:131.06±9.30.
31	Application category 1: Holistic techniques (aromatherapy, music therapy, massage, acupuncture)	Charles et al. (2016)	USA	To provide simple, evidence-based, holistic/ alternative remedies for women who experienced nonemergent pain during pregnancy	Women with nonemergent pain during pregnancy: n = 31	Bay Area Hospital	Quasi-experiment study	Enhanced comfort from 17.5 to 30 (p= 0.00); Reduced pain from 5.8/10 to 3.5/10 (p=0.00).
32	Application category 1: Interventions of environmental and psychospiritual context, music therapy	Zhang et al. (2016)	China	To evaluate the efficacy of perioperative application of comfort nursing in patients with gallstone disease undergoing endoscopic retrograde cholangial pancreatography (ERCP)	Patients receiving endoscopic retrograde cholangial pancreatography : n = 166 (106 vs 60)	One hospital	Quasi-experiment study	Improved sleep quality (p=0.034); Increased patient satisfaction (p=0.02); Decreased postoperative food intake without permission (p=0.018).
33	Application category 1: Positive verbal communication, progressive prone	Gao (2016)	China	To explore the effectiveness of application of Comfort Theory among patients with uterine fibroids receiving ultrasound ablation	Patients with uterine fibroids: n = 210 (102 vs 108)	One ultrasound ablation centre	MMS	Enhanced comfort (p<0.05): intervention group: 93.22±9.56 vs control group: 81.90±10.68; Decreased pain (p<0.05); Increased satisfaction (p<0.05).

	training, peer education, music therapy, therapeutic touch, position intervention, guided imagery, PMR							
34	Application category 1: Massage, still point induction, music therapy, aromatherapy	Townsend et al. (2014)	USA	To determine whether complementary techniques provide pain relief and comfort in patients with chronic pain	Chronic pain patients: n = 22 (9 vs 13)	Unspecified	RCT	Significant improvement in both groups: enhanced comfort; reduced pain (p<0.05).
35	Application category 1: Isothermal haemodialysis	Li et al. (2014)	USA	To demonstrate the feasibility and safety of isothermal haemodialysis	Haemodialysis patients: n = 59 (28 vs 31)	Dialysis Unit at Saint Joseph's Hospital	Quasi-experimental study	No significant difference between two groups: blood pressure; comfort (p>0.05).
36	Application category 1: Interventions of four contexts: environmental, physical, psychospiritual, and sociocultural	Jia (2014)	China	To explore the effect of comfort nursing on comfort and QoL of patients receiving Percutaneous Transhepatic Cholangial Drainage	Patients receiving Percutaneous Transhepatic Cholangial Drainage: n = 81 (40 vs 41)	One general hospital	Quasi-experimental study	Enhanced comfort (p<0.001): intervention group: 82.03±4.560 vs control group: 72.17±10.833; Improved QoL (p<0.001); Shortened hospitalization stay.
37	Application category 1: Reiki therapy	Catlin and Taylor-Ford (2011)	USA	To determine whether provision of Reiki therapy during outpatient chemotherapy is associated with	Patients receiving chemotherapy: n = 189 (63 vs 63 vs 63)	Outpatient chemotherapy in an infusion clinic	RCT	Enhanced comfort: Reiki therapy group (p=0.020) and sham Reiki placebo group (p=0.003) vs standard care group; Increased well-being: Reiki therapy group (p=0.005) and sham Reiki placebo group (p=0.005) vs standard care group.

				increased comfort and well-being				
38	Application category 1: Positioning	Devitt et al. (2011)	USA	To determine which of three positions (left lateral, right lateral, or supine) was the most effective to encourage passing the insufflated room air and to provide patient comfort after a colonoscopy	Postcolonoscopy patients: n=512 (168-174 patients per position)	One 526-bed hospital-based GI endoscopy unit	Quasi-experiment study	Most patients passed the insufflated room air and were comfortable.
39	Application category 1: Auricular point magnetic bead plaster therapy	Zhao (2011)	China	To evaluate the effects of magnetic bead plaster therapy on auricular point on sleep disorders and comfort in haemodialysis patients	Haemodialysis patients: n = 60 (30 vs 30)	One blood purification unit of a hospital	MMS	Higher comfort scores after intervention: intervention group: 82.50 vs control group: 74.50; Enhanced comfort (Z=-1.385, p=0.001); Treatment effective rate: intervention group: 86.67% vs control group: 76.67%; Improved treatment effective rate (p=0.019).
40	Application category 1: Warmed chemotherapy solution	Whyte (2010)	Canada	To measure the comfort levels of patients with gynaecologic type cancer before and after the administration of warmed intraperitoneal chemotherapy on day one and day eight	Patients with gynaecologic type cancer who received intraperitoneal chemotherapy: n = 10	Outpatient at a tertiary level cancer facility	Quasi-experiment study	No significant change in comfort before and after receiving warmed intraperitoneal chemotherapy (p=0.630) or over the three chemotherapy cycles (p=0.603).
41	Application category 1: End-of-Life Nursing Education Consortium training program	Whitehead et al. (2010)	USA	To assess the ongoing impact of the End-of-Life Nursing Education Consortium training program on RNs' death anxiety, concerns about dying, and knowledge of the dying process utilizing the principles of the Comfort Theory and Practice by Kolcaba at the institutional level	Registered nurses: n = 38 (11 vs 27)	One primary care medical centre	Quasi-experiment study	Improved knowledge about dying: at 2 weeks, 12 months (p=0.01).
42	Application category 1: Interventions of four	Wu et al. (2010)	China	To explore the effectiveness of comfort care interventions on the comfort of elderly	Old stroke patients: n = 118 (58 vs 60)	One hospital	Quasi-experimental study	Enhanced comfort (p<0.05): intervention group: 74.32±11.11 vs control group: 68.45±13.93.

	contexts: environmental, physical, psychospiritual, sociocultural, massage, music therapy, therapeutic touch, position intervention			stroke patients in recovery stage				
43	Application category 1: Guided imagery	Apóstolo and Kolcaba (2009)	Portugal	To describe imagery intervention for decreasing depression, anxiety, and stress and increasing comfort in psychiatric inpatients with depressive disorders	Depressive patients: n = 60 (30 vs 30)	Three psychiatric unities/ facilities	Quasi-experiment study	Enhanced comfort (t=-2.01, p=0.03); Decreased depression, anxiety, stress (t=-2.48, p=0.01).
44	Application category 1: Healing Touch, Coaching	Dowd et al. (2007)	USA	To measure and compare the effects of 3 nursing interventions for increasing students' comfort and decreasing their stress-related symptoms	Students: n = 52 (12 vs 14 vs 13 vs 13)	Midwest state university	RCT	Enhanced comfort; Decreased stress; Healing touch had better immediate results on comfort and stress. Coaching had better carryover effects on comfort and stress.
45	Application category 1: Healing touch, coaching	Dowd and Kolcaba (2007)	USA	To study the effects of two types of holistic interventions for effective stress management	Students: n = 58	Midwestern university	RCT	Improved comfort: HTCQ of comfort (F=4.27, p=0.01) and numerical rating scale of comfort (p=0.0001); Decreased stress: numerical rating scale of stress (p=0.0001); No significant differences in stress.
46	Application category 1: PMR	Xiao (2007)	China	To evaluate the effects of progressive muscle relaxation (PMR) on relieving anxiety and depression and promoting comfort among kidney transplant recipients	Kidney transplant recipients: n = 87 (42 vs 45)	One urology surgery unit	MMS	Enhanced comfort (p=0.02): intervention group: 84.17±9.20 vs control group: 79.67±8.68; Decreased anxiety (p=0.04) and depression (p=0.03).

47	Application category 1: Comfort contract (Warming Blanket (Recovery Room), Music, Pillows - location, Massage, Pet Visitation, Cold Wash Cloth, Family Visits)	Patrol (2006)	USA	To address how to increase patient comfort post cardiac bypass surgery	Adult patients: n = 90 (45 vs 45)	One urban hospital.	RCT	No results reported.
48	Application category 1: Warmed cotton blankets versus patient-controlled warming gowns	Wagner et al. (2006)	USA	To compare the effects of preoperative warming with warmed cotton blankets versus patient-controlled warming gowns on patients' perceptions of thermal comfort and anxiety	Patients with scheduled for surgery: n = 118 (60 vs 58)	One large public hospital	RCT	Enhanced NVAS thermal comfort P = 0.005; Decreased anxiety p=0.06.
49	Application category 1: Hand massage	Kolcaba et al. (2006)	USA	To test the effectiveness of hand massage that affects nursing home residents' comfort and satisfaction	Nursing home residents: n = 60 (35 vs 25)	Two nursing homes	Quasi-experimental study	No significant difference in comfort: groups (p=0.15) or over time (p=0.29); At T2: treatment group higher than comparison group (p=0.07); No significant difference in satisfaction between two groups (p=0.64).
50	Application category 1: Music therapy	Besel (2006)	USA	To assess the effects of music therapy on comfort in acute mechanically ventilated patients in the ICU	Mechanically ventilated patients: n = 5	One ICU	Quasi-experimental study	No significant change in comfort (t=-1.378, p=0.206), anxiety (t=1.250, p=0.247) and pain (t=0.909, p=0.390): before vs after the intervention; No significant change in comfort (t=0.302, p=0.770), anxiety (t=-1.512, p=0.169) and pain (t=-0.956, p=0.367): before vs after the control.
51	Application category 1:	Kolcaba et al. (2004)	USA	To determine the beneficial effects of	Hospice patients: n = 31 (16 vs 15)	Three hospice agencies	RCT	No significant change between groups: comfort (p=0.445); symptom distress (p=0.698).

	Hand massage			hand massage on patients near EoL				
52	Application category 1: Cognitive strategies, coaching	Dowd et al. (2003)	USA	To determine effectiveness of coaching added to cognitive strategies and bladder health information for independent, community dwelling persons experiencing compromised urinary bladder syndrome	Patients with compromised urinary bladder syndrome: n = 51 (14 vs 17 vs 16, some participants dropout)	Community	Quasi- experiment study	Persons at level 1 and level 3 showed modest gains over time, whereas persons at level 2 did not improve. The second hypothesis, that persons at level 2 would show less improvement on the outcomes than persons at level 3, was supported for comfort, incontinence episodes, and frequency because persons at level 2 did not perform as well as persons at level 3. The hypothesis was not supported for bladder function or perception of health because persons at both levels 2 and 3 improved on bladder function but neither showed significant differences on perception of health. These findings support the theoretic recursive relationship between comfort and HSBs.
53	Application category 1: Guided imagery	Kolcaba and Steiner (2000)	USA	To test four propositions about the nature of comfort	Breast cancer women: n = 53 (26 vs 27)	Two radiation oncology sites	RCT	RTCQ scores: treatment group higher than the control group at Times 2 and 3 (p=0.04); RTCQ scores in control group: higher at Time 2 and 3 than Time 1 (p=0.04); Comfort had more state characteristics.
54	Application category 1: Cognitive strategies	Dowd et al. (2000)	USA	To test the abilities of cognitive strategies to augment the effects of an educational program designed to treat compromised urinary bladder syndrome	Patients with compromised urinary bladder syndrome: n = 40 (21 vs 19)	Recruited through local newspapers	Quasi- experiment study	Enhanced comfort; Improved compromised urinary bladder syndrome.
55	Application category 1: Guided imagery	Kolcaba and Fox (1999)	USA	To measure the effectiveness of customized guided imagery for increasing comfort in women with early-stage breast cancer	Breast cancer patients undergoing radiation therapy: n = 53 (26 vs 27)	Two radiation oncology units	RCT	Increased differences in comfort between two groups; Higher comfort: treatment group than control group.
56	Application category 1: Guided imagery	Kolcaba (1997)	USA	To test the effectiveness of guided imagery in enhancing comfort of women experiencing negative side effects of	Breast cancer patients post breast conserving	Two hospital radiation oncology units	RCT	Higher comfort in treatment group: p=0.04 (at alpha .10); Differences in comfort between two groups increased steadily over time.

				breast conserving therapy	surgery: n = 53 (26 vs 27)			
57	Application category 2: Guided imagery	Gunes et al. (2023)	Turkey	To examine the effect of guided imagery applied to geriatric orthopaedic patients on preoperative anxiety and comfort	Geriatric patients: n=80 (40 vs 40)	Orthopaedics and traumatology clinic of a university hospital	RCT	The anxiety of the experimental group decreased and their comfort improved.
58	Application category 2: Guided imagery	Ozdemir et al. (2023)	Turkey	To investigate the effects of guided imagery on postoperative pain and comfort in geriatric orthopaedics patients	Patients: n=80 (40 vs 40)	Orthopaedic and Traumatology Inpatient Clinic of a university hospital	Pre- and post-RCT	The pain levels of the experimental group decreased. Their perceived comfort was improved.
59	Application category 2: Mandala art therapy	Özsavran and Ayyıldız (2023)	Turkey	To determine the effect of mandala therapy applied to mothers who have children with special needs on the mothers' comfort and resilience levels	Mothers who had children with special needs: n=51 (24 experimental group vs 27 control group)	One special education school	RCT	Mandala Art Therapy is a method that improves the comfort levels and resilience of mothers.
60	Application category 2: Regular nursing rounds	Roustaei et al. (2023)	Iran	To examine the effect of regular nursing rounds on patients' comfort, satisfaction, and violence against nurses	Patients: n=100; Nurses: n=35	One surgery ward	Quasi-experimental study	The patients' satisfaction and comfort (GCQ) increased and violence against nurses.
61	Application category 2: Aromatherapy and music therapy	Wen et al. (2023)	China	To investigate the effects of aromatherapy and music therapy on alleviating anxiety during MRI examinations	Patients undergoing MRI examinations: n=200 (50 vs 50 vs 50 vs 50)	Department of Radiology at First People's Hospital of Zunyi	Single-centre, double-blinded, RCT	Aromatherapy combined with music therapy is effective for reducing patients' anxiety and improving their comfort level (GCQ) during MRI scans.
62	Application category 2: Cluster nursing methods	Zou et al. (2023)	China	To assess the efficacy of cluster nursing methods in the recovery of patients after laparoscopic partial nephrectomy	Patients with renal tumours: n=96 (48 vs 48)	Laparoscopic partial nephrectomy for kidney tumours in one hospital	Quasi-experimental study	Position management and diversified health education may enhance post-surgery recovery, shorten the hospitalization time, and improve inpatient comfort (GCQ).
63	Application category 2: A flushable double-	Jiang et al. (2022)	China	To investigate the effect of preventive care in conjunction with the use of a flushable	Patients with severe faecal incontinence: n = 164 (82 vs 82)	One hospital	RCT	Enhanced comfort: higher GCQ score in the observation group than in the control group (p<0.05); Improved faecal incontinence QoL (p<0.05).

	cavity colostomy bag			double-lumen stoma bag in the prevention of incontinent dermatitis in critically ill patients				
64	Application category 2: Dental-implant placement in the hydraulic maxillary sinus lift (MSL) without bone grafting	Zhang et al. (2022)	China	To examine the clinical effects of placement of dental implants using the hydraulic maxillary sinus lift (MSL), without bone grafting	Tooth defects patients: n = 68 (unspecified group size)	One stomatology unit of a hospital	RCT	No difference in pain and comfort (GCQ score) at day 1 after surgery (p>0.05); Enhanced comfort and reduced pain: at day 3 and day 7 after surgery (p<0.05); No difference in prognostic QoL (p>0.05); Reduced treatment costs.
65	Application category 2: Acupressure, shower	Solt Kirca and Kanza Gul (2022)	Turkey	To determine the effects of acupressure and shower on labour pain and postpartum comfort	Pregnant women: n = 120 (80 vs 40)	One maternity unit of a private hospital	RCT	Enhanced postpartum comfort (Postpartum Comfort Questionnaire (PPCQ)) (p<0.016); Reduced pain (VAS): dilation 6–7 cm (p<0.001); No significant difference in pain: dilation 8–10cm (p>0.05).
66	Application category 2: Labour dance	Akin et al. (2022)	Turkey	To evaluate the effect of labour dance on traumatic childbirth perception and comfort	Primiparous pregnant women: n = 120 (60 vs 60)	One maternity hospital	RCT	Increase comfort levels (Turkish version Childbirth Comfort Questionnaire (CCQ) and Turkish version Postpartum Comfort Scale); Decreased traumatic childbirth perception (p<0.01)
67	Application category 2: Acupressure	Hsu et al. (2022)	China	To assess the effectiveness of practicing acupressure on the Shenmen and Neiguan acupoints in reducing anxiety and improving comfort and physical health of patients undergoing thoracoscopic surgery	Patients undergoing thoracoscopic surgery: n = 100 (49 vs 51)	One cardiothoracic unit of a medical centre	RCT	Insignificant difference in comfort between two groups (Chinese version GCQ) (F=2.953, p= 0.057); Insignificant difference in anxiety between two groups as time progressed; Insignificant difference in health insurance expenses for hospitalization (t=0.81, p=0.073) and hospitalization duration days (t=1.25, p=0.216). Significant difference in anxiety(STAI-YI scores) in the pre-test and post-test interactions between the two groups (β=-4.72, p=0.031); decreased significant: the average STAI-Y1 score in the experimental group from pre-intervention to T3 (β=-7.33, p≤0.001), significant difference

								between two groups in T3 pre-test and post-test interactions ($\beta=4.72$, $p=0.031$).
68	Application category 2: Portable electronic drug infusion pump	Zhao et al. (2022b)	China	To investigate the clinical safety of portable electronic drug infusion pump in performing hepatic arterial infusion chemotherapy and its impact on patient comfort	Liver cancer patients: n = 70 (50 vs 20)	One interventional treatment unit of a university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Improved Barthel Index; Decreased incidence of symptoms: difficult defecation and loss of appetite ($p<0.05$).
69	Application category 2: FOLFOX-hepatic arterial infusion chemotherapy (FOLFOX-HAIC) for relieving bed restriction activity program	Zhao et al. (2022a)	China	To investigate the safety and feasibility of relieving bed restriction during hepatic arterial infusion chemotherapy	Patients with primary hepatocellular carcinoma: n = 70 (50 vs 20)	One interventional treatment unit of a university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Improved Barthel Index; Decreased incidence of symptoms: sleep disorders, constipation, loss of appetite, limb numbness, lumbar acid ($p<0.05$).
70	Application category 2: Paradoxical intention therapy	Chen et al. (2022)	China	To investigate the application value of paradoxical intention therapy in patients undergoing Percutaneous coronary intervention (PCI)	Patients receiving percutaneous coronary intervention: n = 116 (58 vs 58)	One hospital unit of Structural Cardiology	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Decreased incidence of symptoms: anxiety, depression; Reduced heart rate and blood pressure ($p<0.05$).
71	Application category 2: Kegel pelvic floor muscle training combined with clean intermittent self-catheterization	Zong et al. (2022)	China	To investigate the effect of Kegel pelvic floor muscle training combined with clean intermittent self-catheterization on patients with cervical cancer, and to analyse the risk factors affecting urinary retention	Patients with cervical cancer receiving radical resection: n=166 (83 vs 83)	Department of Reproductive Medicine	RCT	With Kegel pelvic floor muscle exercise combined with clean intermittent self-catheterization results in improved bladder function, reduced incidence of urinary tract infections and urinary retention, as well as increased patient comfort (GCQ).

72	Application category 2: Two different hemostasis methods	Zhou and Xu (2022)	China	To explore the effects of two different haemostasis methods, namely, arterial compression devices and vascular closure devices, in the ischemic cerebrovascular intervention to provide a theoretical basis for clinical selection of haemostasis methods	Patients receiving ischemic cerebrovascular intervention: n=302 (151 vs 151)	Taizhou First People's Hospital	RCT	The use of vascular closure devices can stop the bleeding quickly, which can significantly shorten the bleeding time, and the postoperative braking time of patients is short, with high comfort (Kolcaba Comfort Scale) and fewer complications.
73	Application category 2: Helmet Non-invasive Ventilation Therapy	Majid et al. (2021)	Malaysia	To measure the patients' comfort behaviour level after completion of helmet NIV therapy	Acute Respiratory Failure (ARF) patients: n=67	Emergency and Trauma Department in Perak state tertiary hospital	Quantitative descriptive, observation study	The comfort level (CBC) of patients is moderate. The helmet NIV can be considered as comfortable NIV interface for ventilatory support therapy.
74	Application category 2: Modified cervicothoracic compression band	Hu et al. (2021)	China	To investigate the effect of modified cervicothoracic compression band on successful haemostasis and postoperative complications of patients with endoscopic radical thyroidectomy via breast areola approach and to provide reference for postoperative nursing of thyroid cancer	Patients with endoscopic radical thyroidectomy via breast areola approach: n=128 (64 vs 64)	One university hospital	RCT	Modified cervicothoracic compression band can significantly alleviate the symptoms of postoperative patients with endoscopic radical thyroidectomy, reduce postoperative complications and improve patient comfort (GCQ).
75	Application category 2: Music therapy	Demir et al. (2021)	Turkey	To determine the effect of music therapy on fatigue, comfort and vital signs of the liver transplant patients	Patients: n=120 (60 vs 60)	The Liver Transplant Institute	RCT	Fatigue reduced, comfort (PCQ) was enhanced, and vital signs were normal, with a statistical significance in the experimental group compared with the control group in all measurements before and after music therapy.
76	Application category 2:	Mardaneh et al. (2021)	Iran	To evaluate the effects of Thai massage on comfort and symptoms	Female patients with cancer receiving	Bu-Ali Hospital	RCT with a two-group	Massage therapy is effective in significantly reducing symptoms among female cancer patients receiving chemotherapy.

	Thai massage			among female cancer patients receiving chemotherapy	chemotherapy: n=60		pretest-posttest design	
77	Application category 2: Incentive nursing intervention (INI), intervention s of physical context	Ren et al. (2021)	China	To observe the effect of application of incentive nursing intervention on recovery in burn patients undergoing vacuum sealing drainage	Burn patients using vacuum sealing drainage: n = 82 (41 vs 41)	One university affiliated hospital	RCT	Enhanced comfort (GCQ); Reduced pain; Increased satisfaction; Shorter wound healing time and hospital stay time (p<0.05).
78	Application category 2: Removing bed restriction	Zhao et al. (2021)	China	To investigate the safety of relieving bed restriction in hepatic arterial infusion chemotherapy and its effects on patient comfort	Patients with malignant liver tumour: n = 90 (60 vs 30)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): 88.78±6.705 vs 78.47±9.519; Improved self-care ability; Reduce pain; Improved poor defecation symptom (p<0.001).
79	Application category 2: Foot reflexology	Kapıkıran and Özkan (2021)	Turkey	To determine the effect of foot reflexology on the levels of pain, comfort and beta endorphins in patients receiving liver transplantation	Liver transplantation patients: n = 120 (60 vs 60)	One organ transplantation clinic of a liver transplantation institute	RCT	Enhanced comfort in both groups (Turkish version Perianesthesia Comfort Questionnaire): post-test vs pre-test (p<0.05); No significant differences in comfort between two groups after intervention (p>0.05); Decreased pain (p<0.001).
80	Application category 2: Therapeutic touch	Alp and Yucel (2021)	Turkey	To find out the effects of therapeutic touch on comfort and anxiety of nursing home residents	Old people: n = 60 (30 vs 30)	One nursing home	Quasi-experimental study	Enhanced comfort (Turkish version Perianesthesia Comfort Questionnaire (RCQ)); Decreased anxiety (p<0.05).
81	Application category 2: Enhanced recovery after surgery using the multidisciplinary team model	Zhang et al. (2021a)	China	To explore the application value of enhanced recovery after surgery with the multidisciplinary team model in laryngeal cancer surgery	Laryngeal cancer patients: n = 72 (38 vs 34)	One hospital unit of Otorhinolaryngology Head and Neck Surgery	RCT	Enhanced comfort Chinese version GCQ (Z=-4.370, p<0.001); Decreased anxiety (Z=-4.179, p<0.001); Shorter duration of hospitalization stay (p<0.05); Improved hungry and thirsty symptoms (p<0.001).
82	Application category 2: Modified	Hu et al. (2021)	China	To investigate the effect of a modified pressurized band of	Patients receiving endoscopic	One unit of Thyroid Surgery of a	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural and environmental dimensions;

	cervicothoracic compression band			neck and chest for patients with endoscopic radical thyroidectomy via breast areola approach	radical thyroidectomy via breast areola approach: n = 128 (64 vs 64)	university affiliated hospital		Increased well-being; Reduced incidence of symptoms (p<0.05).
83	Application category 2: Health education	Zhang et al. (2021b)	China	To investigate the effect of health education on the comfort level, pain degree, psychological state and degree of cancer-related fatigue of patients with primary hepatic carcinoma undergoing interventional therapy	Patients with primary hepatic carcinoma undergoing interventional therapy: n = 98 (49 vs 49)	One university affiliated hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Decreased anxiety and depression; Improved QoL; Increased satisfaction; Decrease incidence of symptoms: dysuria, numbness of the lower limbs, irritability and insomnia (p<0.05).
84	Application category 2: Shenque acupoint dialectical paste	Wen (2021)	China	To evaluate the effects of dialectical paste on Shenque acupoint in elderly patients with Qi deficiency constipation after hip fracture	Elderly patients with Qi deficiency constipation after hip fracture: n = 75 (37 vs 38)	One hospital unit of hip injury	RCT	Enhanced comfort (Chinese version GCQ); Increased treatment efficiency; Improved constipation symptom (p<0.05).
85	Application category 2: Compression gloves	Wang (2021)	China	To investigate the use of pressurized gloves on hand swelling, hand pain, hand hypoxia and comfort of patients after percutaneous radial coronary intervention	Patients with coronary heart disease: n = 176 (88 vs 88)	One cardiologic unit of a tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions (p>0.05); Reduced hand pain; Reduced finger swelling (p<0.05).
86	Application category 2: The optimized intraoperative cooperation	Shen et al. (2021)	China	To evaluate an optimized cooperation protocol during operation for treatment of lower extremity arteriosclerosis obliteran	Patients undergoing interventional therapy of lower extremity arteriosclerosis obliteran: n = 196 (98 vs 98)	One general hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased perioperative anxiety (p<0.05); No difference in perioperative depression (p>0.05); Decrease postoperative complications incidence: 6.2% vs 20.41% (p<0.05).
87	Application category 2: Acupoint paste, low-	Li and Jia (2021)	China	To evaluate the influence of acupoint application, low-frequency pulse	Gastric cancer patients: n = 158 (79 vs 79)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased anxiety and depression; Reduced

	frequency pulse electric therapy, clinical psychological guidance			electrotherapy combined with clinical psychological guidance on postoperative complications of patients with gastric cancer				pain; Decreased incidence of postoperative complications: 5.06% vs 15.19% (p<0.05).
88	Application category 2: 5S health education inventory management mode	Li (2020)	China	To develop, apply and evaluate a list of 5s health education management mode in perioperative patients with chronic sinusitis	Chronic sinusitis patients: n = 120 (60 vs 60)	One otolaryngology unit of a university affiliated hospital	Quasi-experimental study	Enhanced comfort (Chinese version adapted comfort questionnaire for postoperative patients with chronic sinusitis) (p<0.05); Decreased anxiety (p<0.001); Improved QoL (p<0.001); Increased satisfaction (p<0.001).
89	Application category 2: Enhanced recovery after surgery, interventions of physical context	Gao et al. (2020)	China	To evaluate the benefits of Enhanced Recovery After Surgery (ERAS) protocol compared to traditional care following endoscopic sinus surgery	Chronic rhinosinusitis patients: n = 55 (11 vs 11 vs 10 vs 10 vs 13)	One hospital	Quasi-experimental study	Patients in enhanced recovery after surgery (ERAS) group demonstrated significantly higher general comfort scores (GCQ) and lower anxiety scores compared to patients in traditional care with Flubiprofen Axetil or analgesia pump group and control groups (p<0.05); Reduced pain: at 6, 24, 48h after surgery (p<0.05); Decreased anxiety (p<0.05); Improved satisfaction (p<0.05).
90	Application category 2: Hand massage, therapeutic touch	Yücel et al. (2020)	Turkey	To investigate the effects of hand massage and therapeutic touch on comfort and anxiety in older people	Old patients: n = 30 (10 vs 10 vs 10)	One nursing home	RCT	Enhanced comfort (Turkish version GCQ); Decreased anxiety (p<0.05).
91	Application category 2: Early mobilization	Yang et al. (2020)	China	To explore improvements of postoperative mobilization protocol	Patients received vascularized free flap reconstruction for head and neck defect: n = 149 (38 vs 37 vs 38 vs 36)	One oral and 5 Maxillofacial surgical unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version adapted comfort questionnaire for perioperative patients with oral and maxillofacial surgery; Reduced pain; Increased sleep time; Shorter catheter removal time (tracheal incision, nasogastric tube, urethral catheter) (p<0.05).
92	Application category 2: Peripherally inserted	Wen and Huang (2020)	China	To explore the application effect of peripherally inserted central catheter (PICC)	Patients with gastrointestinal cancer receiving 5-FU pump	One university cancer centre	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort, psychospiritual context; Improved satisfaction; Increased health-related knowledge (p<0.05).

	central catheter (PICC) based on Orem self-care model			combined with Orem self-care model in patients with gastrointestinal cancer receiving 5-fluorouracil (5-FU) pump chemotherapy	chemotherapy: n = 88 (42 vs 46)			
93	Application category 2: PMR	Gökşin and Ayaz-Alkaya (2020)	Turkey	To evaluate the effect of progressive muscle relaxation (PMR) on the postpartum depression risk and general comfort levels in primiparas	Primipara women: n = 70 (35 vs 35)	One teaching and research hospital	Quasi-experimental study	Enhanced comfort (GCQ score): at the first, second, and third follow-ups; Decreased depression (p<0.05).
94	Application category 2: Preoperative education	Pazar and Iyigun (2020)	Turkey	To evaluate the effects of preoperative education on hemodynamic parameters, patient comfort and anxiety, and patient-ventilator synchrony provided to patients before cardiac surgery	Patients with mechanical ventilation receiving cardiac surgery: n = 200 (100 vs 100)	One cardiovascular surgical clinic of a teaching hospital	RCT	Enhanced Perianesthesia comfort (Turkish version Perianesthesia Comfort Questionnaire (PCQ)); Decreased anxiety; Improved patient ventilator synchrony levels (p<0.05).
95	Application category 2: Hydrogel cold media with mint	Yin et al. (2020)	China	To observe effects of the hydrogel containing mint as the cold medium for local and external treatment on pain, bleeding, swelling, fatigue and discomfort of patients with closed fracture of limbs	Patients with closed fractures of extremities: n = 195 (97 vs 98)	One Orthopaedics unit of a TCM hospital	RCT	Enhanced comfort (Chinese version GCQ); Reduced pain; Improved limb swelling (p<0.05).
96	Application category 2: Fast rehabilitation nursing	Zhang et al. (2020)	China	To explore the effects of rapid rehabilitation nursing care on postoperative comfort and complications in patients undergoing permanent cardiac pacemaker implantation	Patients receiving permanent cardiac pacemaker implantation: n = 86 (43 vs 43)	One hospital unit of Cardiology	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Increased satisfaction; Decreased incidence of back pain, difficulty urinating, difficulty defecating, urinary retention; Reduced costs and shortened duration of hospital stay (p<0.05).
97	Application category 2:	Chen (2020)	China	To evaluate the effects of ginger paste on	Patients receiving total	One hospital unit of orthopaedics	RCT	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological

	Ginger paste on umbilical			umbilical in patients eating early after knee replacement	knee arthmoplasty: n = 88 (44 vs 44)			dimensions; Decreased incidence of symptoms: nausea and vomiting (p<0.05).
98	Application category 2: TCM in rapid rehabilitation	Tang et al. (2020)	China	To investigate the application of TCM intervention in rapid rehabilitation after perianal abscess and anal fistula	Patients with perianal abscess or anal fistula: n = 79 (39 vs 40)	One hospital unit of anorectology	RCT	Enhanced comfort (Chinese version GCQ) at day 7 post surgery; Reduced pain in day 3, day 5, day 7 post surgery (p<0.05).
99	Application category 2: Foot reflexotherapy	Shen (2020)	China	To explore the effect of foot reflexotherapy on lactation and postpartum comfort of parturient after caesarean section	Parturients receiving caesarean section: n = 100 (50 vs 50)	One hospital unit of Obstetrics	RCT	Enhanced comfort (Chinese version GCQ) (p<0.001); Increased breastfeeding satisfaction (p<0.05); No significant difference in pain between two groups (p>0.05).
100	Application category 2: Orem nursing model	Zhang and Zhu (2019)	China	To observe the effects of Orem nursing mode intervention on preventing subcutaneous fat hyperplasia caused by insulin injection in patients with type 2 diabetes mellitus and its effect on patients' comfort and self-management behaviour	Patients with type 2 diabetes mellitus: n = 220 (110 vs 110)	One endocrinology unit	RCT	Enhanced comfort (Chinese version GCQ); Improved self-management: self-care behaviours (p<0.05).
101	Application category 2: Self-oral care based on Orem nursing theory	Fan (2019)	China	To explore the effect and methods of using Orem self-care theory in oral care and comfort of postoperative patients with gastric cancer	Patients with gastric cancer post surgery: n = 99 (50 vs 49)	One gastrointestinal surgical unit	RCT	Enhanced comfort (Chinese version GCQ); Improved self-care ability; Decreased oral symptoms: xerostomia, halitosis, parched lips and pharyngalgia (p<0.05)
102	Application category 2: Music therapy	Karadag et al. (2019)	Turkey	To examine the effect of a music listening intervention applied during radiation therapy on the anxiety and comfort level experienced by women	Breast cancer patients receiving radiation therapy: n = 60 (30 vs 30)	One radiation oncology outpatient clinic of a university hospital	RCT	Enhanced comfort (Turkish version RTCQ); Decreased anxiety and depression (p<0.001).

				with early-stage breast cancer.				
103	Application category 2: Fast track surgery	Ruan et al. (2019)	China	To explore the effectiveness of rapid rehabilitation surgery concept applied to tympanic membrane repair	Patients with chronic suppurative otitis media: n = 60 (30 vs 30)	One hospital unit of otolaryngology, head and neck surgery	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Reduced pain; Shortened duration of hospital stay (p<0.05); No changes in costs (p>0.05).
104	Application category 2: Quality control circle	Yang et al. (2019)	China	To explore the application and effectiveness of quality control circle activities in improving comfort of patients treated with abdominal thermal perfusion	Patients receiving hyperthermic intraperitoneal chemotherapy: n = 76 (38 vs 38)	One hospital unit of gynaecology	Quasi-experiment study	Increased comfort (Chinese version GCQ) from 62% to 81.75% (p<0.05).
105	Application category 2: Finger gymnastic	Xie (2019)	China	To probe into the impacts of finger gymnastic on the degree of hand swelling, pain in the wrist and palm, oxygen saturation, extent of anxiety, and comfort level after transradial coronary intervention	Patients with coronary heart disease: n = 90 (45 vs 45)	One hospital unit of Cardiology	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Reduced pain; Decreased swelling (p<0.05).
106	Application category 2: A bundle of measures named as comfort care	Wang and Wang (2019)	China	To explore the application value of comfort scale in patients with acute leukaemia chemotherapy	Patients with acute leukaemia receiving chemotherapy: n = 80 (40 vs 40)	One hospital unit of Hematologic Tumour	RCT	Enhanced comfort (Chinese version GCQ); Reduced pain; Increased satisfaction; Decreased complication incidence (p<0.05).
107	Application category 2: Acupoint paste with Fructus Evodiae	Wu et al. (2019)	China	To evaluate the effect of acupoint paste with Fructus Evodiae on the recovery of postoperative gastrointestinal function in patients undergoing ureteroscopic lithotripsy with the holmium: YAG laser	Patients undergoing ureteroscopy with holmium: n = 79 (37 vs 42)	One unit of Urology Surgery of a hospital integrating Traditional Chinese and Western Medicine	Quasi-experimental study	Enhanced postoperative comfort (Chinese version GCQ); Increased postoperative satisfaction; Shortened time to first flatus, time to first stool (p<0.05).

108	Application category 2: A new gastric tube fixation bag	Chen (2019)	China	To explore the effect of a new fixation bag for gastric tube in patients post surgery	Patients with gastric tube post surgery: n = 138 (69 vs 69)	One university affiliated cancer hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased incidence of pressure sore, incidence of gastric tube dislocation and displacement (p<0.05).
109	Application category 2: A bundle of measures named as comfort care	Wang (2019a)	China	To improve the comfort of patients with myocardial infarction after thrombolysis	Patients with myocardial infarction after thrombolysis: n = 60 (30 vs 30)	One hospital unit of cardiology	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions (p<0.05).
110	Application category 2: TCM fumigation combined with auricular point sticking pressure	Meng (2019)	China	To evaluate the effect of TCM fumigation combined with auricular acupoint paste pressure on pruritus symptoms, comfort level, life quality and satisfaction of patients with diabetic pruritus	Diabetic pruritus patients: n = 184 (60 vs 62 vs 62)	Two tertiary TCM hospitals	RCT	Enhanced comfort (Chinese version GCQ) (p<0.05); Improved QoL (p<0.05); No significant difference in adherence and satisfaction (p>0.05).
111	Application category 2: Podiatric nursing care	Wang (2019b)	China	To explore the influence of podiatric nursing intervention on comfort and occurrence of foot ulcers among patients with diabetes foot	Diabetic foot patients: n = 134	One tertiary hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Improved behaviours of foot self-examination and self-care (p<0.05).
112	Application category 2: Neiguan point (P6) acupressure	Ünülü and Kaya (2018)	Turkey	To determine how wristband acupressure at pericardium 6 (P6) Neiguan point affects nausea, vomiting, and comfort level in the postoperative period	Patients receiving gynaecologic surgery other than caesarean section: n = 97 (47 vs 50)	One obstetrics hospital	RCT	Enhanced comfort (Perianesthesia Comfort Questionnaire (PCQ)) (p<0.001); Improved nausea and vomiting (p<0.05); No significant differences in anxiety between two groups (p>0.05).
113	Application category 2: A bundle of measures named as comfort care	Ling et al. (2018)	China	To summarize factors affecting comfort of patients after heart valve surgery, to develop targeted comfort care measures, to improve comfort and satisfaction of	Patients after heart valve surgery: n = 101 (50 vs 51)	One hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Improved oral cleanliness; Shortened mechanical ventilation and duration of ICU stay (p<0.05).

				postoperative patients, and to shorten length of stay in ICU				
114	Application category 2: Doll intervention	Gong et al. (2018)	China	To evaluate the effect of doll intervention in psychiatric patients	Psychiatric female patients: n = 61 (30 vs 31)	One mental health unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): 87.07±9.58 vs 79.81±7.94 (p=0.002); Improved social interest, retardation and depression (p<0.05).
115	Application category 2: Perioperative nursing measures	Chen et al. (2018)	China	To analyse the effect of perioperative nursing care for patients receiving laparoscopic precise hepatectomy	Patients receiving laparoscopic precise hepatectomy: n = 110 (55 vs 55)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased QoL at 1 month, 3 months and 6 months post-surgery; Reduced pain at day 3, day 7 post surgery; Shortened duration of hospital stay; Improved preoperative symptoms: thirst and hungry (p<0.05).
116	Application category 2: Warming blanket machine	Ye et al. (2018)	China	To explore the effect of applying a warming blanket machine on postoperative chills in patients undergoing prostate transurethral resection	Patients scheduled for transurethral resection of prostate: n = 120 (60 vs 60)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased body temperature in 30 min, 1h and 2h after admission (p<0.05).
117	Application category 2: Three therapies of TCM, and a bundle of measures named as comfort care	Xun (2018)	China	To explore the effect of TCM Three therapies combined with comfort nursing care on the prognosis of AECOPD patients with invasive mechanical ventilation	Patients with acute exacerbation chronic obstructive pulmonary disease: n = 189 (94 vs 95)	One ICU of a tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Improved satisfaction; Shortened duration of hospital stay (p<0.05).
118	Application category 2: Comfort education brochure	Garlock et al. (2017)	USA	To determine if providing education on comfort and comfort options available in the hospital setting increases level of comfort during labour	Maternal women: n = 80 (39 vs 41)	One labour and delivery unit of a nonprofit hospital	Quasi-experimental study	No difference in pain and maternal comfort (Childbirth Comfort Questionnaire (CCQ)) (p>0.05); Increased use of comfort measures during labour (p=0.000); Increased probability of continuation with original plans for pain control during labour
119	Application category 2: Music therapy	Bilgiç and Acaroğlu (2017)	Turkey	To determine if listening to music affects patients suffering from the undesirable consequences of chemotherapy	Patients receiving chemotherapy: n = 70 (35 vs 35)	Outpatient chemotherapy of a public hospital	Quasi-experimental study	Enhanced comfort (Turkish version GCQ): total comfort and physical, psychospiritual, and sociocultural comfort (p<0.05); Improved chemotherapy symptoms: pain, tiredness, nausea, depression, anxiety, drowsiness, lack

								of appetite, not feeling well, and shortness of breath ($p<0.05$).
120	Application category 2: Face to face training, reflective massage	Tabiee et al. (2017b)	Iran	To determine the effect of comfort-cantered nursing care, including reflective massage and education, on the comfort of patients undergoing coronary artery bypass grafting	Patients with coronary artery bypass grafting (CABG): $n = 70$ (35 vs 35)	One heart centre of a hospital	RCT	Enhanced comfort in two groups (Hospice Comfort Questionnaire (HCQ)): before/ after intervention ($p<0.001$); No significant differences in comfort between two groups after intervention ($p>0.05$).
121	Application category 2: Cold gel pads	Senol and Aslan (2017)	Turkey	To determine the efficacy of cold gel pad application for relieving perineal pain and possibly increasing mothers' comfort after vaginal delivery	Mothers: $n = 200$ (50 vs 50 vs 50 vs 50)	One postpartum unit of hospital	RCT	Enhanced postpartum comfort (Turkish version Postpartum Comfort Scale (PCQ)); Reduced perineal pain; Decreased perineal temperature ($p<0.05$).
122	Application category 2: Back massage, patient and family education	Tabiee et al. (2017a)	Iran	To evaluate the effects of comfort-based interventions (back massage along with patient and family education) on the level of comfort among haemodialysis patients	Haemodialysis patients: $n = 40$ (20 vs 20)	One haemodialysis unit of hospital	RCT	Enhanced comfort before / after intervention (hospice comfort questionnaire (HCQ)): intervention group: environmental and psychospiritual dimensions; control group: psychospiritual dimension ($p<0.001$); Enhanced comfort between two groups: total comfort and environmental dimension ($p=0.02$).
123	Application category 2: Training	Gurcayir and Karabulut (2017)	Turkey	To define the effects of training to patients who are scheduled for hip prosthesis surgery on the level of postoperative comfort and activities in their daily lives	Patients receiving total or partial hip prosthesis surgery: $n = 60$ (30 vs 30)	Clinics (Number of clinics was not specified) of Orthopaedic and Traumatology of two teaching and research hospitals	Quasi-experiment study	Enhance comfort (Turkish version Perianesthesia Comfort Questionnaire (PCQ) and Turkish version GCQ) ($p<0.001$); No significant difference in preoperative daily activities ($p=0.171$); Improved daily activities one month after surgery ($p<0.001$).
124	Application category 2: Modified Trendelenburg position intervention	Wang (2017)	China	To observe the influence of modified surgical position on the comfort and position related complications in elderly patients with gynaecological laparoscopic surgery	Old patients undergoing gynaecological laparoscopic surgery: $n = 100$ (50 vs 50)	One operating room of a university affiliated hospital	RCT	Enhanced operation position comfort (Chinese version Operation Position Comfort Questionnaire): 73.18 ± 4.38 vs 67.80 ± 4.05 ; Reduced pain; Decreased incidence of limbs postoperative complications ($p<0.05$).

125	Application category 2: Early ambulation	Xu (2017)	China	To investigate the effect of early ambulation on patients after ablation, to provide a safe protocol that promote patients' comfort without increasing the risk of vascular complications	Patients receiving radiofrequency catheter ablation via femoral vein approach: n = 116 (39 vs 39 vs 38)	One cardiologic unit of a teaching hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Reduced pain; Decreased incidence of symptoms: urinary discomforts, numbness of limb, loss of appetite and severity of back pain (p<0.05).
126	Application category 2: Deep breathing exercises and acupoint sticking therapy	Ji (2017)	China	To explore the effects of deep breathing exercises combining with acupoint paste therapy on preventing constipation and improving general comfort and satisfaction for middle aged and elderly patients who are bedridden with hip fracture	Middle aged and elderly patients with hip fracture: n = 60 (30 vs 30)	One hospital trauma unit	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Improved constipation symptom (p<0.05).
127	Application category 2: Automatic shower systems	Ji et al. (2017)	China	To explore the effectiveness of automatic shower systems in the comfort care of elderly patients with disabilities	Elderly patients with disabilities: n = 80 (40 vs 40)	One unit of Geriatric model, one unit of stroke and one unit of orthopaedics of a hospital	RCT	Enhanced comfort (Chinese version GCQ): 79.85±4.61 vs 71.68±7.42; Decreased time of providing nursing intervention: 21.75±3.14 vs 39.08±5.47 (p<0.01).
128	Application category 2: Improved low semi-recumbent position intervention	Zhang and Liu (2016)	China	To investigate the safety and efficiency of improved low semi-recumbent in postoperative nursing care after replacement of total hip	Patients receiving total hip replacement: n = 100 (50 vs 50)	One hospital of TCM	RCT	Enhanced comfort (Chinese version GCQ): at 1h, 3h, 6h post-surgery (p<0.05); Insignificant change of pain; No significant difference in vomiting, pulmonary infection and length of hospital stays (p>0.05).
129	Application category 2: Fast track surgical nursing, acupressure	Li (2016)	China	To investigate the effects of perioperative nursing interventions based on track surgery fast theory for patients with hepatic bile duct stones hunger and thirst before operation	Patients receiving hepatectomy for hepatolithiasis: n = 75 (35 vs 35)	One hepatobiliary surgical unit	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Improved hungry and thirsty symptoms; Reduced pain: postoperative 72h and 1 week; Shorter cost and duration of hospital stay (p<0.05).

130	Application category 2: The optimized pressing time after transradial coronary intervention	Zheng et al. (2016)	China	To investigate the safety and superiority of the optimized pressing time after transradial coronary intervention	Patients receiving transradial coronary intervention: n = 238 (120 vs 118)	One cardiology unit of a teaching hospital	RCT	Enhanced comfort (Chinese version GCQ): at 2h, 4h post-surgery; Increased SpO ₂ at 24h post-surgery (p<0.05).
131	Application category 2: Washing formulas that clear Damp-Heat	Yang et al. (2016)	China	To observe the effectiveness of the external cleansing formula for postpartum lateral perineal incision rinsing	Maternal women: n = 350 (175 vs 175)	One unit of obstetric of a TCM hospital	RCT	Enhanced comfort (Chinese version GCQ) at 72h after delivery; Reduced pain: Day 1-3 after delivery (p<0.05).
132	Application category 2: A bundle of measures named as comfort care	Zuo and Long (2016)	China	To investigate the effects of comfort nursing care on the degree of comfort, negative emotions and compliance in haemodialysis patients with diabetic nephropathy	Haemodialysis patients with diabetic nephropathy: n = 60 (30 vs 30)	One blood purification unit of a hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased depression; Improved treatment adherence (p<0.05).
133	Application category 2: A bundle of measures named as comfort care	Shi et al. (2016)	China	To explore the effectiveness of comfort care in patients after electrodesiccation of the prostate	Postoperative patients with prostatic hyperplasia: n = 90 (45 vs 45)	One university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Decreased bladder spasm and incidence of urinary catheter blockage (p<0.05).
134	Application category 2: Position intervention	Ye et al. (2016)	China	To evaluate the effects of different degrees of semi reclining position on comfort and pain of patients after laparotomy in postanesthetic care unit (PACU)	Patients scheduled for laparotomy: n = 120 (30 vs 30 vs 30 vs 30)	One unit of Operation and Anaesthesiology and one unit of General Surgery, at a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): group II and group III than in the group I and group IV after 30° and 45° semi-recumbent position; Improved pain: group IV than group I, II, III after 15° and 60° semi-recumbent position (p<0.05).
135	Application category 2: Person-	Rose and Yates (2015)	Australia	To describe patients' responses to nursing care following the	Patients receiving a curative course of radiation	One radiotherapy unit in a major tertiary referral hospital	MMS	No significant difference in comfort (Radiation Therapy Comfort Questionnaire), anxiety, depression, QoL, satisfaction between two cohorts (p>0.05).

	cantered care model			implementation of a person-cantered model	therapy: n = 194 (86 vs 108)			
136	Application category 2: Position intervention	Liu and Wang (2015)	China	To study the effects of recumbent position changes on comfort and postoperative complications of patients after total hip replacement	Patients receiving total hip arthmoplasty: n = 200 (100 vs 100)	One hospital unit of arthrology	RCT	Enhanced comfort (Chinese version GCQ): Day 3 post surgery; No significant difference in joint dislocation complications (p>0.05).
137	Application category 2: Self-made three-end bandage	Deng et al. (2015)	China	To explore the effect of a self-made bandage with three ends on preventing complications related to the use of pacemaker pouch	Patients implanted with permanent pacemakers: n = 120 (60 vs 60)	One hospital unit of cardiology	RCT	Enhanced postoperative comfort (Chinese version GCQ); Decreased incidence of pouch hematoma and pouch rupture (p<0.05).
138	Application category 2: Pressurized with underwear model	Chen (2014)	China	To investigate the effect of a pressurized panties of inguinal region on patients' comfort	Patients receiving inguinal hernia surgery: n = 60 (30 vs 30)	One gastrointestinal surgical unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ) (p<0.05); Reduced waist and back pain (p<0.05); No significant difference in postoperative wound pain (p>0.05); Reduced occurrence of bleeding; Insignificant difference in swelling.
139	Application category 2: Adding glucose to dialysate	Zhang et al. (2014)	China	To explore the effects of dialysate with glucose on blood pressure and comfort of patients with nondiabetic chronic haemodialysis associated hypotension	Patients with non-diabetic chronic haemodialysis associated hypotension: n = 102 (Cross-referencing, 51 vs 51)	One hospital unit of Blood Purification	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Reduced heart rate (p<0.05).
140	Application category 2: Music therapy	Tian (2014)	China	To explore the influence of music therapy on comfort in patients with lower limb arterial occlusion disease stent implantation	Patients with limb arterial occlusion disease stent implantation: n = 60 (30 vs 30)	One hospital unit of Interventional Medicine	RCT	Enhanced comfort (Chinese version GCQ): Intervention group: low comfort: 3 cases; middle comfort: 21 cases; high comfort: 6 cases vs Control group: low comfort: 11cases; middle comfort: 17 cases; high comfort: 2 cases (p<0.05).
141	Application category 2: Two types of oral-nasal and	Lu (2014)	China	To evaluate the effects of two types of oral-nasal and oropharyngeal nursing measures in patients	Patients with gastric intubation after gastroscop	One digestive unit of hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions at 24h, 48h, 72h after gastric intubation (p<0.01); Reduced pain at 24h, 48h, 72h after

	oropharyngeal nursing measures			with gastric intubation after gastroscopy surgery	surgery: n = 78 (40 vs 38)			gastric intubation (p<0.05); Decreased symptoms incidence: dryness of mouth, nose and throat, difficulty in expelling sputum (p<0.05).
142	Application category 2: Dual-use air mattress for bed bathing and pressure sore prevention	Hu et al. (2014)	China	To explore the effect of a self-made dual-use air mattress for bed bathing and pressure sore prevention for elderly bedridden patients	Elderly bedridden patients: n = 82 (41 vs 41)	One tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction (p<0.05).
143	Application category 2: Fast-track surgery	Ni et al. (2013)	China	To compare the short-term outcomes of partial hepatectomy for liver cancer managed with fast-track surgery or with conventional surgery	Liver cancer patients: n = 160 (80 vs 80)	One hepatic surgical unit of a specialised hospital	RCT	Enhanced comfort (GCQ); Decreased complication, durations of nausea/vomiting, paralytic ileus and duration of hospital stay (p<0.05).
144	Application category 2: A bundle of measures named as comfort care	Tang et al. (2013)	China	To explore the efficacy of comfort nursing care for patients with severe hepatitis receiving artificial liver plasmapheresis	Patients with severe hepatitis: n = 80 (40 vs 40)	One hospital unit of Epidemiology	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased adverse effects incidence (p<0.05).
145	Application category 2: A bundle of measures named as comfort care	Zhong (2013)	China	To explore the effectiveness of comfort care in patients with auditory neuroma resected by posterior suboccipital sigmoid sinus approach	Patients with auditory neuroma: n = 80 (40 vs 40)	One hospital unit of Neurosurgery	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Increased satisfaction (p<0.05).
146	Application category 2: A bundle of measures named as comfort care	Xu et al. (2013)	China	To observe the effect of comfort nursing care on patients receiving ultrasound-guided transvaginal oocyte retrieval	Patients receiving ultrasound-guided transvaginal oocyte retrieval: n = 1469 (704 vs 765)	One hospital unit of Assisted Reproductive	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased anxiety; Increased satisfaction (p<0.05).

147	Application category 2: A bundle of measures named as comfort care	Yao et al. (2013)	China	To explore the application of comfort care on women during breast-feeding after C-section	Maternal women: n = 100 (50 vs 50)	One university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Increased lactation (p<0.05).
148	Application category 2: Dual-use air mattress for bed bathing and pressure sore prevention	Hu and Wang (2012)	China	To explore the effect of a dual-use medical cushion for bathing and preventing press sore	Bedridden patients: n = 66 (33 vs 33)	A tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction (p<0.01).
149	Application category 2: Music therapy	He and Lv (2010)	China	To explore the effect of music therapy on comfort of critically ill patients	Critically ill patients: n = 157 (78 vs 79)	One hospital CCU	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Reduced anxiety and depression (p<0.05).
150	Application category 2: Yoga	Chunthara pat et al. (2008)	Thailand	To determine the effects of using a yoga program during pregnancy on maternal comfort, labour pain and birth outcomes	Primigravid Thai women: n = 74 (37 vs 37)	Two public hospitals	RCT	Enhanced maternal comfort (maternal comfort questionnaire (MCQ)): at 2h after birth (p<0.05); Decreased pain (p<0.05); No significant differences in the first and fifth minute newborn Apgar scores, use of augmentation and pethidine (p>0.05).
151	Application category 2: A bundle of measures named as comfort care	Huang (2008)	China	To apply comfort care in needle removal of venipuncture	Hospitalized patients: n = 82	One hospital unit of general surgery	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Reduced pain (p<0.05).
152	Application category 2: Two different patient-controlled analgesia	Jia (2007)	China	To compare comfort of thoracic patients who use i.v. Patient-Controlled Analgesic (PCA) in 24h and 48h after surgery and comfort of thoracic patients who use epidural PCA in 24h and 48h after surgery	Postoperative thoracic patients: n = 74 (37 vs 37)	One hospital unit of Thoracic Surgery	RCT	Enhanced comfort (Chinese version GCQ): total comfort, physical dimension; Reduced pain (p<0.05); No significant difference in sedation effects (p>0.05).
153	Application category 3:	El-Shami (2023)	USA	To determine if a "Commit to Sit"	Outpatient surgeries: n=469	An urban, short-term, acute care	Service description	Nurses sitting with their patients for 3 to 5 minutes improved patient satisfaction

	"Commit to Sit" initiative			initiative, compared with usual practice, would affect patient satisfaction scores		hospital with 72 beds		regarding nurse-patient communication. The staff was also satisfied with the initiative.
154	Application category 3: Two theories with nursing practice	Ali (2022)	Pakistan	To compare the mentioned theorists, their impacts on the outcomes, and their relationships with the clinical scenario in their own approaches	One 65-year-old male with acute coronary syndrome	ICU	Case study	Through therapeutic communication and collaborative teamwork, the patient had an improved hospital stay and better overall outcomes. This practice aids me in addressing the issue which I was facing in my practice through theoretical knowledge.
155	Application category 3: PI education intervention and Plan-Do-Study-Act (PDSA) performance improvement model.	Seton et al. (2022)	USA	To develop and implement an interactive, evidence-based pressure injury (EB PI) education program and evaluate the impact on frontline hospice nursing staff knowledge and practice	Staff attended the EB PI education workshop: n=19	One 12-bed inpatient hospice unit in a tertiary care Veterans Affairs (VA) Medical Center	Quality improvement project with audit and interviews	Frontline hospice nursing staff knowledge and practice improved after attendance at our evidence-based PI education program. Staff comfort with job duties (NCQ) was stable, and satisfaction with the workshop education was high (100% agreement with trainer effectiveness).
156	Application category 3: Vascular closure devices	Wang et al. (2022)	China	To investigate the effect of vascular closure devices in thrombolytic therapy for inferior vena cava	patients with acute inferior vena cava thrombosis receiving thrombolytic therapy: n = 118 (56 vs 62)	One vascular surgical unit of a hospital	CCS	Higher improved comfort at 6h and 12h postoperatively (p<0.05).
157	Application category 3: TMC-Five-Element Music Therapy	Chen et al. (2022)	China	To observe the effect of five-element music therapy of Traditional Chinese Medicine (TCM) on delirium and negative emotions of ICU patients with severe pneumonia	Pneumonia patients: n = 86 (43 vs 43)	One hospital ICU	Cohort study	Lower comfort score in observational group than those in control group (p<0.05).
158	Application category 3: Self-selected pain management	Such and Denny (2021)	USA	To determine if comfort and satisfaction with the birth experience differed among women who used nitrous oxide	Women with spontaneous vaginal birth at term gestation: n = 84 (N ₂ O = 28	Maternity care units in three hospitals	CCS	No statistically significant differences in comfort and satisfaction with the birth experience between groups which highlights the need to present comprehensive pain

	<i>t method: N₂O and oxygen only, epidural analgesia</i>			(N ₂ O), epidural analgesia, or no analgesia during labour and birth	vs Epidural = 28 vs No analgesia = 28)			management options to women for labour and birth, such as N ₂ O.
159	Application category 3: Text messaging	Vestal (2021)	USA	To evaluate the effectiveness of text messaging initiative in increasing patient satisfaction with the communication between perioperative staff and patients' family members	Surgical patients: Inpatient: Preimplementation: n = 94, Postimplementation: n = 115; Outpatient: Preimplementation n = 139, Postimplementation: n = 172; Ambulatory: Preimplementation n = 89, Postimplementation: n = 97.	Surgical units (Number of units was not specified)	Quasi-experiment study	Increased satisfaction score.
160	Application category 3: Intravenous infusion ports at different sites	Yang et al. (2021)	China	To study the effect of left and right arm port and left and right chest wall port in chemotherapy of malignant tumour patients	Patients undergoing chemotherapy implanted in the infusion port: n = 135 (30 vs 33 vs 34 vs 38)	One teaching hospital	CCS	Comfort scores at different times after surgery: a difference (p<0.05); pain within 24 hours after port placement: no difference (p>0.05).
161	Application category 3: Interventions of physical, psychospiritual, sociocultural, and environmental context; Aromatherapy, music therapy,	Liu et al. (2021)	China	To summarize the early hospice care for a patient with intrahepatic cholangiocarcinoma	Hepatocellular Carcinoma patient: n = 1	One teaching hospital	Case study	A peaceful death and a supported bereavement without regret.

	<i>position change</i>							
162	Application category 3: <i>Totally implanted venous access port vs Peripherally inserted central venous catheter</i>	Wan (2020)	China	To compare peripherally inserted central venous catheters (PICC) and totally implanted venous access port (TIVAP) of administrated chemotherapy in gastric cancer patients	Gastric cancer patients received chemotherapy: n = 142 (72 vs 70)	Oncology surgical unit at a teaching hospital	CCS	Comfort score: TIVAP group>PICC group (p<0.05).
163	Application category 3: A yearlong education and mentoring program to train direct care clinicians	Lafond et al. (2019)	USA	To describe the application of a nursing theory framework for an evidence-based practice/quality improvement project that embedded paediatric primary palliative care into a hospital-based setting using unit-specific projects	Direct care clinicians: n=149	One hospital-based paediatric primary palliative care	Evidence-based practice/quality improvement project	The Comfort Theory guided integration of palliative care for children with serious illness and their families. Improvements in interdisciplinary collaboration in care were demonstrated through 21 unit-based projects, the development of triggers for specialty palliative care consults in several high-risk populations, and the development of institutional guidelines for end-of-life care.
164	Application category 3: <i>A training module for nurses</i>	Robinson (2019)	USA	To determine whether a training module for nurses would assist in the identification of signs and symptoms of mental health issues in Operation Enduring Freedom (OEF)/ Operation Iraqi Freedom (OIF) veterans	nurses and social workers: n = 17	Veterans affairs Medical Centres	Quasi-experiment study	Assisting nurses in identifying the signs and symptoms of mental health issues and educating the nurses on various interventions.
165	Application category 3: <i>Learning comfort</i>	Bice and Bramlett (2019)	USA	To explain and expand upon the role of teaching from a holistic comfort perspective	Undergraduate student and Graduate student: n = 2	University of North Carolina Wilmington	Case study	Meeting the student's needs in the psychospiritual and sociocultural domains by providing (a) reassurance, (b) positive reinforcement, (c) empathy, and (d) help with the development of a plan for course success. students experiencing decreased

								stress and increased relaxation. a met need (relief) and calming (ease) in the physical and environmental domains. Applicable and pertinent to nursing education, implications for nursing education, organizational policy, and nursing practice.
166	Application category 3: <i>Home-based nursing process care</i>	Puchi et al. (2018)	Chile	To apply Kolcaba's comfort theory in the development of the NP care for an older adult treated under Hospital at Home	Pneumonia patient: n = 1	One Hospital at Home	Case study	The theory's application was simple and could be used in the domiciliary context: an adequate assessment, a holistic view of the situation, the nursing care objectives, interventions, and evaluation of these interventions through both internal and external behaviours. The comfort theory can be applied in the context of hospital at home and facilitates the development of the NP and the provision of holistic, person-centred nursing care, incorporating family into the care plan.
167	Application category 3: <i>Two different tube feeding interventions</i>	Zhang (2018)	China	To provide guidance for postoperative comfort care of patients with gastric cancer	patients with gastric cancer: n = 144 (72 vs 72)	One general surgical unit at a cancer hospital	CCS	Higher improved comfort at day1, day7 postoperative (p<0.05).
168	Application category 3: <i>Interventions of physical, psychospiritual and sociocultural context; position change</i>	Awal khan (2017)	Pakistan	To explain the practical application of nominated theory to critical scenario of patient	Patient with post traumatic loss of limb: n = 1	Unspecified	Case study	Actively participating in care related activities, reduction in pain, mobilized with help, used to touch his residual limb confidently and looking relax, fast recovery and reduced hospital stay as health seeking behaviours and institutional integrity.
169	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural</i>	NG. (2017)	Singapore	To demonstrate the application of Kolcaba's comfort theory for the management of a patient with hepatocellular carcinoma	Patient with hepatocellular carcinoma patient: n = 1	One emergency room	Case Study	An increase in the management of pain with a reduction in pain, sodium level improved from 119 mmol/ L to 122 mmol/ L, his oxygen saturation improved from 95% to 96% via 3 litres on nasal prong and respiratory rate decreased from 25 to 20 breaths/ minute, decreased anxiety upon

	, and environmental context							discharge and could identify factors that promote anxiety and ways to modify his response to them, an understanding of role expectations in relation to his illness, and were able to identify and utilise support services to promote and support his role performance. No falls during hospitalization.
170	Application category 3: Telephone follow-up, Nursing consultation	Barros Ferreira et al. (2017)	Brazil	To evaluate telephone follow-up as a strategy to provide comfort	Malignant neoplasm patients: n = 21	One Chemotherapy Outpatient Clinic	MMS	The main signs and symptoms: nausea, weakness, vomiting, inappetence, alopecia and decreased food intake. Thematic categories: "Relief in the Physical Context", "Transcendence in the Psychospiritual and Physical Contexts" and "Tranquillity in the Physical, Psycho-Spiritual and Sociocultural Contexts "
171	Application category 3: Position change	Wang et al. (2017)	China	To explore the clinical efficacy of percutaneous kyphoplasty (PKP) via unilateral transverse process pedicle approach under lateral position for osteoporotic vertebral compression fracture (OVCF)	patients with osteoporotic vertebral compression fracture (OVCF): n = 36 (17 vs 19)	One spine surgical unit at a teaching hospital	CCS	Comfort score: A group was higher than B group (p<0.05).
172	Application category 3: Interventions of physical and psychospiritual context; massage	Liu et al. (2017)	China	To summarize the methods of comfort care for patients undergoing extracorporeal shock wave lithotripsy after coronary stenting	Patients undergoing extracorporeal shock wave lithotripsy for combined urinary tract stones after coronary stenting: n = 68	One urology unit at teaching hospital	Case study	Improved comfort and satisfaction.
173	Application category 3: An evidence-based practice application project	Tacy et al. (2017)	USA	To (1) establish support from staff nurses and providers for the application of the primary care EBP, (2) establish the use of the guidelines for the care	Patients with back pain: n=277	One freestanding ED affiliated with a large multicampus health system in an urban area	Service description	More application. More than 50% of patients were managed on the basis of the guidelines. Patient pain at discharge was reduced by 45%. Satisfaction with the overall pain management exceeding the benchmark. The recidivism rate for CLBP for the pilot period is

				of adult patients with CLBP, (3) increase awareness of available community resources for patients with CLBP, (4) increase patient knowledge on the evidence-based management of CLBP, and (5) increase satisfaction with pain management for adult patients with CLBP who use the ED.				3.91%, meeting the goal of less than 5%. More patients were referred directly to PT.
174	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context; aromatherapy, auricular acupuncture, healing touch, mindfulness, Tai chi</i>	Boudiab and Kolcaba (2015)	USA	To demonstrate how comfort theory has been applied throughout one Veterans Administration System to fulfill the goal of providing quality veteran-centric care	Nurses (number was not specified)	Midwestern Veterans Administration (VA) Health System	Service description	Most patients were found to experience increased comfort and a decrease in pain and anxiety. Few patients who did not experience a decrease in pain intensity have expressed a change in the quality of pain (pain became dull instead of sharp) or a deeper sense of calm and relaxation. Almost all patients report increased relaxation, and most report increased satisfaction with the options and modalities offered.
175	Application category 3: <i>Quiet time intervention</i>	Krinsky et al. (2014)	USA	To describe comfort theory as applied in care of cardiac patients and to demonstrate the use of a specific intervention called quiet time, derived from comfort theory, to improve cardiac patients' experiences of	patients with suspected acute coronary syndrome: n = 2	One chest pain unit in Emergency	Case study	James reported no further episodes of chest pain and was awaiting the results of pending blood work to rule out acute coronary syndrome. He was able to close his eyes and sleep. The Comfort Theory-based intervention of Quiet Time provided an improved standard of care and outcome for this patient as well as other cardiac patients. Explicit applications of comfort theory can benefit nursing practice.

				comfort across four domains of care				
176	Application category 3: Physical context, psychospiritual context, environmental context comfort intervention s; Aromatherapy, music therapy, massage	Su and Wu (2014)	China	To describe the application of comfort theory in care for an old woman with bleeding and short-term readmission	Elder woman: n = 1	One hospital unit	Case study	Increasing physical comfort and establishing good therapeutic interpersonal relationships, respecting the culture and beliefs of the case to change the outcome of the interaction between the individual and the environment, discussing with the caregiver about the care of the case and using the life review approach to strengthen the spiritual level; The case could integrate the tasks of the past developmental stage and relieve the mental discomfort and stress of the case.
177	Application category 3: <i>Music therapy, massage, position change</i>	Lin et al. (2014)	China	To report the nursing care for a patient with end-stage oral cancer, with a long history of self-injurious behaviours	Oral cancer patient: n = 1	One hospital	Case study	To assess the causes of respiratory failure and pain, and symptom management to alleviate the physical discomfort, providing a comfortable and warm environment to achieve peace and stability.
178	Application category 3: ICU family members' needs	Nolen and Warren (2014)	USA	To explore and identify the perceptions of family members' needs and to ascertain if those needs were perceived as met or unmet by the family members of patients housed in the intensive care units	Family members of intensive care patients: n=31 (survey), n= 4 (interview)	One hospital that has 3 ICUs with 3 separate waiting rooms: cardiac, medical, and surgical	MMS	Physical needs: "Comfortable zone"; Communication needs: "Not what we wanted it to be"; Family members visiting loved ones in the ICU had a wide range of emotions stemming from their current experiences. Participants had a positive experience and perceived their needs as being adequately met.
179	Application category 3: <i>A fast-track nursing education program.</i>	Miki et al. (2007)	USA	To discuss how aspects of a holistic comfort theory were adapted to create a taxonomic structure to apply its concepts to a fast-track nursing education program	First-year and senior students: n = 40	Idaho State University	Service description	Considerably less stressed and more relaxed in their affect. Further incorporation of the theory into the nursing curriculum is warranted.

180	Application category 3: <i>Institute-based comfort care practice; massage, guided relaxation</i>	Kolcaba et al. (2006)	USA	To describe how Kolcaba's Comfort Theory was used by a not-for-profit New England hospital to provide a coherent and consistent pattern for enhancing care and promoting professional practice, as well as to serve as a unifying framework for applying for Magnet Recognition Status	Staff nurses, nursing leaders, and the chief nursing officers	One hospital	Service description	The hospital expanded its service recovery program and launched several points-of-care surveys, each showing that patient satisfaction scores are rising. Hospital leaders are fully dedicated to supporting a comfort place. The institution's commitment to achieving a higher level of care for patients/families and improving the organizational culture became aligned around the focus of comfort. We continue to examine how we can incorporate Comfort Theory in all dimensions of practice.
181	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context; Massage healing touch, music therapy, position change</i>	Wilson and Kolcaba (2004)	USA	To define comfort, identify comfort interventions, and discuss the importance of a goal for enhanced comfort in patients in the perianesthesia setting	Colon cancer patient: n = 1	One perianesthesia setting	Service description	A foundational and holistic approach to comfort management, which is proactive, energized, intentional, and longed for by patients and families in all settings.
182	Application category 3: <i>A holistic model-Acute care for elders</i>	Panno et al. (2000)	USA	To help orthopaedic nurses develop an awareness of the Acute care for elders (ACE) model and techniques to achieve desired outcomes in hospitalized elders	Elders (Number of elders was not specified)	One acute care unit	Service description	The Theory of Comfort provides a holistic framework for nurses to assure that all comfort needs are addressed.
183	Application category 3: <i>Interventions of physical,</i>	Jones and Krysa (1998)	USA	To present nursing interventions for the care and comfort of individuals and families	A couple seeking preimplantation genetic testing: n = 2	One genetics and IVF clinic	Case study	Achieved ease, relief, and transcendence.

	<i>psychospiritual, sociocultural, and environmental context</i>			seeking Preimplantation Genetic Testing (PGT)				
184	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context; massage, music therapy, position change</i>	Vendlinski and Kolcaba (1997)	USA	To describe a theory of comfort care that offers definitions and a grid for the art of comfort care that are relevant to hospice nursing practice	Heart failure patient: n = 1	One hospice setting	Case study	Nurses can be comprehensive and consistent in assessing comfort and in designing interventions to enhance comfort. Assessment is an ongoing process. Interventions are modified according to the needs being identified and the feedback obtained. The framework for comfort care offers a theory-based foundation upon which to build patterned, individualized methods for the practice of comforting, the essence of hospice nursing.
185	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context</i>	Kolcaba and Fisher (1996)	USA	To present a framework for holistic comfort care, with strategies to guide the interdisciplinary team through the process of implementing comfort care designing comfort measures, deciding on specific medical management, and assisting the patient and family through the dying process	Metastatic melanoma patient and post-coronary artery bypass graft surgery patient: n = 2	One ICU	Case study	The practice will enable staff to empower patients and families to work through the dying process with optimal comfort.
186	Application category 3: <i>Unit comfort care practice; Art therapy,</i>	Kolcaba (1992)	USA	To develop a framework for gerontological nursing practice that includes comfort as a multidimensional construct for planning	Dementia patients: n = 15	One dementia unit at a teaching nursing home	Service description	The framework is dynamic, describing the essential phenomena in strong gerontological nursing care, explaining what to observe and what to do based on those observations, predicting successful outcomes of effective care, advocating for a

	<i>music therapy</i>			and evaluating nursing interventions				gerontological nursing approach that is warm, skilful, and holistic.
187	Application category 4	Egger-Rainer et al. (2022)	Austria	To find out which variables may be associated with comfort of patients in an epilepsy monitoring unit	Adult hospitalized patients: n = 267	Ten epilepsy monitoring units	CSS	Comfort score (Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ)): 181.32±25.95 (83-235 points). Factors of comfort: gender (women had a total comfort score 4.69 points higher than men), occupation (retired persons 28.2 points higher than high school students ≥18 years); Insignificant: age, marital status, and educational levels.
188	Application category 4	Xiong et al. (2022)	China	To analyse the comfort and factors in patients with enterocutaneous intestinal fistula on hospital admission and propose targeted nursing intervention countermeasures	Patients with enterocutaneous intestinal fistula: n = 193	One unit of gastrointestinal surgery of hospital	CSS	Comfort scores: Total score: 60.12±12.16; physiological: 11.40±3.89, physiological: 24.30±8.36, social: 13.70±3.63, environmental: 14.11±2.34. Factors of comfort: education level, family location, religious belief, skin condition, number of fistulas; Psychological comfort: educational level, family location, family income per capita, medical payment method, religious beliefs, skin condition, number of fistulas; Social comfort: age level, education level, family location, family income per capita, medical payment methods, religious beliefs, skin conditions; Environmental comfort: education level, skin condition.
189	Application category 4	Kim and Uhm (2022)	Korea	To identify the levels of comfort-care provided by trans-arterial chemoembolization (TACE) nurses and examine the discriminant factors thereof	Nurses caring for trans-arterial chemoembolization patients: n = 146	Online	Online survey	The proportions of nurses in comfort-care groups level: low: 18.5%, moderate: 60.3%, and high: 21.2%; Perception of post-embolization syndrome (PES) score: 4.75±1.73; Symptom interference score: 4.54±2.01; Factors of comfort: supportive care competence (0.864), caring attitude (0.685), perception of symptom interference (0.395), perception of PES (0.321), barriers to nausea/ vomiting management (-0.343).
190	Application category 4	Pequeno et al. (2022)	Brazil	To investigate the relationship between the sociodemographic characteristics, the single nucleotide variants, and the holistic	Family caregivers of head and neck cancer patients in palliative care: n = 95	One university Hospital	CSS	Comfort total score (HCQ-caregiver): data were not reported. Factors of comfort: employed family caregivers (p=0.04), those youngest (p=0.04), smokers (p=0.04), those with IL1R2 GA or AA genotypes (p=0.03).

				comfort of family caregivers of head and neck cancer patients in palliative care				
191	Application category 4	Zeng et al. (2022)	China	To investigate the sleep quality and its influencing factors of patients with nasal packing after endoscopic sinus surgery for chronic sinusitis	Patients with chronic sinusitis using nasal packing after endoscopic sinus surgery: n = 360	One unit of Otorhinolaryngology in a university affiliated hospital	CSS	Comfort score (Chinese version Modified Kolcaba Comfort Scale): 66.83±10.02, sociocultural dimension: 18.17±1.51(22-15), spiritual psychological dimension: 21.56±4.56(32-12), environmental dimension: 12.43±2.61(18-6), physiological dimension: 14.68±3.34(22-8). Comfort level: moderate: 234 cases (65.0%), low: 126 cases (35.0%). Sleep quality score: 34.21±5.36. Sleep problems: mild: 63 cases (17.5%), moderate: 221 cases (61.4%), severe: 63 cases (17.5%). Pain score: 5.34±1.54. Pain level: mild: 52 cases (14.4%), moderate: 226 cases (62.8%), severe: 82 cases (22.8%). Correlation: comfort and sleep quality (p<0.05).
192	Application category 4	Sayin Kasar et al. (2021)	Turkey	To determine the comfort level and influencing factors in caregivers of palliative care patients	Caregivers of palliative care patients: n = 102	One palliative care clinic of a teaching and research hospital	CSS	Comfort (Turkish version End-of-Life Comfort Scale (Caregiver/ Family)): 109.6±12.49, from 86-146. Factors of comfort: the patient's performance status, the caregivers' age, their economic situation, the length of the caregiving period and receiving help in care (social support) (p<0.05); Higher: 65 years of age, incomes were greater than their expenditures, care for the patient for 12 hours a day, and received social support while providing care; Insignificant: patients' ESAS symptoms. Symptom score: appetite: 5.4 , drowsiness: 5.2 , fatigue: 4.9, pain: 3.7.
193	Application category 4	Sarıtaş and Özdemir (2021)	Turkey	To determine how compliance with immunosuppressive therapy affected the well-being of liver transplant patients	Patients undergoing liver transplant surgery: n = 103	One liver transplant unit of a teaching hospital	CSS	Comfort score (GCS): data were not reported. Factors of comfort: adherence status (r=0.543, p<0.001) (The patients who adhered to immunosuppressive therapy experienced higher levels of comfort).

194	Application category 4	Demir and Bulbuloglu (2021)	Turkey	To investigate the effect of immunosuppression therapy on activities of daily living and comfort level after liver transplantation	Liver transplant patients: n = 148	One liver transplant unit of a teaching hospital	CSS	Moderate comfort level (Turkish version GCQ): 3.65±0.26 (3.07-4.29). Factors of comfort: independent level in ADL, length of hospital stay and the duration of immunosuppressive drug use (p=0.041, p=0.026).
195	Application category 4	Gong et al. (2021)	China	To understand the comfort level of patients during nasal packing and analyse its influencing factors	Patients with nasal packing: n = 130	One unit of Otorhinolaryngology, Head and Neck Surgery at four tertiary hospitals	CSS	Comfort score (Chinese version Nasal Packing Patient Comfort Questionnaire): 51.73±11.04, item: 2.75±0.92, physical dimension: 2.34±0.65, environmental dimension: 2.78±0.81, psychospiritual dimension: 3.45±0.93, sociocultural dimension: 3.63±0.73. Factors of comfort: gender, per capita monthly income, packing materials, accompanying with family members (p<0.05); Insignificant: age and type of medical insurance.
196	Application category 4	Yu et al. (2021)	China	To explore the impact of trait versus state loneliness, social support and activity of daily living on the comfort of elderly people in nursing homes	Old patients: n = 347	Seven nursing homes	CSS	Comfort score (Chinese version GCQ): 83.52±7.39. Factors of comfort: emotional trait loneliness: -0.849, state loneliness: -0.470; degree of trait loneliness: -0.469; social support: 0.303; ADL: indirectly through state loneliness: -0.042; traits of social loneliness; different religious beliefs, whether they have children, monthly income, marital status, education level, whether they have received chronic disease education, satisfaction with institutions, frequency of leisure activities.
197	Application category 4	Jia (2021)	China	To understand the sleep quality and comfort in patients undergoing maintenance haemodialysis	Patients with end stage renal disease undergoing maintenance haemodialysis: n = 128	One blood purification room of nephrology unit at a tertiary hospital	CSS	Comfort score (Chinese version Maintenance Haemodialysis Patient Comfort Scale): 66.90±9.86. Pittsburgh Sleep Quality Index (PSQI) score: 11.91±4.40; Sleep disorders: 80.5% of patients. Factors of comfort: PSQI with total comfort and various dimensions (r=-0.621 to -0.177); Factors of sleep quality: religious beliefs, occupational status, economic level, comfort level.
198	Application category 4	Yilmaz and Çankaya (2020)	Turkey	To determine the factors that affect the birth worry of primipara	Primiparous women: n = 240	One Maternity and Children Hospital	CSS	Comfort score (Turkish version PPCQ): 122.2±16. Factors of comfort: labour worry in caesarean delivery women, concerns or fears about labour or delivery, not emotionally supported by their family during

								pregnancy, experiences of health problems during delivery, a vaginal delivery vs a caesarean section. Positive significant correlation between OWLS scores and PPCQ scores.
199	Application category 4	Fowler et al. (2020)	USA	To explore patient perceptions of nurse-driven comfort interventions and satisfaction with care during the perioperative phase of surgical care	Ambulatory surgical patients: n = 48	One surgical unit of a nationally recognized, not-for-profit, comprehensive community non-Magnet hospital	Online survey	High comfort level: the highest score of perceived most nursing interventions: connecting with the patient as a person; The lowest percentage of yes responses to comfort: setting a collaborative pain goal (54%), and the highest percent of yes responses: the inclusion of family or caregivers (92%); Factors of comfort: encouragement of use of measures to prevent discomfort (p=0.00), providing a comfortable environment; High satisfaction score: 4.7±0.71; Thirty-eight (79%) extremely satisfied; Factors of satisfaction: (a) medications/ treatments, (b) emotional support, (c) education or teaching, (d) listening, (e) connecting as a person (r: 0.62-0.85, p=0.00).
200	Application category 4	Marques and Alves (2020)	Brazil	To identify clusters of nursing diagnoses and repercussions for patient comfort and survival	66 patients with cancer at EoL: n = 66	One palliative oncology care unit	Cohort study	Three diagnostic groups and 23 nurse diagnoses were used: First and most prevalent diagnosis cluster related to less comfort: intestinal tract disorders and sleep; Second: neuropsychological characteristics, fatigue associated with lower survival; Third: functionality and perception.
201	Application category 4	Cardoso et al. (2020)	Brazil	To identify nursing diagnoses in hospitalized elderly patients in an ICU, and to categorize diagnoses according to the dimensions of comfort in Kolcaba's theory	Elderly patients: n = 103	One hospital ICU	CSS	In 26 titles and six domains of NANDA-I Taxonomy: Physical comfort dimension: 80.77% (Chronic confusion, Excess fluid volume, Impaired swallowing, Risk for electrolyte imbalance, Risk for imbalanced fluid volume, Risk for unstable blood glucose level, Dysfunctional gastrointestinal motility, Impaired gas exchange, Constipation, Impaired urinary elimination, Dysfunctional gastrointestinal motility, Hyperthermia, Risk for vascular trauma, Risk for aspiration, Risk for shock, Risk for bleeding, Impaired skin integrity, Decreased cardiac output, Risk for

								ineffective cerebral tissue perfusion, Impaired spontaneous ventilation, Ineffective breathing pattern); Sociocultural comfort dimension: 11.54% (Readiness for enhanced self-care, Impaired physical mobility, Impaired verbal communication); Environmental comfort dimension: 3.58% (Risk for infection); Psychospiritual comfort dimension: 3.58% (Anxiety).
202	Application category 4	Zeynep et al. (2020)	Istanbul	To determine the comfort levels of patients regarding the pre-operative period in operating room	Patients undergoing elective surgery: n = 130	One general surgery clinic of a university hospital	CSS	Comfort score (Perianesthesia Comfort Scale): 4.85±0.65. Factors of comfort: experience of surgery, being calm while waiting in the operating room in the preoperative period (p<0.05).
203	Application category 4	Türkmen et al. (2020)	Turkey	To examine the effect of labour comfort on traumatic childbirth perception, posttraumatic stress disorder (PTSD), and breastfeeding after the fourth postpartum week	Pregnant women: n = 102	One delivery room	Longitudinal study	Comfort (Childbirth Comfort Questionnaire (CCQ)): data were not reported. Significant relationship: physical labour comfort (p=0.003), transcendence (p=0.023), family history of labour difficulty (p=0.027), feelings about birth before labour begins (p=0.005) and traumatic childbirth perceptions 4 weeks after childbirth; physical labour comfort (p=0.001), psychospiritual labour comfort (p=0.006), transcendence (p=0.001), primiparity (p=0.009), place of residence (p=0.044), and traumatic childbirth perceptions (p<0.001) and PTSD 4 weeks after childbirth. Consequences of comfort: physical labour comfort affected traumatic childbirth perceptions 3 and 6 months after childbirth (p<0.05), affected breastfeeding self-efficacy 4 weeks and 3 months after childbirth (p<0.05).
204	Application category 4	Zhang (2020)	China	To analyse the symptom clusters and comfort of patients with nasopharyngeal carcinoma	Nasopharyngeal Carcinoma patients receiving radiotherapy: n = 153	Two tertiary hospitals	Longitudinal study	Comfort score (Chinese version Radiotherapy Comfort Questionnaire (RTCQ)): from 85.84±8.30 to 104.44±9.71. Factors of comfort: radiotherapy progress-the scores of overall comfort and comfort in all dimensions of nasopharyngeal Carcinoma patients at different time points were statistically significant (F= 9.152-260.826, p<0.05); symptom clusters (r=-0.194--0.892,

								p<0.05) , physiological comfort during T1-T6 (r=-0.214--0.883, p<0.05); fatigue sleep emotion symptom cluster and the oral mucosa symptom cluster with psychological comfort and environmental comfort during T1-T6 (r=-0.249--0.794, p<0.05); oral mucosa symptom cluster, dysphagia symptom cluster and social dimension comfort during T5-T6 (r=0.163-0.184, p<0.05).
205	Application category 4	Pang et al. (2020)	China	To investigate comfort level of caesarean women and explore its influencing factors	Caesarean women: n = 154	One maternity ward	CSS	Medium to high level of comfort (Chinese version GCQ): 79.70±7.82. Factors of comfort: per capita monthly income, whether analgesia before delivery. Moderate comfort level (Chinese version GCQ): 85.43±11.14, lowest item score in environmental dimension comfort: (2.67±0.48).
206	Application category 4	Kizilkaya and Gul (2019)	Turkey	To investigate whether fasting time and anxiety parameters affect pregnant women's preoperative comfort levels	Pregnant women receiving elective caesarean section: n = 110	One Obstetrics and Gynaecology Hospital	CSS	Moderate comfort level (GCQ): 129.82±12.66; State Trait Anxiety Inventory (STAI) subscale scores: 46.72±9.37, 43.65±7.95. Fasting time: 13.16±2.38 hours for solid food, 10.57±2.91 hours for liquid food. Factors of comfort: STAI scores, total fasting duration for solids; Insignificant: total fasting duration for liquids; Factors of STAI score: thirst sensation and mouth dryness.
207	Application category 4	Li et al. (2019)	China	To identify the correlation between comfort related to the position during anal surgery and the preoperative frailty of elderly patient	Elderly patients receiving anal surgery: n = 174	One operating room of a general hospital	CSS	Comfort score (Chinese version Surgical Posture Comfort Questionnaire): 61.56±11.34. FRail Frailty Scale score: 1.37±1.06, 59 (33.9%) without frailty, 71 (40.8%) with pre-frailty, 44 cases (25.3%) with frailty. Negative significant correlation: comfort dimension and total comfort with frailty scale scores (r=-0.508, -0.347, -0.206, -0.263, -0.438, p<0.05); Factors of comfort: age, body mass index, exercise, preoperative comorbidities, preoperative weakness (p<0.05).
208	Application category 4	Estridge et al. (2018)	USA	To determine a potential relationship between comfort and fluid retention (a proxy	Patients receiving haemodialysis: n = 51	Two for-profit dialysis clinics	CSS	Comfort (Haemodialysis Questionnaire): 203.25±26.09, from 146-258 (inconsistent maximum comfort score reported in text and table indicating a low quality of report).

				for adherence) in adults with end stage renal disease receiving haemodialysis				Factors of comfort: insignificant association: adherence to fluid restrictions, sex, whites and non-whites. Awareness of comfort as a consideration for adherence to prescribed treatment regimens may improve treatment adherence.
209	Application category 4	Gayoso et al. (2018)	Brazil	To verify the association between the level of comfort of the caregiver and sociodemographic variables related to caregiving, and the patient's functional status and symptoms	Informal caregivers of cancer patients in palliative care: n = 50	One outpatient clinic and home care of a tertiary hospital	CSS	Comfort (Holistic Comfort Questionnaire–caregiver (HCQ-caregiver)): 4.52 points. Factors of comfort: better functional status of the patients, the Palliative Performance Scale(PPS) scores and the HCQ-caregiver (p=0.009); older caregivers who received helped in the care activities (p=0.018), physical comfort of caregiver and PPS (p=0.006), psycho-spiritual comfort and caregiver's age (p=0.012), psychospiritual comfort and patient tiredness (p=0.022); Caregivers classified the functional status of the patients as 50 to 70% in 25 cases (50%), 80 to 100% in 14 cases (28%), 0 to 40% in 11 cases (22%), with a mean: 60% (20-100%).
210	Application category 4	Mosleh (2018)	Jordan	To evaluate the impact of a cancer diagnosis on Jordanian cancer patients' health-related QoL and its relationship with social support and emotional status	Patients with cancer: n = 226	Outpatient clinics of a tertiary hospital (Number of clinics was not specified)	CSS	Comfort score (HCQ): 4.25±0.055; Unsatisfactory QoL; Fatigue; Factors of comfort: high educational level, less rehospitalization, high anxiety and depression scores; Factors of QoL: social support, hospitalization readmission, being a non-smoker, anxiety and depression; Factors of functioning scores and symptom complaints: social support, anxiety and depression.
211	Application category 4	Nural and Alkan (2018)	Turkey	To determine the factors affecting comfort and the comfort levels of patients hospitalized in the CCU	Patients in the CCU for at least 2 days: n = 119	One CCU of a state hospital	CSS	Comfort score (Turkish version GCQ): 3.22±0.33; Factors of comfort: age (r=-0.19, p=0.03), communication by nurses and physicians (p<0.05), sufficient communication by physicians, education level, age, and having a companion, having visitors(p<0.05); Insignificant: gender, place of residence, family structure, the information level of patients and families, being informed about procedures, and

								conditions causing concern in the intensive care.
212	Application category 4	Ramirez (2018)	USA	To assess therapists' comfort level in providing psychotherapy in a home-based setting and how therapeutic competency, therapeutic relationship, and advanced therapeutic training related to the comfort level	Psychotherapists who provided: n = 76	One non-profit home-based psychotherapy agency	CSS	Comfort score (Therapist Comfort Scale): 28.23±18.50. Positive relationship between: therapeutic relationship and comfort level, therapeutic training and comfort level, advanced therapeutic training and comfort level.
213	Application category 4	Ding et al. (2018)	China	To understand the comfort and its influencing factors of patients within 24 hours after gynaecological surgery	Patients receiving gynaecological surgery: n = 98	One unit of Gynaecology in a municipal hospital	Longitudinal study	Moderate comfort (Chinese version GCQ): 6 hours after surgery total: 82.59±0.75, physical dimension: 13.41±0.63, environmental dimension: 21.21±1.00, psychospiritual dimension: 29.44±0.49, sociocultural dimension: 19.29±0.44; 24 hours after surgery total: 81.21±1.42, physical dimension: 13.95±0.75, environmental dimension: 19.54±0.80, psychospiritual dimension: 28.75±0.51, sociocultural dimension: 18.47±0.62. comfort level at 24 hours after gynaecological surgery. Highest demand for physical comfort: at 6 hours after surgery. Highest demand for social and cultural comfort: at 24 hours after surgery. Factors of comfort: age, education, surgical methods, surgical procedures.
214	Application category 4	Zhu et al. (2018)	China	To explore usefulness of the Comfort Scale in accelerated rehabilitation surgical care	Patients with gastric cancer receiving laparoscopic accelerated recovery surgery: n = 60	One unit of Gastrointestinal Surgery of a medical college hospital	Longitudinal study	Comfort (Chinese version Modified general comfort questionnaire): 1 day after surgery: total: 66.39±15.08, physical dimension: 11.85±3.42, psychological dimension: 17.21±3.52, spiritual dimension: 18.32±4.63, sociocultural and environmental dimension: 19.01±3.51; 7 day after surgery: total: 70.06±14.45, physical dimension: 13.85±4.15, psychological dimension: 18.41±3.96, spiritual dimension: 19.23±4.43,

								sociocultural and environmental dimension: 19.11±1.91; Factors of comfort: physiological dimensions: postoperative pain, time post operation: higher comfort at 7 days than those at 1 day after surgery, higher satisfaction at 7 days (58 (96.7%)) vs those at 1 day after surgery(42 (70%)), indwelling catheter causing fear and then affecting the time and frequency of patients' early ambulation, postoperative dry mouth and thirst, economic factors with psychological pressure.
215	Application category 4	Shang and Fang (2018)	China	To investigate the comfort level and its influencing factors of patients after coronary artery intervention	Patients receiving percutaneous coronary intervention: n = 87	One unit of Cardiology of a tertiary hospital	CSS	Moderate comfort score (Chinese version GCQ): 73.64±7.899, physiological dimension: 12.90±2.146, social and cultural dimension: 17.06±1.985, environmental dimension: 17.29±2.623, psychological dimension: 26.40±3.472. Factors of comfort: physical dimension and overall comfort: residence, education level and payment method (p<0.05)-living in cities higher than living in rural areas, senior high school and technical secondary school higher than junior college and above, junior high school and below.
216	Application category 4	González Gómez et al. (2017)	Colombia	To determine the association between the sociodemographic factors and the dimensions of comfort present in patients hospitalized in the intensive and intermediate care units	Patients hospitalized in the intensive and intermediate care units: n = 160	Intensive and intermediate care units of four institutions (Number of units was not specified)	CSS	Comfort score (GCQ): data not reported. Type of comfort: transcendence in social, psychospiritual, and physical dimensions, tranquillity in environmental dimension; Factors of comfort: being from a socioeconomic level above two and having secondary or higher education.
217	Application category 4	Song et al. (2017)	China	To analyse the related influencing factors of comfort degree after permanent pacemaker implantation for elderly patients to provide evidence for improving patients' comfort degree	Elderly patients after permanent dual chamber pacemaker implantation: n = 80	One tertiary hospital	Longitudinal study	Comfort (Chinese version GCQ): 70.16±8.06 (53-92). Self-Rating Anxiety Scale(SAS) score: 32-78, 52.45±9.20, 27 normal cases, 53 with anxiety; Numeric Rating Scale (NRS) score: incision before sandbag compression: 0-4, 2.44±0.81, no pain: 1 case, pain: 79 cases; incision after sandbag compression: 1-5, 3.26±0.87, no pain: 0 case, pain: 80 cases; low back pain: 52 cases, no pain: 28 cases.

								Factors of comfort: anxiety, incision pain before and after sandbag compression, incidence of low back pain ($p<0.05$).
218	Application category 4	Li et al. (2017a)	China	To analyse the factors for the comfort of otolaryngology patients	Hospitalised patients: $n = 82$	One hospital unit of Otolaryngology Head and Neck Surgery	CSS	High comfort level (Chinese version GCQ) in social-culture dimension and low in mental, physical and environmental dimension. Number of people whose dimension scores are lower than Xi-Si and Xi-2Si: 12, 20, 11, 10 and 3, 0, 4, 3.
219	Application category 4	Li et al. (2017b)	China	To investigate the comfort of patients after haemodialysis temporary central venous catheterization	Patients on haemodialysis using temporary central venous catheterization: $n = 74$	One kidney centre	CSS	Low comfort level (Chinese version GCQ): 61.73 ± 14.49 , lowest in physiological dimension, highest in environmental dimension. Factors of comfort: different income, medical insurance reimbursement methods, catheterization sites ($p<0.05$); Factors of psychological comfort: different ages, marital status ($p<0.05$), lower in unmarried, widowed and separated patients than married patients, higher in patients with neck catheterization than femoral static vein catheterization.
220	Application category 4	Wen et al. (2017)	China	To observe the effect of comfort levels in patients during long-term video electroencephalographic (VEEG) monitoring on the monitoring effect	Patients with consecutive epilepsy: $n = 168$	One unit of Neurosurgery of a hospital	Longitudinal study	Comfort score (video - electroencephalogram (VEEG) Monitoring Patient Comfort Scale) before VEEG: physiological: 2.87 ± 1.04 , psychological: 2.63 ± 0.98 , social: 2.40 ± 1.25 , environmental: 2.84 ± 0.90 , overall comfort: 2.69 ± 1.07 . Comfort score after VEEG: physiological: 2.06 ± 1.38 , psychological: 1.66 ± 1.40 , social: 1.89 ± 0.57 , environmental: 1.83 ± 1.24 , overall comfort: 1.86 ± 1.19 . Factors of comfort: 2 groups ($t=4.011-6.353$, $p<0.05$); blinks or eye movement artifacts, physical artifacts, chewing or swallowing artifacts, electrocardiogram artifacts ($r=-0.843-0.585$, all $p<0.05$); Insignificant: sweating, skin artifacts, electrocardiogram artifact ($r=-0.204-0.158$, $p>0.05$).
221	Application category 4	Pehlivan et al. (2016)	Turkey	To examine the relationship between comfort and quality of life in breast cancer	Patients with breast cancer undergoing	One Radiation Oncology Unit of a cancer hospital	Longitudinal study	Comfort (Radiation Therapy Comfort Questionnaire Turkish version (RTCQ)): 3.75 ± 0.61 (before radiation therapy), 3.75 ± 0.71 (after radiation therapy).

				patients undergoing radiation therapy	radiation therapy: n = 61			Factors of comfort: significant association: comfort and functional and general QoL, comfort and the symptom QoL (p<0.01), pain and symptom QoL (p<0.05); insignificant association: QoL (p>0.05), educational status, marital status, place of residence, duration of disease, stage of disease, previous treatments applied, type of surgery, being informed about radiation therapy and experiencing problems during the treatment period and comfort and QoL (p>0.05).
222	Application category 4	Meneguín et al. (2016)	Brazil	To analyse the comfort of formal and informal caregivers to palliative care patients, identifying the variables associated with the difficulties for home care	Caregivers of palliative care patients: n = 50	One primary health care network of an interior city	CSS	Comfort score (GCQ): 235 points (202-263); Factors of comfort: caregiver's report of some difficulty in care delivery to palliative care patients (OR=0.90; 95.0% CI 0.81-1.01); Insignificant: female participants with a partner, practicing some religion, illiterate/unfinished primary education.
223	Application category 4	Richards (2016)	USA	To evaluate reasons for the low use of hospice care among the terminally diagnosed members of this population, between the ages of 18 and 64	Military patients with terminal illness: n = 32	One military ambulatory care setting located in the North-eastern portion	CSS	No differences between groups in: knowledge of hospice care, attitudes and beliefs about hospice, distrust in the health care system, advanced care plans based on race.
224	Application category 4	Hansen et al. (2015)	USA	To explore family relationships at the EoL and investigate associations among perceived comfort, relatedness states, and life closure	Hospice patients: n = 30	One large not-for-profit hospice	MMS	Hospice Comfort Questionnaire (HCQ): Cronbach's alpha: 0.86, Concurrent validity: Verbal Rating Comfort Questionnaire and HCQ: r=0.66, p=<0.001. Factors of comfort: life closure (r=0.69, p=0.001), residing in an inpatient setting vs in the home setting.
225	Application category 4	Rondinelli et al. (2015)	USA	To examine the factors related to the nurse's comfort in fulfilling interventions during the perinatal loss, and to examine the comments related to barriers and facilitators to nurses'	Nurses who cared for parents and families during perinatal loss: n = 172	One large integrated healthcare system	Online survey	Comfort score (a revised perinatal bereavement scale): 56.49±22.76; Comfort scale reliability: Cronbach's alpha=0.98. Factors of comfort: experience, number of perinatal loss cases cared for (r=0.374, p<0.001); Top five bereavement role components: discussing baby's gender, contacting social services, allowing time with the baby during the hospital stay, contacting

				comfort reported in open-ended questions				spiritual advisor, and holding their baby (scores from 3.16 to 3.06 (range=0-4)); Five lowest bereavement role components: retrieving baby from the morgue, discussing autopsy and genetic testing with parents, discussing funeral options, the grief process, discussing with parents the option to bathe and dress their baby (scores from 1.81 to 2.6.). Barriers or Facilitators to Comfort: Structure: organizational support: education on bereavement care, time and space with and for the grieving family, Knowing what to say, having supplies and materials to provide care; Process: experiential knowing, personal knowing, professional knowing, acknowledgment of diverse cultural and spiritual beliefs, not being alone when completing bereavement care. Outcome: comfort, always difficult and uncomfortable, I am comfortable.
226	Application category 4	Twohig et al. (2015)	USA	To create a survey to capture the family experience in the surgical intensive care unit (SICU) based on Kolcaba's "Enhanced Comfort Theory"	ICU patients and their families: n = 331	One 14-bed closed surgical ICU in a 1,171-bed tertiary hospital	Online survey	High satisfaction: high in quality of care provided to patients, communication and availability of nurses and doctors, explanations from staff, inclusion in decision making, the needs of patients being met, quality of care provided to patients, cleanliness of the unit. Length of stay: 13 days (range 1-91), 47% (17/ 36) 7 days or greater. "What is one thing you would change about the SICU?" responses: lack of responsiveness to beeping machines, patient's access to the call bell and food, and the need for a liver transplant protocol for donors and recipients, the need for more patient mobility and wound care, ill-maintained family facilities (the waiting room and bathroom), more timely meetings for families , doctors and family involvement in rounds, comment on the negative attitude of staff. "What is the best thing about the SICU?" responses: Positive attitude of staff

								toward patients (n = 18): caring, compassion, dedication and commitment to patients of nurses, doctors and other staff; Positive comments on patient care (n = 9): high quality of care, attentiveness, close monitoring and cleanliness of patient; Information and communication (n = 3): staff being available for and answering questions, and the quality and regularity of updates received. Other: cleanliness of the unit (n = 3), support in the form of 'special accommodation' or attitude that made 'a stressful time easier' for families (n =2).
227	Application category 4	Karabulut et al. (2015)	Turkey	To determine patient satisfaction with pain management and comfort levels after undergoing open heart surgery	Patients who had undergone open heart surgery: n = 52	One cardiovascular surgery clinic of a Region Training-Research hospital	Longitudinal study	Comfort level (GCQ) at discharge: 3.16±0.2. Pain score: 7.07±2.6 immediately after surgery, 6.71±2.7 at first post-operative ambulation, 6.32±2.4 at 24 hours before discharge, one patient: no pain at discharge: 4.57±2.3. High satisfaction in pain management: 80.8% patients. Insignificant difference: comfort level and pain rating at discharge (r=-0.225, p>0.05).
228	Application category 4	Aktaş (2015)	Turkey	To investigate the prevalence and the affecting factors of dysmenorrhea and its effects on overall comfort among female university students	Female students: n = 200	One university	CSS	Prevalence of dysmenorrhea: 84% of students; Comfort score (GCQ) for students with dysmenorrhea: 2.57±0.25, without dysmenorrhea: 2.65±0.23; Pain score (VAS): 5.78±2.45; Moderate pain: 45.8% of students; Most common co-occurring symptoms: irritability (34.6%), fatigue (21.5%); Most commonly used methods for pain: analgesics (69%), heat application (56.5%), rest (71.4%). Factors of comfort: family history of dysmenorrhea, education about menstruation, frequency of menstrual cycle (p<0.05); use of the methods for management of dysmenorrhea.
229	Application category 4	Yuan (2015)	China	To investigate comfort and its factors of patients receiving choledochoscope operation	Patients receiving choledochoscope surgery: n = 330	One unit of Hepatobiliary Surgery of one university affiliated hospital	CSS	Comfort score (Chinese version GCQ): 76.19±3.99, psychological domain: 2.56±0.23, physiological field: 1.98±0.38, social studies: 2.86±0.22, environment: 2.49±0.26. SAS score: 45.43±8.06. Pain: grade 0: 12.1%, grade 1: 39.7%, grade 2:

								37.6%, grade 3: 10.6, grade 4 and 5: 0%. Factors of comfort: room temperature, saline temperature, posture, moist skin, abdominal distention, nausea and vomiting, pain, anxiety, self-recumbent position, ages, family economic level, medical payment ($p<0.05$); Insignificant: gender, occupation, education level, marital status, religious beliefs ($p>0.05$).
230	Application category 4	Zhao et al. (2015)	China	To discuss the associated factors induced discomfort in gynaecological laparoscopic surgery patients	Patients receiving gynaecological laparoscopic surgery: $n = 205$	One women's and children's hospital	CSS	Comfort score (Chinese version GCQ): data were not reported. Factors of comfort: marital status, indwelling catheter feeling, sleep, nausea and vomiting ($p<0.05$).
231	Application category 4	Lamino et al. (2014)	Brazil	To assess the comfort of cancer patients' primary caregivers and verify the association between comfort and variables related to patients, the disease and the principal caregivers	Caregivers of patients with Karnofsky scores lower than 50: $n = 88$	One oncology outpatient clinic	CSS	Comfort score (GCQ): 203.9; Factors: age of the caregiver, care time, current occupation, caregivers who didn't have a paid job or leisure's activities; Factors of physical, environmental dimensions and spirituality: caregivers felt loved; Caregivers' GCQ scale: Cronbach's alpha: 0.814.
232	Application category 4	Tuncer and Yucel (2014)	Istanbul	To determine the comfort and anxiety levels of women with breast cancer receiving radiotherapy	Women with breast cancer receiving radiotherapy at an early stage: $n = 66$	One radiation oncology breast polyclinic of a university hospital	CSS	Moderate comfort: Radiation Therapy Comfort Questionnaire (RTCQ): 3.73 ± 0.31 . Low anxiety: State Anxiety Inventory (SAI): 29.1 ± 5.88 , Trait Anxiety Inventory (TAI): 37.8 ± 6.91 . Factors of comfort: no differences regarding marital status, educational status, presence comorbidities, menopause status of the women, and history of cancer in the family ($p>0.05$).
233	Application category 4	Seyedfate mi et al. (2014)	Iran	To explore the relationship between comfort and hope in the preanesthetic stage in patients undergoing surgery	Surgical patients: $n = 191$	One teaching hospital	CSS	Comfort (Perinaesthesia Comfort Questionnaire Iranian version (PCQ)): 107.37 ± 11.53 , from 70-144. Factors of comfort: hope ($p\leq0.001$, $r=0.65$), educational level and marital status ($p\leq0.01$), university education, males, age between 18 and 37 years, duration of disease less than 1 month, and patients undergoing orthopaedic surgery ($p\leq0.05$).

234	Application category 4	Álvares de Medeiros et al. (2014)	Brazil	To identify the perceptions of hospital nurses about the concept of comfort and discomfort that affect the elderly in the postoperative period	30 nurses: n = 30	One university hospital	CSS	Nurses (96.7%) conceptualized comfort as well-being. Two or more discomforts of the four contexts (physical, environmental, socio-cultural and psycho-spiritual) were observed by more than 50% of the nurses. More frequent discomforts identified by nurses: pain (100%), excessive noise (56.7%), feeling of displacement of home environment (76.7%), and anxiety (93.3%). Greater emphasis on physical discomforts, especially pain.
235	Application category 4	Zheng (2013)	China	(1) based on comfort theory to construct a clinical nursing care and quality evaluation standard for AIDS patients so as to standardize nursing process and improve the quality of AIDS patients care. (2) to evaluate the clinical care of AIDS patients by the evaluation standard for AIDS patients, summarize and analyse effect factors, to improve the clinical care standard and quality evaluation system	AIDS patients: n = 105	One infectious disease hospital	MMS	Clinical care standard and care quality evaluation system for AIDS patients 4 dimensions: environmental comfort, physical comfort, psychological comfort, cultural comfort; 7 class-I indicators, 21 class-II indicators and 48 class-III indicators. Retest reliability: Pearson Correlation 0.853; Inter-rater reliability ICC: 0.987. Environmental comfort: 4.97-5.00, coefficient of variation: 0.00-0.03. Physical comfort: 3.55-4.95, coefficient of variation: 0.00-0.19. Psychological and spiritual comfort: 3.56-3.98, coefficient of variation: 0.08-0.32. Social and cultural comfort: 2.92-4.95, coefficient of variation: 0.14-0.29; Lowest score: constructing support system; Highest score: respecting the patient's religious belief. Low satisfaction level. Comfort score (Chinese version Nasal Packing Patient Comfort Questionnaire): 51.73±11.04, item: 2.75±0.92, physical dimension: 2.34±0.65, environmental dimension: 2.78±0.81, psychospiritual dimension: 3.45±0.93, sociocultural dimension: 3.63±0.73.
236	Application category 4	Li (2013)	China	To analyse the comfort and psychological needs of patients in thoracic surgery within 72 hours after operation	Patients after thoracic surgery: n = 120	One unit of Cardiothoracic Surgery of a hospital	Longitudinal study	Medium and high comfort level(Chinese version GCG) within 72 h after thoracic surgery. Severe pain and fatigue within 24 h after surgery: a high demand for companionship. Factors of comfort: postoperative time (p<0.01)-higher on the second day after surgery in overall comfort

								and each dimension than those on the first day after surgery ($p<0.05$), higher on the third day after surgery in overall comfort and each dimension than those on the first and second day after surgery ($p<0.05$); gender, marital status, medical payment method and family economic status within 72 h after surgery ($p<0.05$)-higher comfort in unmarried than married patients, in retired patients than unemployed patients, in women than men, in those paid by the public felt than those who paid by themselves.
237	Application category 4	Feng and Gu (2011)	China	To investigate the comfort of patients at 24h and 48h after hysterectomy and the factors affecting them, in order to provide a scientific basis for alleviating postoperative discomfort and improving patients' comfort	Patients after hysterectomy: $n = 105$	One unit of Obstetrics and Gynaecology of hospital	Longitudinal study	Medium-high comfort (GCQ): 81.77 ± 10.92 at 24 h and 88.54 ± 8.94 at 48 h after hysterectomy. Factors of comfort: lumbago pain, inability to take a bath after surgery, indwelling catheter; worry about work, fatigue.
238	Application category 4	Tanatwanit (2011)	Thailand	To explore and describe comfort as experienced by Thai older patients with advanced cancer in an academic medical-university hospital in Thailand	Thai old patients with advanced cancer: $n = 111$	One academic medical-university hospital	MMS	Moderate and high comfort (Hospice Comfort Questionnaire (HCQ-Patient)): 4.29 ± 0.50 ; VRSs: 6.25 ± 2.09 . Qualitative findings: Three domains: Discomfort, Comfort, and an Additional domain. Four contexts of discomfort: physical-physiological (sleep disturbance and pain), psycho-spiritual (worry and/ or fear about the illness and symptoms), socio-cultural (no reporting/ communication of existing discomfort), environmental (the setting-the patient's room and the restrooms). Four categories of comfort: Relief, Ease, Transcendence, and Inadequate comfort. Three main comfort providers: nurses, patients' relatives, and the patient him/herself through health-seeking behaviours.

								An additional domain: intervening variables, nursing comfort care, nurses (including other healthcare personnel), improvement for comfort care, and comparison between the hospital and the (participant's) house.
239	Application category 4	Schuiling (2011)	USA	To explore the existence of comfort during labour in a sample of healthy, primigravid women experiencing a normal labour and birth	Primiparous women: n = 64	Three tertiary hospitals	Longitudinal study	Comfort score (CCQ): T1: 33-67 (M: 54.48); T2: 32-69 (M: 55.68); Highest subscale scores: ease occurring in environmental (4.79/ 5.00), Lowest subscale scores: relief occurring in psychospiritual (1.58/ 5.0); Pain scores: T1 (F=12.92, df=2, 50, p<0.001), T2 (F=13.61, df=2, 40, p<0.001). Most common measures: one-to-one continuous support (T1 n = 47; T2 n = 46), freedom of movement (T1 n = 43;T2 n = 22), massage (T1 n = 25; T2 n = 23); Factors of comfort: massage vs not use massage at T2 (t=-2.29, df=51, p<0.05), one-to-one support.
240	Application category 4	Zhu et al. (2011)	China	To understand the correlation between living conditions and changes in the psychological status of family members of terminally ill elderly patients at home	Elderly dying patients: n =60, and their primary family caregivers: n = 60	One hospital at home bed	CSS	Comfort score (Chinese version Dying Patient Comfort Questionnaire): 101.83±12.93 (73-133); Anxiety scores: family members 25-70 (39.85±11.23), and 50 (83.33%) higher than the norm (29.78±0.46). Factors of comfort: ADL of elderly dying patients living at home (r=0.348, p<0.01), anxiety of the family members (r=-0.372, p<0.01), patient's self-assessment of the severity of the disease (F=5.796, p<0.05); Insignificant: ages, educational levels, economic status, marital status (p>0.05), comfort of patient and the depression of the family members.
241	Application category 4	Feng et al. (2011)	China	To understand the comfort and satisfaction of general surgical ICU patients 3 days after admission	Patients in general surgical ICU: n = 65	One General surgery ICU of a tertiary hospital	CSS	Moderate comfort level (Chinese version GCQ): 85.43±11.14, lowest item score in environmental dimension comfort: (2.67±0.48). High satisfaction level. Correlation: comfort and satisfaction (r=0.407, p<0.01), among all dimensions, except for the physiological dimension, highest in social and cultural dimension: (r=0.407, p<0.01).

242	Application category 4	Murray (2010)	USA	To describe and compare differences between special care unit nurses and oncology nurses' own definition of spirituality, comfort level in assessing and discussing spiritual needs, and the frequency of completing a spiritual assessment at patients' EoL	Nurses in intensive care and oncology: n = 33	Two oncology and special care units of a hospital	CSS	Data clearly show that nurses on the oncology and special care units are aware of their spirituality and the necessity in addressing patients' spiritual care issues. Data revealed a great inconsistency in nurses addressing these needs and a desire for education in addressing spirituality issues with their patients and family members. Factors insignificant: ages, education level, or units worked.
243	Application category 4	Heard (2010)	USA	To determine the relationship between mindfulness, comfort, work satisfaction, and burnout in nurses	Nurses: n = 186	Four South Mississippi hospitals	CSS	Comfort score (Nurse Comfort Questionnaire (NCQ)): 175.27±12.13. Moderate levels of mindfulness; Average propensity to burnout; Average levels of nurse comfort and work satisfaction. Factors of comfort: different hospitals; Relationship significant: nurse comfort and work satisfaction, nurse comfort and personal accomplishment component of burnout (p=0.018); Insignificant: nurse comfort and mindfulness, mindfulness and work satisfaction, nurse comfort and burnout.
244	Application category 4	Wu et al. (2010)	China	To investigate the comfort level of stroke patients	Stroke survivors: n = 118	One geriatric unit of hospital	CSS	Comfort score (Chinese version stroke comfort questionnaire, SCQ): lowest in the mental and psychological domain: 54.23±18.56. Factors of comfort: age, level of education (p<0.05); Insignificant: gender, time of onset, hemiplegia, disease type.
245	Application category 4	Ning (2010)	China	To investigate patients' comfort in 24h after kidney aspiration biopsy	Patients after aspiration biopsy in kidney: n = 59	One unit of Nephrology of a hospital	Longitudinal study	Comfort score (Chinese version GCQ): lowest in physical dimensions at 24 h after aspiration biopsy: 15.13±2.09. Medium and high comfort level at 24 h after aspiration biopsy: 98.34±7.88. Symptoms with high need for care: backache and tiredness. Time difference of comfort: higher comfort and each dimension at 12 hours after operation vs at 6 hours after operation (p<0.05), higher comfort and each dimension at 24 hours after operation vs at 6 hours and 12 hours after operation (p<0.05). Comfort needs:

								accompanying needs, "I hope my family will accompany me more" and "I am very unhappy when no one is with me".
246	Application category 4	Jiang et al. (2009)	China	To understand the comfort of renal transplant recipients in intensive care stage after transplantation	Renal transplant recipients: n = 92	One tertiary general hospital	CSS	Comfort score (Chinese version Renal Transplant Recipients Comfortable Scale): 66.72±10.15, mental: 2.42±0.92, physical: 2.69±0.95, social: 2.72±0.87, environment: 3.18±0.67. Factors of comfort: ages, family economic levels, various medical payment, serum creatinine levels of renal transplant recipients (p<0.05); Insignificant: sexes, occupation, education, marriage status, whether such as religion (p>0.05).
247	Application category 4	McAfee (2008)	USA	To describe the stressors and level of stress experienced by undergraduate students and faculty in a nursing program in southeast Texas	Faculty (78.95%): n = 30 and students (48%): n = 137	Department of Nursing at Lamar University	Online survey	Moderate stress level of faculty: 169.19±43.834, n = 29; Moderate stress level of students: 67.90±13.158, n = 125; Most stressful situation for faculty: teaching responsibilities in both programs during the same semester, attending meetings that take up too much time; Most stressful situation for students: lack of free time. Transcended stress levels for faculty: supportive to students; Transcended stress levels for students: successfully completed nursing courses. Factor of stress: grades. Faculty are encouraged to explore comfort strategies in themselves and students to enhance learning and performance resulting in higher grades, and success in the program.
248	Application category 4	Kim and Kwon (2007)	South Korea	To quantify the comfort level and QoL of cancer patients, to identify the variables associated with comfort level and QoL, and to identify the relationship between comfort level and QoL	Cancer patients: n = 100	Four outpatient settings including university-based cancer centres and day-care chemotherapy units, four inpatient settings including a hospice unit and oncology units, and home settings that provided home	CSS	Total comfort score: 61.50±12.02, sociocultural comfort: 71.05±16.01, physical comfort: 60.30±16.71, psychospiritual comfort: 57.65±16.81, environmental comfort: 56.32±16.86; QoL score: 46.34±20.76; Factors of comfort: comfort and all dimensions of QoL (r=-0.549-0.581), patients graduated from primary school and graduated in sociocultural context (p=0.033), sites where the participants completed the questionnaire and total comfort (p<0.001);

						care at two university hospitals		perception of a serious disease status; thoughts of that they could be cured or incurable or would be worse ($p < 0.05$), all contexts of comfort except the environmental context ($p = 0.074$); insignificant association: age subgroup ($p = 0.140$), occupation subgroup ($p = 0.106$), gender, marital status, religion, current treatment, time since initial diagnosis.
249	Application category 4	Rassin et al. (2007)	Israel	To examine the personal characteristics and levels of comfort among women suffering from urinary incontinence	Women with urinary incontinence: $n = 50$	One urology or gynaecology clinic	CSS	Medium low comfort (UIFCQ): 2.95 ± 0.04 (1-6); Low levels of comfort items: 'I feel clean and fresh', 'finding a toilet in close proximity is a worrisome issue when I exit the house', 'I fear having sex due to the urinary incontinence problem'; Urinary incontinence frequency: several times a day (50%), once a day (19%), several times a week (31%); Urinary incontinence time: 5 months-25 years (4.54 ± 9.2); Absorption control measures: pads (64.3%), diapers (14.3%), cotton (4.8%), did not report the use measures (16.7%); Treatments: performed pelvic muscle exercises (35%), medications such as Detrusitol (18.2%), Burch or TVT surgery (11.4%), no treatment (35.4%).
250	Application category 4	Xiao et al. (2007)	China	To understand patients' comfort in acute rejection reaction after kidney transplantation	Patients with acute reject reaction adverse after kidney transplantation: $n = 22$	One tertiary general hospital	CSS	Low Comfort score (Chinese version Kidney Transplant Recipient Comfort Scale): 56.91 ± 6.74 . Main discomforts in mental and psychological field: depression, anxiety, uncertainty, lack of confidence caused by the worry about the recovery of the disease; in physical discomforts: fatigue, pain, thirst, difficulty falling asleep, gastrointestinal discomfort; in social dimension: lacking of knowledge about rehabilitation, understanding and empathy from others, worries about the economy. Factors of comfort: gender and the source of hospitalization expenses, worse in women vs men, and higher in medical insurance patients vs self-pay patients.

251	Application category 4	Zhu et al. (2007)	China	To understand the comfort status and influencing factors of patients within 72 hours after thoracic surgery	Postoperative thoracic patients: n = 123	One unit of Thoracic Surgery and Cardiothoracic Surgery of a Medical College Hospital	Longitudinal study	Medium to high comfort level (Chinese version GCQ) within 72h after thoracic surgery. Severe postoperative pain and fatigue: a high demand for companionship. Factors of comfort: postoperative time (p<0.01), gender, marital status, medical payment method, family economic status within 72h after surgery (p<0.05)-higher in female than male, in unmarried patients than married patients, in retired patients than those without jobs, in patients with public expenses than those with self-payment.
252	Application category 4	Lee (2005)	China	To test the relationship between comfort, spirituality and QoL among long-term care facility residents in southern Taiwan	Residents: n = 99	Seven facilities in Kaohsiung city and Hsien	CSS	Moderate comfort (Short version GCQ): 103.94±12.04 (79-135 points); Factors of QoL: marital status, religion, family visit frequency, subjective health status; spirituality (β=0.337, p=0.56), family visit frequency (β=0.243), and subjective health status (β=0.41). Comfort had an indirect effect on quality of life, through its influence of spirituality while controlling demographic variables.
253	Application category 4	Zhu (2005)	China	To describe the comfort of postoperative thoracic patients in 24h, 48h,72h respectively, and to analyse the factors that affect the comfort of postoperative thoracic patients within 72h	Postoperative thoracic patients: n = 123	One unit of Thoracic Surgery and Cardiothoracic Surgery of a Medical College Hospital	Longitudinal study	Comfort score (Chinese version GCQ): 82.27±7.42 at 24h, 91.27±8.63 at 48h, 98.34±7.88 at 72h; Physical comfort score: 1.88±0.44 at 24h, 2.50±0.47 at 48h, 3.03±0.42 at 72h; Social comfort score: 3.00±0.18 at 24h, 3.13±0.20 at 48h, 3.25±0.17 at 72h; Environmental comfort score: 2.72±0.39 at 24h, 3.01±0.43 at 48h, 3.24±0.45 at 72h; Lowest score item: 'I hope kin to accompany me', 'i am unhappy when I am alone' within 72h. Comfort level: moderate at 24h, medium and high at 48h, high at 72h. Factors of comfort: postoperative time(p<0.01), incision pain, coughing pain, moving pain, throat pain, tiredness, insomnia, dry mouth and thirst, discomfort because of unbath after operation, worry about prognosis, worry about diagnosis, afraid to cough, worry

								about job and study, worry about economy, gender, marital status, occupation, medical care system, domestic economy; physiological comfort in 24h after surgery: gender, marital status; comfort in 48h after surgery: higher in retired patients vs unemployed patients; Insignificant difference: between employed patients and non-employed and retired patients.
254	Application category 4	Krenzischek et al. (2004)	USA	To test the content of the ASPAN Pain and Comfort Clinical Guideline, which included the domains of assessment, intervention, and outcomes	Perinaesthesia nurses: n = 215	Perinaesthesia settings (Number of settings was not specified)	CSS	ASPAN Pain and Comfort Clinical Guideline has practical utility for perinaesthesia nurses in all settings: Instrument reliability: Cronbach's alpha 0.98 (high), clarity, usability, and feasibility in all the perinaesthesia settings; Overall mean scores: 3.55 to 3.80 (high), Preoperative Phase mean: 3.55 to 3.68, PACU Phase I mean: 3.55 to 3.68, Phase II mean: 3.61 to 3.78, Phases II and III mean: 3.72 to 3.80.
255	Application category 4	Schuiling (2003)	USA	To determine if comfort exists during childbirth	Healthy primigravid women: n = 25	Three hospitals: one large university medical centre, one smaller regional medical centre, and one serving an ethnically and economically diverse population of 238,000	Longitudinal study	Comfort scores (Childbirth Comfort Questionnaire (CCQ)): 33-66, Time 1 (M=54.48 [n = 62]), Time 2 (M=55.68 [n = 53]); CCQ Cronbach's alpha: Time 1: 0.69 , Time 2: 0.73 ,Time 3: 0.53; Factors of comfort: pain scores of women who had epidural analgesia, women who did not have a second-degree perineal laceration (t=2.858, df=47, p=0.04), higher pain scores of women who used comfort measures, women who had a perineal laceration of any kind, education, income, hospital (F=3.05, df=3.56, p=0.04), no other provider of support; Insignificant: using pain medication (intramuscular, intravenous or epidural) (t=0.729, d f=60, p=0.09), using comfort measures, using an epidural. Most commonly used comfort measures: one-to-one continuous support, freedom of movement and massage.

256	Application category 4	Wilson (2002)	USA	To test the positive relationships between comfort and perceived nursing caring, social support and emotion-focused coping	Hospitalized patients: n=191	One university medical center	Theory testing correlation study	Perceived nursing caring, social support and emotion-focused coping served as explanatory factors of comfort.
257	Application category 4	Dowd et al. (2002)	USA	To assess the psychometric properties and relationships among 8 measures of comfort, status of urinary frequency and incontinence, and QoL	Patients with urinary incontinence for more than 6 months: n = 47	One community	Longitudinal study	Comfort score: data was not reported. UIFCQ Cronbach's Alpha: Time 1: 0.74, Time 2: 0.83. Factors of comfort: UIFCQ and Bladder Function Questionnaire (BFQ) at Time 1 and 2 (r=0.51 & 0.59), UIFCQ and BFQ with Incontinence Impact Scale (IIQ) (r=0.54, 0.69, & 0.51, 0.66); UIFCQ and BFQ with urinary incontinence (UI) Amount (r=ns, -0.32, & -0.53, -0.47), with CUBS Limit (r=ns, -0.48, & -0.42, -0.47).
258	Application category 5	Gonzalez-Baz et al. (2023)	Spain	To evaluate the psychometric properties of the General Comfort Questionnaire (GCQ) in patients admitted to intensive care units (ICUs)	Patients: n=580	Two 1000-bed public hospitals	Psychometric validation study	Comfort Questionnaire (CQ)-ICU: 28 items. Seven factors: psychological context, need for information, physical context, sociocultural context, emotional support, spirituality, and environmental context. Cronbach's alpha: 0.807, with subscale values ranging from 0.788 to 0.418.
259	Application category 5	Sahin and Pakyuz (2022)	Turkey	To develop a valid and reliable measuring tool in order to evaluate comfort of patients receiving haemodialysis treatment	Chronic haemodialysis patients: n=436	Five haemodialysis centers	Scale development study	26-item six dimensions Haemodialysis Comfort Scale Version II: Cronbach alpha 0.79, physical relief 0.83, physical ease 0.71, psychospiritual ease 0.87, psychospiritual transcendence 0.85, environmental transcendence 0.82, and sociocultural ease 0.61.
260	Application category 5	Egger-Rainer et al. (2020)	Austria and Germany	To evaluate the psychometric properties of the newly developed Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ) according to the consensus-based standards for the selection of health measurements instruments (COSMIN)	Patients: n = 267	EMUs of ten centres (comprising 51 beds) with the research management wing at the Department of Neurology of a Medical University	Questionnaire psychometric test (reliability and validity): survey	EMUCQ items: n = 42. Items changes: removed two items. Internal consistency-Cronbach's α coefficient: subscales: 0.77-0.81, total scale: 0.88. Final exploratory factor analysis with the 42-item: KMO=0.799, MSA-coefficients 0.5, Bartlett-Test $p<0.001$. Kaiser-Guttman Criterion: 13 factors (eigenvalues>1), 61.44% variance. Convergent validity: Spearman correlations ≥ 0.3 ($p<0.05$). Lower comfort at the end of the stay than at the beginning, in nonseizure-free patients than seizure-free patients.

				to assess changes in comfort-levels				Interpretability: SEMs mean difference: >0.31, subscales (0.37-relief, 0.31-ease, 0.36-transcendence), total comfort scale >0.22.
261	Application category 5	Melo et al. (2020)	Brazil	To assess the psychometric properties of the Brazilian version General Comfort Questionnaire	Chronic patients undergoing kidney haemodialysis: n = 260	Three haemodialysis clinics	Questionnaire psychometric (reliability and validity): su	Brazilian version GCQ items: n = 33. Items changes: 33 items remained, excluded 15 items (3, 4, 5, 6, 7, 18, 19, 20, 22, 24, 25, 27, 33, 35, 36, 39, 41, 42, 47), excluded items from factor analysis with commonality values 0.40, Cronbach's α : total GCQ: 0.805, factor 3 (environmental) items: 0.576, factor 4 (physical): 0.327. Cronbach's α : 48 items: 0.83, 33 items: 0.80. Item-total correlations: factor 3: -0.366-0.456, factor 4: 0.132-0.196, factor 1: Cronbach's α : 0.764, factor 2 Cronbach's α : 0.707. KMO test: 0.815; P<0.001. Exploratory analysis of factors: 10 factors explained 60.14% variance. Scree plot test: four factors (psychospiritual, sociocultural, environmental, and physical) explained 38.01% variance.
262	Application category 5	Li and Wang (2020)	China	To develop and test its reliability and validity of a comfort scale for patients after nasal packing	Patients after nasal packing: n = 30 (pilot survey), n = 210 (formal survey); Experts in otolaryngology clinical and nursing education: n = 7	One otolaryngology unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	Chinese version post-nasal packing comfort scale items: n = 30, Four dimensions: physical, psychospiritual, environmental, sociocultural. Items changes: first draft scale had 4 dimensions and 33 items, deleted 4 items, added 7 items, and modified 3 items, 30 items after two rounds of experts' comments. I-CVI: 0.786-0.98. S-CVI/Ave: 0.955. Cronbach's α : scale: 0.886, Each dimension: physical: 0.929, psychospiritual: 0.929, environmental: 0.867, and sociocultural: 0.820. Test-retest reliability: 0.938, each dimension: physical: 0.949, psychospiritual dimension: 0.959; environmental dimension: 0.896, sociocultural dimension: 0.907. Split-half reliability: 0.927, each dimension: 0.775-0.937. KMO value: 0.867. Exploratory factor analysis: 4 factors, 62.004% explanatory variance. Recovery rate and effective rate: both 100%. 95.24% patients fully understood

								items of scale, 4.76% had basic understanding of the items. Completion time: completed by oneself: 3-4 minutes, with assistant: 5 minutes.
263	Application category 5	Egger-Rainer et al. (2019a)	Austria	To develop an instrument to assess comfort of adult patients during hospitalization in an EMU, namely the Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ)	Experts in the translation procedure: n = 4; Experts in Neurology: n = 9 (raters of content validity); Experts in EMU and psychology: n = 9; Hospitalised adult patients: n = 25	One unit of Neurology of a medical university	Questionnaire development, translation, experts consultation	EMUCQ items: n = 44. Items changes: added 12 items, unchanged 26 items, revised 12 items, omitted 14 items, put aside 8 items, leaving questionnaire with 38 items; unchanged 27, added six items, reworded another 11 items, leaving questionnaire with 44 items. Content validity: I-CVI: 0.33-1, average CVI: S-CVI/ ave: 0.84. Questionnaire completion time: 5 min 39 s-1 min 10 s (mean: 7 min 9 s).
264	Application category 5	Egger-Rainer et al. (2019b)	Austria	To assess the feasibility of a multicentre validation study, to recruit additional study centres, and to undertake orientating descriptive item analysis of the 44-item Epilepsy Monitoring Unit (EMU) Comfort Questionnaire (EMUCQ)	Patients: n= 44	One four-bed EMU of the Neurology unit of a medical university	Questionnaire validation feasibility study survey + a multicentre feasibility study	EMUCQ items: n = 44. 40 complete questionnaires collected, with four patients dropout in second round survey. Floor and ceiling effects were detected in 32 items. One item with the lowest median showed the low item difficulty. Another five items showed medians with the height of 6. In four items, high difficulty indices were observed.
265	Application category 5	Melo et al. (2019)	Brazil	To validate the content of the Brazilian version of the General Comfort Questionnaire	Experts: n = 22	Online by email	Questionnaire psychometric test (reliability and validity): expert consultation for content validity	Brazilian version GCQ: n = 48. Content Validity Index: 0.81. Agreement: 10 items in physical dimension: 0.5-1.0, 11 items in sociocultural dimension: 0.59-0.90, 10 items in environmental dimension: 0.68-1.0, 17 items in psychospiritual dimension: 0.45-11.0. All items obtained satisfactory evaluation and four did not reach the recommended agreement.
266	Application category 5	Yucel et al. (2019)	Turkey	To determine psychometric characteristics of the Turkish version of the	Nurses: n = 30 (pilot survey), n = 275 (formal survey); Experts: n = 10	A university affiliated hospital in Izmir	Questionnaire cross-cultural adaption and test of reliability and validity:	NCQ items: n = 39 (4-point Likert scale). Items changes: 48 items original questionnaire, removed 8 items (6, 14, 26, 32, 33, 34, 40, 41), excluded fifteenth item. I-CVI: 0.80-1, S-CVI: 0.99. Internal reliability

				Nurse Comfort Questionnaire (NCQ)			translation experts consultation + survey	coefficient: 40-item questionnaire (4-point Likert-type scale): 0.915. Cronbach's α : 0.859 for the first factor, 0.846 for second factor, 0.818 for third factor. Test-retest reliability: $r=0.93$, $P=0.000$. Correlation values: 40-item questionnaire (4-point Likert-type scale): 0.215-0.648. KMO: 0.891: 40-item questionnaire. Three-factor model: 37.875% variance, 40-item questionnaire. Confirmatory factor analysis: model fit indices: $\chi^2/df=1.756$, RMSEA=0.053, RMR=0.183, IFI=0.856, GFI=0.832, AIC=1397.812. Comfort score: not significant: results of two measurements of questionnaire ($t=1.88$, $P=0.06$), administered at a fifteen-day interval.
267	Application category 5	Zhang and Wang (2019)	China	To develop a comfort scale for the patients after enterostomy and to test its reliability and validity	Patients after enterostomy: $n=310$; Nursing experts: $n=15$	One unit of Proctology of a hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + pilot survey	Items of Chinese version comfort scale for enterostomy patients: $n=35$. Items changes: 28 items compiled and 16 items drawn from mature comfort scale, resulting in 44 items: deleted 3 items, modified expression of 2 items, 4 items were deleted which had low correlation with the total score, and the correlation coefficient with the total score is $r<0.4$, deleted factor 5 due to the number of factor orders <3 , remaining 35 items. Four dimensions: physical dimension, social dimension, environmental dimension physiological dimension. I-CVI: 0.80 to 1.00; S-CVI/UA: 0.80, S-CVI/Ave: 0.96. Cronbach's α coefficient: 0.937, each dimension: 0.802-0.923. Test-retest reliability: total: 0.846, each dimension: 0.735-0.826. Half-fold reliability: 0.926. Split-half reliability of each dimension: 0.816-0.910. Exploratory factor analysis: four factors, explained 52.584% variance. KMO: 0.921, Bartlett's sphericity: $\chi^2=5,363.838$.
268	Application category 5	Góis et al. (2018)	Brazil	To describe the first stages of the cross-cultural adaptation process of the General	ICU patients with myocardial infarction: $n=30$; Lay people	ICUs of two large institutions specialized in cardiology in the	Questionnaire cross-cultural adaption and test of reliability and	Brazilian version GCQ-AMI items: $n=63$. Item changes: 15 new items added. The author of the original scale made comments on item 2, item 6, item 12, item 15, item 30

				Comfort Questionnaire for myocardial infarction patients in ICUs	who experienced infarction and ICU admission: n = 10; Experts n = 7	municipality of Feira de Santana, Bahia	validity: translation experts consultation + pilot survey	and item 37. CVI: 44 items (69.4%): 1, 15 items (23.8%): 85.7, 4 items (6.34%): 71.1, 15 new items >0.78. CVI: 26 items (41.2%): 1, 28 items (44.4%): 85.7, 9 items (14.2%): 71.4. Questionnaire completion time: 23 min.
269	Application category 5	Egger-Rainer (2018)	Austria	To initially determine the content validity of Epilepsy Monitoring Unit Comfort Questionnaire	Professional experts in EMU: n = 9	One EMU unit of Neurology at a medical university	Questionnaire psychometric (reliability and validity): expert consultation + content validity	EMUCQ-2 items: n = 38. Items changes: 60-item EMUCQ-1, omitted 14 items, put aside 8 items for further evaluation, 26 items unchanged, reworded 12 items. S-CVI/Ave: 0.90. I-CVI scores: 0.78-1.
270	Application category 5	Carvalho et al. (2018)	Portugal	To develop and psychometrically test the Perioperative Comfort Scale (PCS)	Patients: n = 400 (300 in surgical unit, 100 in non-surgical unit) (Number of units were not specified)	Two different settings of three hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: translation experts consultation + survey	PCS items: n = 15. Items changes: 18-item version, excluded 3 items (7, 8, 11): convergent-discriminant validity or had loads <0.40. Internal consistency: Cronbach's α coefficient: 0.83, components: ease: 0.78; relief: 0.73; transcendence: 0.70. Discriminant validity: surgical and non-surgical patients. Criterion validity: correlation between PCS and Thermal Comfort Scale (TCS): $r=0.83$; $P=0.0001$. Construct validity: Bartlett's test ($P<0.0001$), KMO: 0.87. Factor analysis: explained 45.28% variance. Correlations: three components of PCS (ease/ relief $r=0.46$; ease/ transcendence $r=0.44$ relief/ transcendence $r=0.45$): moderate, positive, highly significant correlation $P=0.0001$. Strong positive correlation: PCS and TCS. Comfort level: highest in surgical group for all components and total scale, significant differences between groups.
271	Application category 5	Artanti et al. (2018)	Indonesia	To assess the validity and reliability of the Shortened General Comfort Questionnaire (SGCQ) in Indonesian version	Patients with stage 5 chronic kidney disease undergoing haemodialysis: n = 71; Nursing experts in haemodialysis	One haemodialysis unit of a central hospital in Yogyakarta	Questionnaire psychometric test (reliability and validity): expert consultation + survey	Indonesian version SGCQ items: n = 28. I-CVI: 1, S-CVI: 1. Cronbach's α : 0.769, range: 0.7-0.95.

					care: n = 3 (content validity)			
272	Application category 5	Zhang et al. (2018)	China	To develop and test a Chinese Immobilization Comfort Questionnaire (ICQ) among patients post total knee arthroplasty	Hospitalized patients post total knee arthroplasty: n = 20 (pilot), n = 126 (formal survey); Nursing experts: n = 6; Experts in English and Orthopaedic: n = 4	One unit of Orthopaedics of a hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation survey	Chinese version ICQ items: n = 20. Items changes: from 1 dimension with 20 items to 4 dimensions with 20 items. Four dimensions: physical comfort, psychological comfort, social comfort and environmental comfort. CVI: 0.889, from 0.76-1.00, item-total correlation: P<0.01. Cronbach's α coefficient: 0.894, physical comfort: 0.874, psychological comfort: 0.902, social comfort: 0.824, environmental comfort: 0.803. Test-retest correlation coefficient: 0.842, each dimension: 0.738, 0.932, 0.672 and 0.759 (P<0.01). Discrimination validity: significant differences between high and low groups (P<0.05). Criterion validity: scores of each dimension and total score of ICQ positively correlated with GCQ score (P<0.01). Exploratory factor analysis: 4 common factors, explain 71.3% variance. KMO=0.9. Completion time: 3 to 5 minutes.
273	Application category 5	Saray Kilic and Tastan (2017)	Turkey	To develop and psychometrically test the Post Hip Replacement Comfort Scale (PHRCS)	Patients undergoing hip replacement surgery: n = 180; Nursing experts: n = 20, n = 5	Orthopaedic and trauma units of three teaching and research hospitals (number of units was not specified)	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation survey	PHRCS items: n = 26. Items changes: from 87 items to 43 items, 5 of the 43 items were deleted based on experts opinions in first group, 2 of remaining items were excluded in second group, 10 items were excluded based item analysis and corrected item-total score correlation coefficient. Cronbach's α coefficient: 0.758. Test-retest reliability: positive and meaningful correlation: PHRCS: 44 patients (24.4%) ten minutes after first test: r=0.817; p<0.001. Criterion validity: positive and significant: PHRCS and GCQ (r=0.701; p<0.001). Construct validity: KMO test value: 0.681 (p<0.001). Scale: single factor. Comfort score: 3.64 \pm 0.43 (from 1-5).
274	Application category 5	Li et al. (2017)	China	To develop a comfort scale for cervical cancer patients undergoing endovascular retrofitting	Patients with cervical carcinoma after intracavitary brachytherapy: n	One cancer hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts	Items of Chinese version comfort scale for cervical cancer patients undergoing endovascular retrofitting: n = 27, 4 dimensions: physical (9), psychological (5), sociocultural (7), environmental (6). Items

					= 18 (interviews), n = 30 (retest), n = 256 (pilot survey); Doctors: n = 3		consultation + pilot	changes: 34 items, 3 items were deleted after interview. Content validity: CVI: 0.919. Cronbach's α coefficient: 0.877, each dimension >0.80, physical dimension: 0.933, psychological dimension: 0.874, sociocultural dimension: 0.880, environmental dimension: 0.876. Test-retest reliability: overall: 0.929, each dimension: 0.968-0.985. Correlation coefficient: total scores of two measurements: 0.929 (P<0.01), each dimension: physiological: 0.977, psychological comfort: 0.968, social dimension: 0.984, environmental dimension: 0.985. KMO: 0.844 (>0.70); Four factors explained 63.785% variance. Completion time: 11 minutes.
275	Application category 5	Pinto et al. (2016)	Portugal	To provide an accurate and sensitive instrument to assess the spiritual comfort of Portuguese palliative care patients	patients with an incurable, chronic and progressive illness in palliative care: n = 141	Acute medical-surgical settings in a central hospital (medicine, general surgery, vascular surgery, neurosurgery, pulmonology and day hospital for chemotherapy)	Questionnaire development and test of reliability and validity translation survey	Portuguese version end of life spiritual comfort questionnaire items: n = 20, 1-6 Likert (1: 'Strongly Disagree' to 6: 'Strongly Agree'). Items changes: removed 8 items: 2, 7, 10, 11, 12, 19, 22, 25. Internal consistency: 0.84. Factor analysis: five factors. Concurrent validity: Spearman's correlation: 0.74 (P=0.000). Factor analysis: 57.307% variance, α values: 0.43-0.84. Item-total correlation values: 0.59-0.678. Five themes: physical, psychological, spiritual, social, environmental dimensions.
276	Application category 5	Marques et al. (2016)	Portugal	To analyse the psychometric properties of the Holistic Comfort Questionnaire - Family (HCQ-F) for the Portuguese population and assess the level of comfort among caregivers of people with advanced chronic disease	Caregivers of people with advanced chronic disease: n = 314	Two hospitals	Questionnaire revalidation in different populations: survey	Portuguese version HCQ-C items: n = 18. Items changes: 31 items eliminated, 18 items remained. Cronbach's α =0.795. KMO: 0.797, Bartlett's test of sphericity: 2029.780 (p<0.0001). Factor analysis: 3 factors: relief, ease, and transcendence, explained 52.43% variance. Comfort score: 4.23 \pm 0.83. Comfort level: highest in Ease in the psychospiritual context: 'My God is helping me' (5.11 \pm 1.27), lowest in Ease in the psychospiritual context: caregivers are 'afraid of what is next' (3.01 \pm 1.90). higher in Relief (4.57 \pm 1.02), lower in Ease (3.57 \pm 1.15).

277	Application category 5	Shen et al. (2016)	China	To evaluate comfort of ventilated patients after coronary artery bypass grafting (CABG)	Patients removed ventilation after coronary artery bypass grafting: n = 30 (first round), n = 145 (second round); Experts in Cardiac Surgery: n = 8	One university affiliated hospital	Questionnaire cross-cultural adaption and test of reliability and validity: expert consultation survey	Chinese version GCQ items: n = 33, 4 dimensions: physical (9), psychospiritual (10), sociocultural (6) and environmental (8). Items changes: from original 28 items to final 33 items: deleted 3 item, modified 3 items, added 10 items, deleted item 9 and item 15. I-CVI: 0.898, SVI/Awe: 0.972. Cronbach's α coefficient: 0.879, subscales: 0.798-0.943, 4 dimensions: physical: 0.802, psychospiritual: 0.798, sociocultural: 0.943, environmental: 0.943. Four factors explained 64.42% variance. KMO: 0.862. Comfort score: 3.02 ± 0.44 ; 4 dimensions: 2.58 ± 0.45 - 3.34 ± 0.43 ; The lowest score was in physical dimension.
278	Application category 5	Ferrandiz and Martín-Baena (2015)	Spain	To translate the General Comfort Questionnaire (GCQ) in English language into Spanish (S-GCQ) and to examine the psychometric properties of the S-GCQ	Nurses: n = 600	Eight public hospitals in Valencia and Murcia	Questionnaire cross-cultural adaption and test of reliability and validity: translation survey	Spanish version GCQ items: n = 48. Cronbach's $\alpha = 0.90$. Item-total correlation: good, coefficient of determination: 0.94. KMO: 0.911. Factor analysis: 12 factors account for 54.51% variance.
279	Application category 5	Tosun et al. (2015)	Turkey	To determine the validity and reliability of the Turkish version of the Immobilization Comfort Questionnaire (ICQ)	Patients undergoing lower extremity arthroscopy: n = 121	One unit of orthopaedics and traumatology in a teaching and research hospital in Ankara	Questionnaire cross-cultural adaption and test of reliability and validity: translation + survey	ICQ items: n = 20, no items excluded. Cronbach's α : first measurements: 0.75, second measurements: 0.82. Criterion validity: moderate positive correlation: ICQ scores and VAS comfort scores. Moderate negative correlation: ICQ and VAS pain measures. KMO: 0.66, Bartlett's test of sphericity: 914.36 ($p < 0.001$). Factor analysis: 7 subfactors explained 70.6% variance. Correlation coefficient: 0.38 ($p < 0.001$), moderately significant correlation between first and second comfort scores assessments. Moderately significant correlation between the first and the second comfort scores assessments ($r = 0.38$, $p < 0.001$): Time 1: ICQ score: 75.37 ± 12.39 ; VAS comfort score: 5.40 ± 1.62 ; VAS pain score: 3.65 ± 2.22 . Time 2: ICQ score: 68.85 ± 12.57 , VAS comfort score: 4.42 ± 1.61 , VAS pain score: 5.01 ± 2.07 .

280	Application category 5	Paiva et al. (2015)	Brazil	To perform a cross-cultural adaptation and to assess the psychometric properties of the Portuguese (Brazil) version of the Holistic Comfort Questionnaire-caregiver (HCQ-caregiver) in a sample of family caregivers (FCs) of palliative care (PC) cancer patients	Family caregivers of palliative care patients with advanced cancer: n = 150; Experts: n = 3	One outpatient clinic and one inpatient ward of palliative care in the Cancer Hospital of Barretos	Questionnaire cross-cultural adaption and of reliability validity: translation experts consultation survey	Portuguese-Brazil version HCQ-Caregiver items: n = 49. Items change: 24 required changes. Cronbach's α : 0.858, ICC: 0.961. Retest reliability: after 2-4 days (n = 24, ICC=0.995, 95%CI 0.989-0.998), after 5-7days (n = 26; ICC=0.927, 95%CI 0.838-0.967). Ceiling effect: 19 items, 4 response rates >90%. Moderate-to-strong correlation: HCQ-Caregiver and QoL. HCQ-caregiver and WHOQOL-Brief dimension and WHOQOL-SRPB global spirituality dimension: correlation coefficient: overall QoL (r=0.688, p<0.01), physical dimension (r=0.415, p<0.01), psychological dimension (r=0.570, p<0.01), social dimension (r=0.561, p<0.01), environmental dimension (r=0.619, p<0.01), global spirituality (r=0.639, p<0.01). Completion time: 7.33 \pm 1.64. HCQ-caregiver comfort score: 214.7 \pm 25.6, from 130-261. Caregiver score: very bad or bad (median=202.5; p25th-p75th=181.1-225.5), fair (median=222; p25th-p75th=206-235), and good or excellent (median=231; p25th-p75th=214-244.5). Factors of comfort: insignificant difference between inpatient and outpatient. Significant: in the median (p25th-p75th) HCQ-caregiver (P<0.001). Greater in FCs better self-perception of emotional health.
281	Application category 5	Xu et al. (2014)	China	To form the Operation Position Comfort Questionnaire (OPCQ) and evaluate its reliability and validity	Patients undergoing lithotomy surgery: n = 30 (pilot), n = 120 (formal survey); Experts: n = 6	One unit of Obstetrics and Gynaecology at a medical college hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	Chinese OPCQ items: n = 27. Items changes: original 30 items: deleted 2 items, reworded some items, deleted 1 item, leaving 27 items. I-CVI: 0.8-1.0, S-CVI/Ave: 0.96. Cronbach's α coefficient: total: scale: 0.86, each dimension: 0.76-0.88. Factor analysis: 5 factors, explained 60.40% variation. KMO: 0.83, 5 factors explained variance: 20.48%, 16.42%, 13.36%, 6.34%, 4.78%. Item understanding: 117 (97.5%) participants fully understood, 3 (2.5%) participants basically understood. Completion time: 2-4 minutes, 5 minutes with assistance.

282	Application category 5	Cheng (2013)	China	To develop a Comfort Questionnaire for patients with Head and Neck Neoplasms undergoing radiotherapy	Patients with head and neck cancer undergoing radiation therapy: n = 180 (pilot), n = 200 (formal survey); Nursing experts: n = 21	Radiotherapy unit of three hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation survey	Chinese version RCQ items: n = 29. Items changes: from original 58 items to: added 9 items, deleted 30 items, integrated 2 items into 1 item, modified 13 items, deleted 7 items. Four dimensions: physical, psychospiritual, sociocultural, environmental. CVI: 0.885. Split half: 0.914, four factors: 0.534-0.933. Cronbach's α : 0.851, four dimensions: 0.634-0.917. Criterion validity: 0.788. KMO: 0.832, cumulative contribution rate: 73.503%. Correlation coefficients: four factors and total: 0.855, 0.697, 0.534, 0.786 ($P < 0.01$). Completion time: 12 minutes. Comfort scores: 87.78 ± 12.06 , sociocultural comfort: 4.04 ± 0.48 , environmental comfort: 3.50 ± 0.59 , psychospiritual comfort: 2.82 ± 0.64 , physical comfort: 2.37 ± 0.73 . Comfort scores at stages of radiotherapy: early stage: 92.95 ± 9.241 , middle stage: 87.33 ± 12.790 , late stage: 82.37 ± 11.851 (P early-middle, < 0.01 , P early-to-late < 0.001 , P middle-late < 0.05) ($F = 12.387$, $P < 0.001$). 8 common discomfort items: dry mouth, lots of mucus in pharynx, dry throat and larynx, decreased taste, worrying about disease recurrence, pain of the throat and larynx, loss appetite. Factors of comfort: times of radiotherapy ($P < 0.001$), family accompanying, educational level, accompanied diabetes.
283	Application category 5	Wang et al. (2013)	China	To develop a Radiotherapy Comfort Questionnaire (RCQ) for patients with head and neck neoplasms and to test its reliability and validity	Patients with head and neck cancer undergoing radiation therapy: n = 180 (pilot); Experts: n = 21	One radiotherapy unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	Chinese version RCQ items: n = 29. Item changes: 58 items in first round of consultation, initially formed 36 items, deleted 7 items. CVI: 0.885. Four dimensions: physical comfort, psychospiritual comfort, sociocultural comfort, and environmental comfort. Items understanding: 93.3% patients completely understood, 6.7% basically understood. Cronbach's α coefficient: 0.851, physical comfort: 0.917, psychospiritual comfort: 0.634, sociocultural

								comfort: 0.635, and environmental comfort: 0.778. Half coefficient: 0.914, physical comfort: 0.933, spiritual comfort: 0.534, sociocultural comfort: 0.630, environmental comfort: 0.872. Good discriminant validity: significant difference in comfort level of patients at different stages of radiotherapy. Exploratory factor analysis: 4 common factors, cumulative contribution rate: 73.50%. Completion time: 12 minutes. Factors of comfort: 3 stages of radiotherapy. Comfort scores: before radiotherapy: 92.95±9.24, during radiotherapy 87.33±12.79, after radiotherapy: 82.37±11.85.
284	Application category 5	Huang et al. (2013)	China	To test the reliability and validity of the Chinese version Comfort Scale for patients receiving total knee arthroplasty	Patients at 72hours post knee arthroplasty: n = 94; Experts in English and Orthopaedic: n = 7	One Orthopaedics unit of a university affiliated hospital	Questionnaire development and test of reliability and validity: translation, experts consultation + survey	Chinese version GCQ (not specified number of items). Item changes: changed the comprehensible items to intuitive and easy-to-understand items, and modified the items with overlapping meanings. Cronbach's α : 0.881, each dimension: 0.800-0.946. CVI: 0.730. KMO: 0.710. Cumulative variance contribution rate of four common factors: 62.56%. Comfort score: 3.26-0.50. dimension scores from high to low: environmental physical, psychological, social comfort. Factors of comfort: age, marital status, family per capita monthly income, medical payment (all P<0.01). Insignificant: gender.
285	Application category 5	Zhao and Yan (2011)	China	To develop maintenance haemodialysis patients comfort scale and evaluate its reliability and validity	Patients with end-stage renal disease receiving maintenance haemodialysis: n = 100, n = 30 (pilot survey); Nursing experts: n = 8	One unit of Blood Purification in a general hospital	Questionnaire development and test of reliability and validity: translation + experts consultation + survey	Chinese version maintenance haemodialysis comfort scale (MHCS) items: n = 28. Item change: modified items 1, 9, and 10 of the original scale, deleted items 12, 27, 20, and 21 of the original scale, added patient characteristics items. Revision principle: opinion of expert group, characteristics of maintenance haemodialysis patients, cultural background of country, results of pre-investigation. Content reliability-CVI: 0.883. Internal consistency-Cronbach's α coefficient: overall scale: 0.935, each dimension: 0.879-0.930. Retest reliability:

								overall score: 0.944, each dimension: 0.817-0.924. Four factors were extracted: psychological comfort, physical comfort, social comfort, environmental comfort (eigenvalue>1): explain 68.758% covariance. KMO value: 0.867.
286	Application category 5	Chen et al. (2010)	China	To develop a chemotherapy comfort scale suitable for evaluating the comfort of Chinese chemotherapy patients	Chemotherapy patients: n = 20, n = 30 (pilot survey); Experts: n = 5, n = 15	One hospital oncology unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + Delphi + pilot survey	Items of Chinese version Chemotherapy Comfort Scale: n = 40. 4 dimensions: physical (9 items), psychospiritual (10 items), sociocultural (9 items) and environmental (12 items). Items changes: from original 31 items to final 40 items: added 10 items, added 10 items, deleted 7 items, added 2 items, modified 11 items, deleted 2 items. Cronbach's α : 0.916, physical dimension: 0.812, psychospiritual dimension: 0.713, sociocultural dimension: 0.635, environmental dimension: 0.876. CVI: 0.976. Expert authority coefficient: 0.91±0.07, coordination coefficient W of expert opinions: 0.419 (P<0.01). Questionnaire response rate: 100.00%.
287	Application category 5	Alves-Apostolo et al. (2007)	Portugal	To develop and evaluate the psychometric characteristics of the Psychiatric In-patients Comfort Scale (PICS) in hospitalized psychiatric patients	Psychiatric inpatients: n = 49, n = 273 (a 2nd study); Portuguese nurse experts in psychiatric nursing: n = 5 (content validity)	Three psychiatric hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	PICS items: n = 38. Items changes: 98 item version (5-point Likert from 1 to 5): 51 item version, elimination of 4 items (5, 6, 8 and 31), 9 items excluded (4, 12, 13, 28, 36, 40, 41, 44, 49). Cronbach's α coefficient: total scale 0.89, subscales: 0.75-0.90. Concurrent validity: comfort dimensions correlated positively with well-being, with positive experiences of suffering, negatively with the remaining dimensions of suffering. Criterion validity: Total Comfort correlates negatively with Total Suffering (r=-0.55), logical well-being (r=0.47), positively with the positive experiences of suffering (r=0.59): moderate to high values. Factor analysis: 3-factor: relief, ease and transcendence, explained 38.64% variance.
288	Application category 5	Dowd et al. (2006)	USA	(1) What is the preliminary internal consistency reliability of	Healing Touch (HT) recipients: n = 56	Private healing touch practices either in their	Questionnaire psychometric test	HTCQ items: n = 35. Cronbach's α coefficient = 0.94. Comfort level: higher in more than 4 healing touch treatments than fewer than 4,

				the Healing Touch Comfort Questionnaire HTCQ? (2) What is the correlation between the number of HT sessions and comfort level?		homes or in settings where they volunteered	(reliability and validity): survey	13.7 points higher in 5 or more healing touch treatments than received 1 to 4 treatments. Comfort seems to increase slightly as the number of treatments increases until about 20 treatments. Then, comfort levels off and may decline, although data beyond 20 treatments are scarce (5 questionnaires).
289	Application category 5	Zhu et al. (2006)	China	To develop a Chinese version of Kolcaba's General Comfort Questionnaire	Patients 48 hours after thoracic surgery: n = 20 (pilot), n = 123 (second round); Nursing experts: n = 5	One unit of Thoracic Surgery at a medical college hospital	Questionnaire cross-cultural adaption and test of reliability and validity: translation experts consultation survey	Shortened Chinese version GCQ: n = 30 (30-120 points). Items changes: removed 1 item, added 1 item, added 2 items. CVI: 0.86. Cronbach's α : 0.92, subscale: 0.53-0.85. Comfort score: 91.27 \pm 8.63; the lowest score was in physical subscale: 2.50 \pm 0.47; the highest score was in psychological subscale: 3.26 \pm 0.35.
290	Application category 5	Schuiling and Kolcaba (2002)	USA	To describe the development of an instrument that enables quantification of a women's level of comfort during childbirth	Primiparous normally labouring women: n= 25 (pilot), n= 64; Women experienced labour and a vaginal birth: n= 10 (face validity for the Childbirth Comfort Questionnaire (CCQ)); Expert nurse-midwives: n= 10; Obstetrician/gyn aecologists: n= 10	Unspecified setting	Questionnaire development and test of reliability and validity: experts consultation + survey	CCQ items: n = 14. Items changes: added the item 'The pain of the contractions motivates me to be strong'. Internal consistency- Cronbach's α coefficient: 0.71 during pilot phase.
291	Application category 5	Novak et al. (2001)	USA	To test several formats of end-of-life comfort instruments for patients and closely involved caregivers	End of life patient and caregiver dyads: n = 38	Two hospice agencies	Questionnaire psychometric test (reliability and validity): survey	Phase I: six-item Likert EoL questionnaire and vertical TC line. Cronbach's α : 6 Likert EoL comfort questionnaire for patients: 0.98, for caregivers: 0.97. Test-retest reliability with 20 minutes interval: vertical TC line for patients: 0.64, and for caregivers: 0.79.

								<p>External validity: association between six-item Likert EoL questionnaire and vertical TC line for patients: 0.45 (first administration) and 0.48 (second administration) and for caregivers: 0.44 (first administration) and 0.50 (second administration). Association of the six-item Likert response set questionnaires between patients and families: 0.41. Associations for the vertical TC line between patient and families: 0.31. Comfort score: caregivers' questionnaires: 231±29, TC line: 8±2; patients' questionnaires: 253±27, TC line: 8±2. Phase II: four-item Likert response set questionnaire and horizontal TC line. Cronbach's α of four-item Likert response set questionnaire: patient questionnaire: 0.83, caregiver questionnaire: 0.89. Test-retest reliability of TC line with 20 minutes interval: 0.61 for caregivers, 0.42 for patients. External validity: association between four-item Likert response set questionnaire and horizontal TC line for patients: 0.31 (first administration) and 0.45 (second administration), for caregivers: 0.35 (first administration) and 0.52 (second administration). Associations for the four-item response set questionnaire between patient and families: 0.31. Associations for the horizontal TC line between patient and families: 0.10. Comfort scores: caregiver and patient questionnaires: 153±17 (range: 49-196, moderately high), caregivers' TC line: 7±2, patients' TC line: 7.4±1.8.</p>
292	Application category 6	Freire et al. (2021)	Brazil	To understand the meaning and dimensionality of state of comfort from chronic haemodialysis patients' perspectives	Patients: n=30	One haemodialysis clinic in a public hospital	Qualitative, descriptive and exploratory study	Five subcategories for being and feeling comfortable emerged: psychological well-being; Silent environment; Good quality of care; No health changes; Reduction in the frequency/duration of haemodialysis.
293	Application category 6	Gaibor et al. (2021)	Ecuador	To describe the comfort provided in the elderly	Older adults: n=8	The ATALAYA Senior Center	Qualitative study with a	Categories: Sharing with other adults; Be at ease when attended; Respecting my religion;

				through an in depth interview at the ATALAYA Senior Center			phenomenological approach	Feeling comfortable; Feeling at peace with me; Visit to my relatives
294	Application category 6	Washington et al. (2021)	USA	To better understand the challenges faced by cancer family caregivers who receive services from outpatient palliative care teams	Family caregivers: n = 39	One palliative care outpatient	Reflective qualitative study	Seven themes: need to understand, need for self-efficacy, need to derive meaning, need for informal support, need for formal support, need for resources, need for self-care.
295	Application category 6	Berntzen et al. (2020)	Norway	To explore in depth discomfort in intensive care as experienced by patients and attended to by critical care nurses	Adult ICU survivors: n = 18; critical care nurses: n = 13	One adult ICU at a teaching hospital	Secondary qualitative analysis	Three themes: Being deprived of a functioning body, Being deprived of a functioning mind, and Being deprived of integrity.
296	Application category 6	Melo et al. (2020)	Brazil	To analyse the benefits of auriculoacupuncture in nursing professionals working in the COVID-19 pandemic in the light of Katherine Kolcaba's Theory of Comfort	Nursing professionals: n = 33	One tertiary hospital	Descriptive qualitative study	Three thematic categories: "Auriculoacupuncture as a measure of comfort", "(Dis) Physical and psychospiritual comfort and performance in assisting COVID-19", and, "From organizational support to individual commitment to health".
297	Application category 6	Oliveira et al. (2020)	Brazil	To reveal the Comfort needs as perceived by hospitalized elders, using Kolcaba's theory	Hospitalized elders: n = 11	One teaching hospital	Descriptive qualitative study	Physical: Symptom Relief; Daily Life Activities; Hygiene and personal care; Diet; Sleep and rest. Environmental: superior in hospital services environment than in the elders' home. Sociocultural: family bonds were found to become more distant, triggering feelings of missing one's family and isolation. Psychospiritual: spirituality and religiosity stood out.
298	Application category 6	Osundina (2019)	USA	To examine nurses' lived experiences of comfort care among residents at the EoL in long-term care facilities	Nurses caring for patients during EoL: n = 13	Long-term care facilities: n = 3	Phenomenological study	Nurses' experiences: being emotionally drained, being part of a peaceful transition, feeling ambivalent regarding use of pain medication at the EoL, and being vigilant at recognizing which comfort measures to implement at the EoL.
299	Application category 6	Benedetti et al. (2018)	Brazil	To identify the strategies that mothers undertake while looking for comfort during the breastfeeding period	Primiparous lactating women: n = 24	Home	Collective subject discourse	Women are exposed to various situations of (dis)comforts during the breastfeeding period. The breastfeeding practice represents physical and emotional efforts to women. The woman establishes strategies

								aiming to promote their comfort, although they do prioritize their child's welfare.
300	Application category 6	Bergström et al. (2018)	Sweden	To describe and analyse the nurse anaesthetist's comfort measures in the preoperative context on the basis of the Comfort Theory	Patients: n = 12; Nurse anaesthetists: n = 11	Preoperative environment at a teaching hospital	Qualitative study	Comfort measures to ensure the patient's needs of relief, ease and transcendence in the physical, psycho-spiritual, environmental and socio-cultural contexts.
301	Application category 6	Simes et al. (2018)	Australia	To identify factors that influence nursing educator comfort in the use of simulation	University lecturers: n = 12; Registered nurses: n = 4	One school of nursing at one university	Explorative qualitative	Four themes: Personal barriers, Human resource barriers, Structural barriers, and Suggestions to address barriers.
302	Application category 6	Figueiredo et al. (2018)	Brazil	To analyse the contribution of clinical nursing care to the mother who has recently given birth with immediate postpartum pain based on the Kolcaba's Theory of Comfort	Postpartum women: n = 30; Nurses: n = 3	One rooming-in, one natural Birth Centre, one Post-Anaesthetic Care Unit and one Obstetric Emergencies in a public maternity hospital	Qualitative	Nursing care offers administration of medications, guidelines and non-pharmacological measures for pain relief.
303	Application category 6	Mendonça et al. (2018)	Brazil	To reflect on the subjectivity of puerperal care and the transcendence of being a mother in the light of the Comfort Theory	Pregnant woman: n = 1	One maternity hospital	Reflective qualitative study	The adoption of the comfort theory for the delivery of clinical nursing care allows an individual, human and ethical approach, since it incorporates the needs pointed out by the individual, which contributes to the attention being personified and removed from the mechanistic care, that is attached to protocols or even to theoretical orientations, but that do not come to life in the contact with the patient.
304	Application category 6	Guan et al. (2018)	China	To explore the comfort of the patients with nasal packing after nasal endoscopic surgery from the perspective of patients	Patients with nasal packing after nasal endoscopic surgery: n = 16	One Head and Neck Surgical unit at a teaching hospital	Phenomenological study	Four level-1 themes and sixteen level-2 themes: physical discomfort: discomfort in nose, head, eye, mouth, face, ear, sleep, diet and movement; psychological discomfort: sense of unevenness and anxiety, sociocultural discomfort: discomfort in the role of patients and bad relationship, environmental discomfort: dry, noise and bad air in the ward.
305	Application category 6	Pinto et al. (2017)	Portugal	To analyse palliative care patients'	Patients with chronic,	Five medical-surgical settings at	Qualitative study	Themes: me and what I feel, me and how I react, me a human being in society, me and

				experiences about comfort	incurable and progressive disease: n = 15	an acute and central hospital: medicine, general surgery, neurosurgery, pneumology and vascular surgery		the meaning of my life, me and the world around me. Determinants for comfort: the context of provision of care, the presence of family, the way information is managed, the search for meaning in life, and the need to keep life under control.
306	Application category 6	Egger-Rainer et al. (2017)	Austria	To determine which perception of personal comfort patients name in the context of their hospitalization in an Austrian Epilepsy Monitoring Unit	Epilepsy patients: n = 12	Epilepsy monitoring unit at one hospital	Qualitative	Comfort decreasing factors: bed rest, boredom, and waiting for possible seizures. Comfort-increasing factors: hope for enhanced seizure control, support by family and staff, and intelligible information about the necessity of restrictive conditions.
307	Application category 6	Astuti et al. (2017)	Indonesia	To describe the perceived experience post-surgical orthopaedic clients were given murottal Al-Qur 'an on comfort	Participants: n=8	Orthopaedics	Qualitative descriptive	Three themes: the need for comfort care, nursing interventions for comfort and comfort after nursing actions (murottal Al-Qur 'an). Listen to murottal Al-Qur 'an, read tartil and correct manner, will bring tranquillity of soul.
308	Application category 6	Manning (2016)	Wales	To explore how traditional and new models of care meet patients' needs according to patient and staff experiences	Patients and staff members: n = 10	One accident and emergency unit	Case study	Themes: perception of coping alone, not wanting to be a burden to families but prepared to accept help from other services (dependency) and pain affecting their physical capabilities. Service issues: the length of time Early Response Service (ERS) can provide care, analgesic administration in the community, financial assistance and social care delays in starting care packages.
309	Application category 6	Owen (2016)	USA	To explore palliative care needs in heart transplant candidates	Heart transplant candidates: n = 22	Online	Descriptive qualitative study	Themes: The emotional burden of awaiting transplant is more significant than the physical burden, Support during the wait is essential to the well-being of the candidate, and Candidates experienced significant concern for others during the wait.
310	Application category 6	Ponte et al. (2014)	Brazil	To describe the contribution of clinical nursing care to the environmental comfort of women with Acute Myocardial Infarction,	Women with acute myocardial infarction: n = 9	Coronary care unit and emergency care unit at a heart hospital	Qualitative study	Interventions: managing equipment noises, reducing conversations in the room, and controlling excessive lightning, unpleasant odors, and the temperature.

				based on the Comfort Theory and mediated by the research-care approach				
311	Application category 6	de Azevedo Ponte and de Fátima da Silva (2014)	Brazil	To report the experience of using the Care Research Method based on Kolcaba's Theory of Comfort, reinforcing the importance of conducting research to enable the interaction between subject and researcher with positive outcomes for the researched person	Women with acute myocardial infarction: n = 9	One hospital	Qualitative	The research, which involved the Care Research Method and Kolcaba's Theory of Comfort, made the integration and proximity between researcher and cared-researched patient possible, and provided immediate results that brought comfort through the implementation of care, according to the individual needs presented.
312	Application category 6	Miller and Dowd (2008)	USA	To share Miller's story about her volunteer experience with the nursing community	Residents along the Gulf coast after Hurricane Katrina struck their shores	Health care systems	Story of experience	A memorable lived experience that brought caring, healing, and comfort to a situation of devastation.
313	Application category 7	Lin et al. (2023)	China	To map and present the available evidence on the effects of interventions underpinned by Kolcaba's Comfort theory in healthcare settings	N/A	N/A	Evidence and gap map protocol of international effectiveness studies	N/A
314	Application category 7	Zhuang and Zeng (2023)	China	To examine the issue of ICU patient dignity in China from multiple perspectives employing Taylor's Reflection Model, aiming to uncover the systemic problems that lead to these unfortunate experiences	N/A	One ICU	Critical reflection	Enhancing Chinese nurse's attention to patient dignity, improving the inpatient experience of ICU patients, and enhancing the quality of nursing practice and providing improvement recommendations.
315	Application category 7	Martins et al. (2022)	Portugal	To understand how Kolcaba's Theory of	N/A	N/A	Reflective study	Kolcaba's Comfort Theory allows stating that nursing interventions promoting comfort will

				Comfort has influenced research and clinical practice in nursing through the evolution of the concept				be considered a good practice in nursing care if this intervention is perceived as comforting by the person, family, or community targeted by this intervention. Kolcaba's studies mirror the need to clarify the concept of comfort and provide a more comprehensive view of this term to all populations and contexts, awakening in other theorists and researchers the interest in continuing the study of the concept of comfort, enabling his theory to serve as a basis of support for multiple research studies over the years, demonstrating that the phenomenon of comfort is not exhausted in its essence, but remains a contemporary and pertinent focus of study for research.
316	Application category 7	Reven (2022)	USA	To describe the building of the concept welcoming ease for its use in further knowledge development in research	One 55-year-old male with advanced cancer	The medical/surgical unit	Concept building process	The model of welcoming ease illustrates relationships between the core qualities of comfort, anguish, and fully present regard. Comfort is depicted as a large semi-porous circle encasing the smaller semi-porous circle of anguish.
317	Application category 7	Auyezkhan kzy et al. (2022)	Kazakhstan	To analyse the application of Kolcaba's Theory of Comfort for nursing research, education, practice and leadership	Inapplicable	Inapplicable	Literature review and discussion paper	Wide application: paediatric care, perinaesthesia nursing, perinatal nursing; institution-level application, comfort measures: guided imagery, quiet time interventions, warm blanket, hand massage, therapeutic touch, music therapy; comfort questionnaires.
318	Application category 7	Castro et al. (2021)	Brazil	To reflect on the possible connections between Katharine Kolcaba's Theory of Comfort and Cicely Saunders's concept of Total Pain and the implications to the care of the oncology palliative care patient	N/A	Oncology palliative care	Theoretical reflection based on a literature review	The knowledge of the concepts presented allows redirecting the focus of care towards individualized actions to strengthen the patient and his participation in the choices of comfort interventions.
319	Application category 7	Tanay (2021)	USA	To identify strategies used by palliative care	Inapplicable	Inapplicable	Systematic review	Reported in themes, findings from the literature indicate that provider training and

				professionals that enhance timely hospice referrals				healthcare staff education, nurse-led strategies, patient and family teaching, academic education and research, and specialist support are current strategies used to enhance timely referrals of patients for hospice care.
320	Application category 7	Kolcaba (2020)	USA	A book chapter without a clearly reported aim	Inapplicable	Inapplicable	Literature review and discussion of book chapter	Comfort care model: hospice care, discipline-level application, difficult health care situations, institution-level application, wide application.
321	Application category 7	Luo et al. (2020)	China	To review the comfort assessment tools, factors and nursing care measures for patients with high flow nasal cannula (HFNC)	Inapplicable	Inapplicable	Literature review	Comfort care model: intensive care, comfort questionnaires, wide application.
322	Application category 7	Liu et al. (2020)	China	To summarize the literature on the comfort theory used in hospice care	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, comfort questionnaires.
323	Application category 7	Wang et al. (2020)	China	To review the evaluation indicators for comfort care	Inapplicable	Inapplicable	Literature review	Comfort questionnaires, wide application.
324	Application category 7	Glose and Diggle-Fox (2019)	USA	To critically appraise and present research findings pertaining to sexuality in older adults and to translate these findings into useful processes and tools that can be used to support comfort in sexuality and sexual wellbeing of older adults	Inapplicable	Inapplicable	Literature review	Comfort care model: elderly care, wide application.
325	Application category 7	Su et al. (2019)	China	To review effective comfort interventions for patients after endoscopic retrograde cholangiopancreatography (ERCP) in light of holistic nursing and evidence-based nursing	Inapplicable	Inapplicable	Literature review	Comfort care model: surgical care.

326	Application category 7	Cardoso et al. (2019)	Brazil	To reflect on the promotion of well-being for the hospitalized elderly based on the Theory of Comfort and the principles of bioethics	N/A	N/A	Reflective study	It is essential for health professionals to offer holistic and humanized care that addresses patients' physical, psycho-spiritual, sociocultural and environmental needs, taking into account the comfort of the hospitalized elderly and the principles of bioethics.
327	Application category 7	Brandão and Santos (2019)	Brazil	To think about application of the concepts of Henderson and Kolcaba during care for people with cutaneous conditions, with a view to affording comfort, besides autonomy for the nurses involved	N/A	Dermatology	Reflective study	This reflection may contribute to the use of the theories cited in practical care in dermatology.
328	Application category 7	Younas and Quennell (2019)	Canada	To analyse the extent of use and usefulness of nursing theories in guiding practice	N/A	N/A	Integrative review	Nursing theories have guided practice in both eastern and Western countries, and theory-guided practice has been found useful compared to traditional nursing practice. One out of 35 studies is the application of Kolcaba's comfort theory.
329	Application category 7	Huster (2018)	USA	To analyse the complexities of a lack of communication leading to a pursuit of futile treatment to care for patients and to examines methods for nurses and the healthcare system to reconcile the inadequacies found in the care of the lung cancer patient population	Inapplicable	Inapplicable	Literature review and discussion paper	Institution-level application, comfort measures: advocating, communicating, supporting hope.
330	Application category 7	Faria et al. (2018)	Portugal	To identify comfort needs and measures of the patient admitted in ICUs	Inapplicable	Inapplicable	Integrative review	Comfort needs concern essentially physical and psychospiritual context and the comfort measures more frequently adopted are aim to relieve suffering and promote a peaceful atmosphere.

331	Application category 7	Lorente et al. (2018)	Spain	To analyse the psychometric properties and the utility of instruments used to measure	Inapplicable	Inapplicable	Psychometric review	Comfort questionnaires
332	Application category 7	Pinto et al. (2017)	Portugal	To provide a conceptually adequate definition of comfort as a foundation for knowledge development, having in mind an evaluation of comfort as an outcome	Inapplicable	Inapplicable	Concept analysis	Comfort questionnaires.
333	Application category 7	Bailey (2017)	USA	To define comfort in the context of Kolcaba's mid-range Comfort Theory, demonstrating to manage comfort in a holistic way by adapting the Comfort Theory and using the Comfort Matrix to illustrate the application of the Comfort theory	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: childbirth care
334	Application category 7	Liehr and Smith (2017)	USA	To replicate the 1999 literature search process, state the recommendations as criteria to critique ongoing development and use of middle range theory, and identify approaches for moving on	N/A	N/A	Literature review	Kolcaba has most frequently described use in practice. Comfort theory has been used to guide practice at the unit level with hospitalized populations like paediatric patients, and the hospital-wide level with description of use in the Veterans Administration setting and description of use by a hospital pursuing Magnet status. There is little documentation of middle range theory moving to the frontlines of nursing practice.
335	Application category 7	Lima et al. (2017)	Brazil	To evaluate the usefulness of the comfort theory for the clinical nursing care of new mothers	N/A	N/A	Reflexive-theoretical study	The theory provides applicable concepts that facilitated the clinical nursing care of women in the postpartum period and helped increase their comfort level. The theory can be applied in different settings of clinical care for new mothers.

336	Application category 7	Sitzman and Eichelberger (2017)	USA	To introduce Katharine Kolcaba's theory of comfort	Inapplicable	Inapplicable	Literature review and discussion book chapter	Comfort care model: cardiac care, comfort measures: quiet time interventions, institution-level application, wide application.
337	Application category 7	Dinis et al. (2017)	Portugal	To analyse a case study based on the theory of Kolcaba	Inapplicable	Inapplicable	Integrative review	Comfort measures: healing touch, massage, music therapy, positions, supporting hope.
338	Application category 7	Coelho et al. (2017)	Portugal	To examine and map the non-pharmacological interventions implemented and evaluated to provide comfort in palliative care	Inapplicable	Inapplicable	Scoping review	Comfort care model: hospice care, Comfort measures: healing touch, massage, music therapy, aromatherapy, art therapy, footsoak, and reflexology, hypnotherapy, comfort needs.
339	Application category 7	Zhang et al. (2017)	China	To introduce comfort's definition, factors, characteristics, and review comfort assessing tools	Inapplicable	Inapplicable	Literature review	Comfort questionnaires
340	Application category 7	Pinto et al. (2016a)	Portugal	To analyse the elements that characterize comfort in nursing scientific literature	Inapplicable	Inapplicable	Systematic review	Comfort measurement tools: 20 tools were reviewed.
341	Application category 7	Marshall (2016)	USA	To develop an evidence-based practice guideline for doctoral-prepared NPs working in long-term care facilities	Inapplicable	Inapplicable	Literature review	Comfort care model: long term care.
342	Application category 7	Pinto et al. (2016b)	Portugal	To discuss the "Impaired Comfort" nursing diagnosis	Inapplicable	Inapplicable	Literature review and discussion paper	When the patient has impaired comfort, the nursing intervention should be specific to the etiological factor.
343	Application category 7	Astuti (2016)	Indonesia	To identify the effectiveness of the use of Quiet Time Intervention in cardiac patient	Inapplicable	Inapplicable	Literature review	Comfort care model: cardiac care, comfort measures: quiet time interventions.
344	Application category 7	Ponte and Silva (2015)	Brazil	Identify measures of comfort as a result of nursing care in the articles published by Brazilian nurses, taking	Inapplicable	Inapplicable	Integrative review	The care shown as comfort in publications of nurses in Brazil were more present in the physical context, being the satisfaction of pain relief care more referred to between the articles. However, care also was present

				into account the foundations of the theory of comfort Katharine Kolcaba				in the sociocultural context, and environmental psychospiritual.
345	Application category 7	Ludington-Hoe (2015)	USA	To provide a scenario of pregnancy and birth to show how stressful birth can be, and to relate the empirical evidence and explanatory mechanisms showing that skin-to-skin contact can change stress to comfort by providing physical, psychospiritual, and environmental comfort care using Kolcaba's Comfort Theory	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: childbirth care, comfort measures: Skin-to-skin contact.
346	Application category 7	Dowd (2014)	USA	To introduce theory of comfort	Inapplicable	Inapplicable	Literature review and discussion book chapter	Comfort care model: perinaesthesia nursing, nursing education, wide application.
347	Application category 7	Tsai et al. (2012)	China	To synthesize relevant literature to redefine the concept of comfort using the conceptual analysis steps described by Walker and Avant	Inapplicable	Inapplicable	Concept analysis	Comfort questionnaires: GCQ, Short Form of the GCQ, and the Radiation Therapy Comfort Questionnaire (RTCQ), Urinary Incontinence and Frequency Comfort Questionnaire, Hospice Comfort Questionnaires (HCQ).
348	Application category 7	Lv et al. (2012)	China	To review Kolcaba's comfort theory including background of the theorist, process of developing the theory, content of theory, and research and practical application	Inapplicable	Inapplicable	Literature review	Comfort care model; comfort measures: massage, healing touch, guided imagery, muscle relaxation; wide application.
349	Application category 7	Yan and Zhao (2012)	China	To systematically elaborate on comfort including definition, development of comfort nursing theory, clinical	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, perinaesthesia nursing, comfort measures: massage.

				practice, research, and related problems				
350	Application category 7	Doolin et al. (2011)	USA	To provide advanced practice nurses with the best available evidence for implementation of policies and procedures to allow family presence during cardiopulmonary resuscitation (CPR) in the acute care environment	Inapplicable	Inapplicable	Literature review and discussion paper	Best practices, comfort care model: comfort of nurses.
351	Application category 7	Kolcaba (2010)	USA	To introduce the theorist, overview of the theory, and application of the theory in practice	Inapplicable	Inapplicable	Literature review and discussion book chapter	Best policies, best practices.
352	Application category 7	Shi (2010)	China	To introduce the comfort theory including founder and process of theory development, content, meta-paradigm concepts, and application of the tidal care model in nursing practice	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, perinaesthesia nursing, comfort questionnaires, wide application.
353	Application category 7	March and McCormack (2009)	Canada	To examine how a modification in the theoretical framework of Kolcaba's theory of comfort can guide the thinking and work of other healthcare disciplines	Inapplicable	Inapplicable	Literature review and discussion paper	Institution-level application.
354	Application category 7	Ice (2007)	USA	To extend/ modify Kolcaba's Comfort Theory utilizing theory derivation method by Walker and Avant (2005)	Inapplicable	Inapplicable	Theory derivation method	Wide application.

355	Application category 7	Kolcaba (2003)	USA	To provide a blueprint for application of Comfort Theory in practice, education, research, and quality improvement	Inapplicable	Inapplicable	Literature review and discussion book chapter	Alternative and complementary therapies, best policies, comfort care model, comfort measures: art therapy, cognitive strategies, guided imagery, healing touch, music therapy, massage, comfort questionnaires, wide application.
356	Application category 7	Kolcaba and Wilson (2002)	USA	To define holistic comfort congruent with the standards, present a framework of comfort care for perinaesthesia nursing practice and research that is easy to understand and implement, and discuss how application of the framework can be satisfying for patients, nurses, and administrators	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: perinaesthesia nursing, comfort measures: structured information programs, therapeutic use of self.
357	Application category 7	Koehn (2000)	USA	To propose the use of Kolcaba's theory of holistic comfort to explain and predict how alternative therapies are especially well suited for relieving discomfort associated with the labouring process	Inapplicable	Inapplicable	Literature review and discussion paper	Alternative and complementary therapies, comfort care model: childbirth care, acupressure, acupuncture, music therapy, prayer.
358	Application category 7	Schoener and Krysa (1996)	USA	A framework for nurses to use to provide comfort in infertility is provided, as are suggestions regarding nursing interventions to assist infertile patients through the physical, social, psychospiritual, and environmental contexts.	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: infertility care.

359	Application category 7	Yucel (Unknown)	Turkey	A slide presentation without an informed aim	Inapplicable	Inapplicable	Literature review and discussion about a slide presentation	Comfort measures: hand massage.
Application category 1 - Interventions underpinned by Comfort Theory as the theoretical framework; Application category 2 - Interventions evaluated by instruments derived from Comfort Theory; Application category 3 - Descriptive or observational studies of services or practices underpinned by Comfort Theory; Application category 4 - Surveys using questionnaires derived from Comfort Theory; Application category 5 - Questionnaires development or adaption based on Comfort Theory; Application category 6 - Qualitative studies interpreted by Comfort Theory; Application category 7 - Literature review and discussion about Comfort Theory use.								
ACE: Acute Care for Elders; ADL: Activities of Daily Living; AECOPD: Acute Exacerbation Chronic Obstructive Pulmonary Disease; AIC: Acute Information Criterion; AMI: Acute myocardial infarction; BFQ: Bladder Function Questionnaire; CABG: Coronary Artery Bypass Grafting; CBC: Comfort Behavioural Checklist; CCQ: Childbirth Comfort Questionnaire; CCS: Case Controlled Study; CCU: Critical Care Unit; CG: Control Group; CQMVP: Comfort Questionnaire for Mechanically Ventilated Patients; CCR: Cardiopulmonary Resuscitation; CSS: Cross-sectional study; CUBS: Compromised Urinary Bladder Syndrome; EMU: Epilepsy Monitoring Unit; EMUCQ: Epilepsy Monitoring Unit Comfort Questionnaire; EoL: End of life; ERAS: Enhanced Recovery After Surgery; ERCP: Endoscopic Retrograde Cholangial Pancreatography; ERS: Early Response Service; FCs: Family caregivers; GCQ: General comfort questionnaire; GCS: General Comfort Scale; GFI: Goodness of Fit Index; HAG: Heat Application Group; HCQ: Hospice Comfort Questionnaire; HCQ-C: Holistic Comfort Questionnaire-Caregiver; HCQ-F: Holistic Comfort Questionnaire-Family; HFNC: High Flow Nasal Cannula; HSBs: Health seeking behaviours; HT: Healing Touch; HTCQ: Healing Touch Comfort Questionnaire; ICQ: Immobilization Comfort Questionnaire; ICU: Intensive care unit; ICVI: Item Content Validity Index; IFI: Incremental Fit Index; IIQ: Inpatient Experience Impact Scale; KMO: Kaiser-Meyer-Olkin; MAS: Measurement System Analysis; MCQ: Maternal Comfort Questionnaire; MG: Massage Group; MHCS: Maintenance Haemodialysis Comfort Scale; MMS: Mixed methods study; MSL: Maxillary Sinus Lift; NCQ: Nurse Comfort Questionnaire; NP: Nursing Process; NVAS: Number Visual Analog Scale; OEF: Operation Enduring Freedom; OIF: Operation Iraqi Freedom; OPCQ: Operation Position Comfort Questionnaire; OVCF: Osteoporotic Vertebral Compression Fracture; OWLS: Oxford Worries about Labour Scale; PACU: Postanaesthetic Care Unit; PC: Palliative Care; PCA: Patient-Controlled Analgesic; PCI: Percutaneous Coronary Intervention; PCQ: Perianesthesia Comfort Questionnaire; PCS: Perioperative Comfort Scale; PES: Post-Embolisation Syndrome; PGT: Preimplantation Genetic Testing; PHRCS: Post Hip Replacement Comfort Scale; PICC: Peripherally Inserted Central Catheter; PICS: Psychiatric In-patients Comfort Scale; PKP: Percutaneous Kyphoplasty; PMR: Progressive Muscle Relaxation; PPCQ: postpartum Comfort Questionnaire; PSQI: Pittsburgh Sleep Quality Index; PTSD: Posttraumatic Stress Disorder; QoL: Quality of life; RCQ: Radiotherapy Comfort Questionnaire; RCT: Randomized controlled trial; RMR: Root Mean Square Residual; RMSEA: Root Mean Square Error of Approximation; RTCQ: Radiation Therapy Comfort Questionnaire; SCQ: Stroke Comfort Questionnaire; Shortened GCQ: Shortened General Comfort Questionnaire; SCVI: Scale Content Validity Index; S-GCQ: Spanish-General Comfort Questionnaire; SICU: Surgical Intensive Care Unit; STAI-YI: State-Trait Anxiety Inventory; TACE: Trans-Arterial Chemoembolization; TC: Total Comfort; TCM: Traditional Chinese Medicine; TCS: Thermal Comfort Scale; TIVAP: Totally Implanted Venous Access Port; UIFCQ: Urinary Incontinence and Frequency Comfort Questionnaire; VA: Veterans Administration; VAS: Visual Analog Scale; VEEG: Electroencephalographic; WHOQOL: The World Health Organization QoL.								

Supplemental Table S5. Full texts excluded with reasons (update search and selection) (n=208)

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
1	Embase	Fields et al. (2021) 93EMF Understanding the Relationship Between the Emergency Department Built Environment and Physician Burnout Through High Fidelity Virtual Reality Modeling	Comfort Theory was not applied
2	MEDLINE	Laufer (2013) A brief interphase interval interposed within biphasic pulses enhances the contraction force of the quadriceps femoris muscle	Comfort Theory was not applied
3	Web of Science	Kirkpatrick et al. (2017) A Concept Analysis of Palliative Care Nursing: Advancing Nursing Theory	Comfort Theory was not applied
4	CINAHL	Cossette et al. (2006) A dimensional structure of nurse-patient interactions from a caring perspective~ refinement of the Caring Nurse-Patient Interaction Scale (CNPI-Short Scale)	Comfort Theory was not applied
5	Embase	Pulakanti and Holland (2018) A fatal case of adult-onset acute necrotizing encephalitis secondary to influenza a virus	Comfort Theory was not applied
6	Embase	Villarruel et al. (2008) A parent-adolescent intervention to increase sexual risk communication~ Results of a randomized controlled trial	Comfort Theory was not applied
7	MEDLINE	Lamarche et al. (2012) A qualitative examination of body image threats using Social Self-Preservation Theory	Comfort Theory was not applied
8	MEDLINE	Liao et al. (2020) A Social Group-Based Information-Motivation-Behavior Skill Intervention to Promote Acceptability and Adoption of Wearable Activity Trackers Among Middle-Aged and Older Adults	Comfort Theory was not applied
9	CINAHL	Broome et al. (2003) A study of parent/grandparent education for managing a febrile illness using the CALM approach	Comfort Theory was not applied
10	CINAHL	Huth et al. (2003) A study of the effectiveness of a pain management education booklet for parents of children having cardiac surgery	Comfort Theory was not applied
11	MEDLINE	Kerrigan et al. (1996) A tool to assess biomechanical gait efficiency; a preliminary clinical study	Comfort Theory was not applied
12	MEDLINE	Bryan et al. (2020) Acceptable Noise Level Stability Over a One-Year Period of Time	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
13	CINAHL	Smith (2017) Advance Care Planning Communication for Young Adults: A Role for Simulated Learning	Comfort Theory was not applied
14	Web of Science	Li et al. (2020b) Advanced nursing recovery therapy in the field of nanotechnology based on tetracycline hydrochloride type drugs	Comfort Theory was not applied
15	Embase	McNaughton Collins and Wilt (2002) Allopurinol for chronic prostatitis	Comfort Theory was not applied
16	Scopus	Tomaszewski (2013) An evaluation of the complex programme of rehabilitation for the patients with late 'whiplash' syndrome following neck injuries	Comfort Theory was not applied
17	CINAHL	Farrell and Belza (2012) Are Older Patients Comfortable Discussing Sexual Health With Nurses~	Comfort Theory was not applied
18	CINAHL	Lacovara et al. (2011) Are Patients with Breast Cancer Satisfied with Their Decision Making A Pilot Study	Comfort Theory was not applied
19	CINAHL	Chan and Whitfield (2022) Article: "Too Old" and "Too Cold": Discomfort Towards Photographs of Breastfeeding Beyond Infancy and Public Breastfeeding in Nova Scotia, Canada	Comfort Theory was not applied
20	APA PsycInfo	Marmarosh et al. (2023) Attachment theory and the transition to online group therapy during COVID-19: A preliminary investigation	Comfort Theory was not applied
21	Scopus	Berkout and Sunal (2023) Attitudes Towards Digital Mental Health Among Individuals With Unmet Mental Health Needs	Comfort Theory was not applied
22	MEDLINE	Martinez et al. (2023) Auditory brainstem responses obtained with randomised stimulation level	Comfort Theory was not applied
23	APA PsycInfo	Seow et al. (1995) Beliefs and attitudes as determinants of cervical cancer screening: A community-based study in Singapore	Comfort Theory was not applied
24	Scopus	Leroy et al. (2016) Beyond the drugs: Non-pharmacological strategies to optimize procedural care in children	Comfort Theory was not applied
25	CINAHL	Halm et al. (2012) Broadening cultural sensitivity at the end of life~ an interprofessional education program incorporating critical reflection	Comfort Theory was not applied
26	CINAHL	Stilos et al. (2007) Building Comfort With Ambiguity in Nursing Practice	Comfort Theory was not applied
27	Scopus	Canning and Drew (2022) Canadian nursing students' understanding, and comfort levels related to Medical Assistance in Dying	Comfort Theory was not applied

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d by copyright, including for uses related to text and data mining, AI training, and similar technologies.

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
28	MEDLINE	Griggs et al. (2021) Care During Pregnancy, Childbirth, Postpartum, and Human Milk Feeding for Individuals Who Identify as LGBTQ	Comfort Theory was not applied
29	CINAHL	Madeleine and Madsen (2009) Changes in the amount and structure of motor variability during a deboning process are associated with work experience and neck-shoulder discomfort	Comfort Theory was not applied
30	AMED	Cognitive and situational precipitants of loneliness among patients with cancer~ A qualitative analysis	Comfort Theory was not applied
31	CINAHL	Rodrigues Soares et al. (2020) Comfort of the child in intensive pediatric therapy: perception of nursing professionals	Comfort Theory was not applied
32	CINAHL	Czernecki and Ślusarska (2023) Comfort or discomfort for patients in palliative home care? – a pilot study	Comfort Theory was not applied
33	MEDLINE	Mitchell and Pilkington (2000) Comfort-discomfort with ambiguity: flight and freedom in nursing practice	Comfort Theory was not applied
34	CINAHL	Askin (1993) Commentary on Reconciliation and healing for mothers through skin-to-skin contact provided in an American tertiary level intensive care nursery [original article by Affonso D et al appears in NEONAT NETW 1993;12(3)~25-32]	Comfort Theory was not applied
35	Embase	da Silva et al. (2023) Construction of a Musculoskeletal Discomfort Scale for the Lower Limbs of Workers: An Analysis Using the Multigroup Item Response Theory	Comfort Theory was not applied
36	Web of Science	Zhang et al. (2011) Correlation analysis for the attack of respiratory diseases and meteorological factors	Comfort Theory was not applied
37	CINAHL	MacDonald et al. (2008) Correspondence among older drivers' perceptions, abilities, and behaviors	Comfort Theory was not applied
38	MEDLINE	Haigh et al. (2019) Cortical Hyper-Excitability in Migraine in Response to Chromatic Patterns	Comfort Theory was not applied
39	CINAHL	Blausey (2023) Creative Arts Therapists' Engagement in Sexuality Dialogues With Clients: Pilot Study	Comfort Theory was not applied
40	CINAHL	Kardong-Edgren (2007) Cultural competence of baccalaureate nursing faculty	Comfort Theory was not applied
41	MEDLINE	Edmondson et al. (2008) Death without God: religious struggle, death concerns, and depression in the terminally ill	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
42	Scopus	Drick (2004) Deep Comfort: The Essence of Nursing	Comfort Theory was not applied
43	Embase	Lysaker Paul H et al. (2011) Deficits in the ability to recognize one's own affects and those of others~ Associations with neurocognition, symptoms and sexual trauma among persons with schizophrenia spectrum disorders	Comfort Theory was not applied
44	Embase	Hartman et al. (2023) Defining the Role for Palliative Care Referral in Patients with Pancreatic Cancer Undergoing Curative-Intent Surgery~ An International Survey of Surgeons and Palliative Care Physicians	Comfort Theory was not applied
45	CINAHL	Parsons (2004) Delegation decision-making by registered nurses who provide direct care for patients with spinal cord impairment	Comfort Theory was not applied
46	CINAHL	Parsons (2004) Developing Emotional Competence of Social Workers of End-of-Life and Bereavement Care	Comfort Theory was not applied
47	MEDLINE	Aslakson et al. (2018) Developing the Storyline for an Advance Care Planning Video for Surgery Patients: Patient-Centered Outcomes Research Engagement from Stakeholder Summit to State Fair	Comfort Theory was not applied
48	MEDLINE	Liu et al. (2021) Development and validation of the Chinese surgical inpatient satisfaction and comfort questionnaire	Comfort Theory was not applied
49	Embase	Flynn et al. (2015) Development and validation of the PROMIS vulvar discomfort with sexual activity scales	Comfort Theory was not applied
50	Embase	Herranz-Pascual et al. (2023) Development of the Acoustic Comfort Assessment Scale (ACAS-12): Psychometric properties, validity evidence and back-translation between Spanish and English	Comfort Theory was not applied
51	CINAHL	Grossman (2013) Development of the Palliative Care of Dying Critically Ill Patients Algorithm	Comfort Theory was not applied
52	APA PsycInfo	Le et al. (2022) Discomfort in LGBT community and psychological well-being for LGBT Asian Americans: The moderating role of racial/ethnic identity importance	Comfort Theory was not applied
53	CINAHL	Baker (1992) Discomfort to environmental noise: heart rate responses of SICU patients	Comfort Theory was not applied
54	Embase	Schenker et al. (2013) Discussion of treatment trials in intensive care	Comfort Theory was not applied
55	APA PsycInfo	(Polivy and Herman, 1999) Distress and eating: Why do dieters overeat?	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
56	MEDLINE	Kutner et al. (2020) Does Stigma Toward Anal Sexuality Impede HIV Prevention Among Men Who Have Sex With Men in the United States: A Structural Equation Modeling Assessment	Comfort Theory was not applied
57	CINAHL	Ohashi (2014) Effects of early morning care, named 'Comfort upon Rising' care, on postoperative orthopedic ambulation and morning activity	Comfort Theory was not applied
58	CINAHL	Noji et al. (2017) Evaluating cultural competence among Japanese clinical nurses: Analyses of a translated scale	Comfort Theory was not applied
59	CINAHL	Futamura et al. (2008) Evaluation of comfort in bedridden older adults using an air-cell mattress with an automated turning function: measurement of parasympathetic activity during night sleep	Comfort Theory was not applied
60	Web of Science	Yao et al. (2023) Examining Care Planning Efficiency and Clinical Decision Support Adoption in a System Tailoring to Nurses' Graph Literacy: National, Web-Based Randomized Controlled Trial	Comfort Theory was not applied
61	Scopus	West et al. (2005) Expressions of nonabandonment during the intensive care unit family conference	Comfort Theory was not applied
62	MEDLINE	Karp and Hallett (1996) Extracorporeal 'phantom' tics in Tourette's syndrome	Comfort Theory was not applied
63	CINAHL	Hernandez-Ruiz (2020) Feasibility of Parent Coaching of Music Interventions for Children With Autism Spectrum Disorder	Comfort Theory was not applied
64	CINAHL	Mason et al. (2014) Focused and Motivated: A Psychoeducational Group for Parents Living With HIV	Comfort Theory was not applied
65	Scopus	Goodspeed Grant (2009) Food for the Soul: Social and Emotional Origins of Comfort Eating in the Morbidly Obese	Comfort Theory was not applied
66	Embase	Crayon (2017) Functionality: A concept analysis	Comfort Theory was not applied
67	CINAHL	Bernosky de Flores (2010) Human Capital, Resources, and Healthy Childbearing for Mexican Women in a New Destination Immigrant Community	Comfort Theory was not applied
68	CINAHL	Lassche et al. (2013) Identifying Changes in Comfort and Worry Among Pediatric Nursing Students Following Clinical Rotations	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title	Reasons for exclusion
69	MEDLINE	Leahy (2010) Impact of a limited trial of walking training using body weight support and a treadmill on the gait characteristics of an individual with chronic, incomplete spinal cord injury	Comfort Theory was not applied
70	MEDLINE	Hui et al. (2016) Impact of Oncologists' Attitudes Toward End-of-Life Care on Patients' Access to Palliative Care	Comfort Theory was not applied
71	CINAHL	Stacy et al. (2019) Improving Knowledge, Comfort, and Confidence of Nurses Providing End-of-Life Care in the Hospital Setting Through Use of the CARES Tools	Comfort Theory was not applied
72	Scopus	Zhang et al. (2016) Incidence of allergic rhinitis and meteorological variables: Non-linear correlation and non-linear regression analysis based on Yunqi theory of Chinese medicine	Comfort Theory was not applied
73	CINAHL	Malachi et al. (2016) Institutional factors influencing women's perception of quality of intrapartum care in Naivasha County Hospital labour ward, Kenya	Comfort Theory was not applied
74	CINAHL	Glueckauf et al. (2009) Integrative cognitive-behavioral and spiritual counseling for rural dementia caregivers with depression	Comfort Theory was not applied
75	CINAHL	Chen and Han (2010) Knowledge, attitudes, perceived vulnerability of Chinese nurses and their preferences for caring for HIV-positive individuals~ a cross-sectional survey	Comfort Theory was not applied
76	CINAHL	Noone et al. (2015) Latino Teen Theater: A Theater Intervention to Promote Latino Parent-Adolescent Sexual Communication	Comfort Theory was not applied
77	APA PsycInfo	Le et al. (2023) Latinx sexual minority men, psychological well-being, racial sociopolitical involvement, and discomfort in LGBT community	Comfort Theory was not applied
78	CINAHL	Hansen et al. (2012) Life-sustaining treatment decisions in the ICU for patients with ESLD: A prospective investigation	Comfort Theory was not applied
79	CINAHL	Li et al. (2001) Long-term care services needs for spinal-cord injury patients in Taiwan	Comfort Theory was not applied
80	MEDLINE	Bosch-Alcaraz et al. (2020) Meaning and comfort factors in the paediatric intensive care unit from an adult perspective: a descriptive phenomenological study	Comfort Theory was not applied
81	APA PsycInfo	Harkness and Nofziger (1998) Medical family therapy casebook training in a collaborative context: What we did not know then...we know now	Comfort Theory was not applied
82	Scopus	Reese et al. (2021) Mobile technology-based (mLearning) intervention to enhance breast cancer clinicians' communication about sexual health: A pilot trial	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
83	Embase	Xu et al. (2014) Modeling intention to participate in face-to-face and online lung cancer support groups	Comfort Theory was not applied
84	Scopus	Väitalo et al. (2017) Morphine Pharmacodynamics in Mechanically Ventilated Preterm Neonates Undergoing Endotracheal Suctioning	Comfort Theory was not applied
85	CINAHL	Stinson and McKeever (1995) Mothers' information needs related to caring for infant at home following cardiac surgery	Comfort Theory was not applied
86	MEDLINE	Bell et al. (2009) Neurocognition, social cognition, perceived social discomfort, and vocational outcomes in schizophrenia	Comfort Theory was not applied
87	MEDLINE	Tappen and Sopcheck (2023) Nursing Home Resident, Family, and Staff Perspectives on Achieving Comfort at End of Life: A Qualitative Study	Comfort Theory was not applied
88	CINAHL	Kelley et al. (2010) Opiniones: end-of-life care preferences and planning of older Latinos	Comfort Theory was not applied
89	APA PsycInfo	Opioid use disorder treatment in rural settings~ The primary care perspective	Comfort Theory was not applied
90	CINAHL	Butts (1998) Outcomes of comfort touch in institutionalized elderly female residents	Comfort Theory was not applied
91	Web of Science	Väitalo et al. (2016) Pain and distress caused by endotracheal suctioning in neonates is better quantified by behavioural than physiological items: a comparison based on item response theory modelling	Comfort Theory was not applied
92	MEDLINE	Khu et al. (2022) Patient-reported intraoperative experiences during awake craniotomy for brain tumors: a scoping review	Comfort Theory was not applied
93	Embase	Rubin et al. (2018) Pharmacists' perspectives on counseling adolescents and young adults on sexually transmitted infection prevention and treatment	Comfort Theory was not applied
94	Embase	Salam et al. (2012) Physical, mental, emotional and social health status of adolescent and youths in Benghazi, Libya	Comfort Theory was not applied
95	Web of Science	Catlin (2018) Pregnancy Loss, Bereavement, and Conscientious Objection in Perioperative Services	Comfort Theory was not applied
96	Embase	Linsky et al. (2016) Prescribers' perceptions of medication discontinuation~ Survey instrument development and validation	Comfort Theory was not applied
97	Embase	Cabaton (2019) Pro-con debate - Regional anaesthesia or wide awake local anaesthesia no tourniquet technique (walant) for hand and wrist surgery	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
98	CINAHL	Lasker and Bedrosian (2001) Promoting acceptance of augmentative and alternative communication by adults with acquired communication disorders	Comfort Theory was not applied
99	CINAHL	Buijs et al. (2003) Promoting participation~ evaluation of a health promotion program for low income seniors	Comfort Theory was not applied
100	CINAHL	Yeo et al. (2023) Public sentiments and the influence of information-seeking preferences on knowledge, attitudes, death conversation, and receptiveness toward palliative care: results from a nationwide survey in Singapore	Comfort Theory was not applied
101	MEDLINE	Maurici et al. (2014) Quality measurement and benchmarking of HPV vaccination services~ a new approach	Comfort Theory was not applied
102	MEDLINE	Loe et al. (2021) Racism as an Adverse Childhood Experience~ An Interactive Workshop to Train Pediatricians to Address Racism in Clinical Care	Comfort Theory was not applied
103	MEDLINE	Taylor et al. (2011) Religious involvement and suicidal behavior among African Americans and Black Caribbeans	Comfort Theory was not applied
104	Embase	Ólafsson et al. (2014) Replacing intrusive thoughts~ Investigating thought control in relation to OCD symptoms	Comfort Theory was not applied
105	MEDLINE	Ritz et al. (2013) Respiratory muscle tension as symptom generator in individuals with high anxiety sensitivity	Comfort Theory was not applied
106	Embase	Corghan et al. (2022) RETAINER II - DEVELOPMENT AND VALIDATION OF A PATIENT REPORTED OUTCOME MEASURE (PROM) FOR INGUINAL HERNIA REPAIR	Comfort Theory was not applied
107	MEDLINE	Lemay and Landreville (2010) Review: verbal agitation in dementia: the role of discomfort	Comfort Theory was not applied
108	APA PsycInfo	Primack et al. (2007) Social marketing meets health literacy: Innovative improvement of health care providers' comfort with patient interaction	Comfort Theory was not applied
109	Embase	Guo et al. (2009) Some Evidence for Multidimensional Biculturalism: Confirmatory Factor Analysis and Measurement Invariance Analysis on the Bicultural Involvement Questionnaire-Short Version	Comfort Theory was not applied
110	CINAHL	Fabrizio and Cardin (2012) Special considerations for endoscopists on PEG indications in older patients	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
111	CINAHL	Rafferty et al. (2015) Spirituality, Religion, and Health: The Role of Communication, Appraisals, and Coping for Individuals Living with Chronic Illness	Comfort Theory was not applied
112	Scopus	Giguere et al. (2018) Tailoring and evaluating an intervention to improve shared decision-making among seniors with dementia, their caregivers, and healthcare providers: Study protocol for a randomized controlled trial	Comfort Theory was not applied
113	Web of Science	Cucciare et al. (2012) Teaching Motivational Interviewing to Primary Care Staff in the Veterans Health Administration	Comfort Theory was not applied
114	MEDLINE	Perez et al. (2022) Technology Acceptance of a Mobile Application to Support Family Caregivers in a Long-Term Care Facility	Comfort Theory was not applied
115	MEDLINE	Schwenk et al. (2019) The Adapted Lifestyle-Integrated Functional Exercise Program for Preventing Functional Decline in Young Seniors: Development and Initial Evaluation	Comfort Theory was not applied
116	Embase	Fang et al. (2012) The association between physical disability and eye care utilization among elderly population in Taiwan: A nationwide cohort study	Comfort Theory was not applied
117	CINAHL	Yavaş et al. (2021) The effect on pain level and comfort of foot massages given by mothers to newborns before heel lancing: Double-blind randomized controlled study	Comfort Theory was not applied
118	CINAHL	Crangle et al. (2017) The effects of attachment and outness on illness adjustment among gay men with prostate cancer	Comfort Theory was not applied
119	CINAHL	Fox-Hill (1999) The experiences of persons with AIDS living-dying in a nursing home	Comfort Theory was not applied
120	AMED	The impact of dreams of the deceased on bereavement: A survey of hospice caregivers	Comfort Theory was not applied
121	Scopus	Tan et al. (2022) The Motivation of Media Users and China's National Media Digitization Construction in the Post-COVID-19 Era	Comfort Theory was not applied
122	AMED	The therapeutic use of doll therapy in dementia	Comfort Theory was not applied
123	Scopus	López-Pérez et al. (2022) Theory of Mind and children's comforting behaviour	Comfort Theory was not applied
124	MEDLINE	Charney et al. (2019) Training community providers in evidence-based treatment for PTSD Outcomes of a novel consultation program	Comfort Theory was not applied
125	CINAHL	Wright (2011) Trauma Resuscitations and Patient Perceptions of Care and Comfort	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
126	APA PsycInfo	Riggs (2014) Traumatized relationships: Symptoms of posttraumatic stress disorder, fear of intimacy, and marital adjustment in dual trauma couples	omfort Theory was not applied
127	CINAHL	Kaplow (2000) Use of nursing resources and comfort of cancer patients with and without do not resuscitate orders in the intensive care unit	omfort Theory was not applied
128	MEDLINE	Lu (1995) Variables associated with breast self-examination among Chinese women	omfort Theory was not applied
129	CINAHL	Williams et al. (2011) Visual Cues for Person-centered Communication	omfort Theory was not applied
130	Embase	Sarkar et al. (2018) Vitiligo and psychiatric morbidity~ A profile from a vitiligo clinic of a rural-based tertiary care center of eastern India	omfort Theory was not applied
131	MEDLINE	Beckert et al. (2020) What can we learn from patients to improve their non-invasive ventilation experience: 'It was unpleasant; if I was offered it again, I would do what I was told'	omfort Theory was not applied
132	CINAHL	Lessard (2008) Women with spinal cord injuries underwent a process of discomfort, moving towards comfort, and comfort in dealing with their changed bodies	omfort Theory was not applied
133	CINAHL	Chonody et al. (2014) Working with Older Adults: Predictors of Attitudes Towards Ageing in Psychology and Social Work Students, Faculty, and Practitioners	omfort Theory was not applied
134	CINAHL	Kagan (1994) Integrating cancer into a life mostly lived (elderly)	omfort Theory was not applied
135	Embase	Oswald et al. (2022) (143) A QI Project: Transforming Management of Agitation in the Medically Hospitalized Patient Through Resident Education	abstract without information on use of Comfort Theory
136	Embase	Su and Chen (2017) "delayed presence of diaphragmatic electrical activity" as a potential physiologic sign for insufficient assist in neurally adjusted ventilatory assist	abstract without information on use of Comfort Theory
137	Embase	Ashkenazy and Dekeyser Ganz (2018) A concept analysis of discomfort: Differentiating pain and discomfort	abstract without information on use of Comfort Theory
138	Embase	Krott et al. (2021) A novel one-day virtual-live hybrid training course is feasible and has a positive impact on colonoscopy key performance indicators of experienced endoscopy trainees	abstract without information on use of Comfort Theory
139	Embase	Perera et al. (2014) Acute respiratory distress: A rare complication of achlasia	abstract without information on use of Comfort Theory
140	Embase	Elswick et al. (2021) AIR EMBOLISM FROM ENEMA RESULTING IN STROKE	abstract without information on use of Comfort Theory

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
141	Embase	Hefel and Bauer (2022) Allergy and Immunology Advanced Practice Provider Continuing Education Curriculum	Abstract without information on use of Comfort Theory
142	Embase	Frueh et al. (2023) An Interactive Approach to Teaching Neurology Residents about Intellectual and Developmental Disabilities(IDD): Effects of In-Person Versus Virtual Noon Conferences	Abstract without information on use of Comfort Theory
143	Embase	Lewin et al. (2022) AN INTERPROFESSIONAL LONGITUDINAL WELLNESS CURRICULUM TO BUILD RESILIENCY AND FIND JOY IN WORK DURING AND BEYOND THE COVID-19 PANDEMIC	Abstract without information on use of Comfort Theory
144	Embase	Fernet et al. (2017) Between the sheets: Attachment, communication and sexuality during adolescence	Abstract without information on use of Comfort Theory
145	Embase	Harmon and DeFelice (2018) Caregiver perceptions of epinephrine autoinjector training	Abstract without information on use of Comfort Theory
146	Embase	Li et al. (2020a) Clinical efficacy of thalidomide combined with avermectin a in the treatment of generalized pustular psoriasis	Abstract without information on use of Comfort Theory
147	Embase	Malik et al. (2022) COMBINING IMPLEMENTATION SCIENCE AND HUMANCENTERED DESIGN TO EXAMINE USABILITY OF A DEPRESSION SCREENING SHARED DECISION-MAKING TOOL AMONG CORONARY HEART DISEASE PATIENTS	Abstract without information on use of Comfort Theory
148	Embase	Coelho et al. (2018) Construction of a guided imagery program for patients in palliative care units	Abstract without information on use of Comfort Theory
149	Embase	Lipkus et al. (2018) Do resident as teacher programs increase emergency medicine residents comfort level with teaching junior learners~	Abstract without information on use of Comfort Theory
150	Embase	Abumusa et al. (2023) FEMALE SEXUAL DYSFUNCTION~ A KNOWLEDGE AND COMMUNICATION SKILLS CURRICULUM FOR HEALTH CARE PROFESSIONALS	Abstract without information on use of Comfort Theory
151	Embase	Kafka-Peterson and Branom (2018) Interdepartmental collaboration in developing educational program for caring for the high-dose-rate (HDR) brachytherapy patient in the inpatient setting	Abstract without information on use of Comfort Theory
152	Embase	Patel and Breeze (2022) Mixed-methods exploration of trainee wellbeing in relation to out-of-hours staffing: a pilot study	Abstract without information on use of Comfort Theory

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
153	Embase	Nguyen et al. (2021) Piloting a training for medical students to debrief peers after an adverse patient outcome	Abstract without information on use of Comfort Theory
154	Embase	Baker (2019) Stroke care and mental health: Improving patient care with national institutes of health stroke scale certification of registered nurses	Abstract without information on use of Comfort Theory
155	Embase	Lee and Lin (2017) The effect of counselor training program on sexual comfort in Taiwan	Abstract without information on use of Comfort Theory
156	Embase	Lee et al. (2022) The Limitations of Surgical Hierarchy: A Needs Assessment in Peer Feedback Practices Within a Surgical Residency Program	Abstract without information on use of Comfort Theory
157	Embase	Shumeiko et al. (2023) TRAINING AND PRACTICE COLORECTAL CANCER SCREENING AND THE WARTIME UKRAINE	Abstract without information on use of Comfort Theory
158	Embase	Hill et al. (2017) Validation of a behaviorally anchored evaluation form for resident lectures	Abstract without information on use of Comfort Theory
159	Embase	Cooke and Stewart (2013) Wounded healer: A journey of sharing the spiritual burden of suffering (TH314)	Abstract without information on use of Comfort Theory
160	Web of Science	O'Reilly et al. (2023) "Is Everybody Comfortable?" Thinking Through Co-design Approaches to Better Support Girls' Physical Activity in Schools	Not healthcare field
161	AMED	A Novel Theory for Nursing Education~ Holistic Comfort	Not healthcare field
162	CINAHL	Gallagher and Long (2011) Advanced dementia care: demystifying behaviors, addressing pain, and maximizing comfort	Not healthcare field
163	Scopus	Carrington et al. (2007) Auditing stories about discomfort: Becoming comfortable with comfort theory	Not healthcare field
164	APA PsycInfo	Townsend et al. (2021) Difference-education improves first-generation students' grades throughout college and increases comfort with social group difference	Not healthcare field
165	CINAHL	Mazerolle et al. (2011) Evidence-Based Medicine and the Recognition and Treatment of Exertional Heat Stroke, Part II: A Perspective From the Clinical Athletic Trainer	Not healthcare field
166	Scopus	Malins and Whitty (2022) Families' comfort with LGBTQ2s+ picturebooks: Embracing children's critical knowledges	Not healthcare field
167	CINAHL	Goldsworthy et al. (2005) Goal orientation and its relationship to academic success in a laptop-based BScN program	Not healthcare field

NO.	Source	Author(s), Year, Title	Reasons for exclusion
168	Scopus	March and McCormack (2009) Nursing theory-directed healthcare: Modifying kolcaba's comfort theory as an institution-wide approach	Not healthcare field
169	Embase	Güvenbaş and Polay (2021) Post-occupancy evaluation: A diagnostic tool to establish and sustain inclusive access in Kyrenia Town Centre	Not healthcare field
170	MEDLINE	Qi and Guan (2019) Quantitatively mining and distinguishing situational discomfort grading patterns of drivers from car-following data	Not healthcare field
171	MEDLINE	Stamps (2008) Some findings on prospect and refuge I	Not healthcare field
172	Scopus	Ortuno et al. (2017) Understanding by looking through prisms	Not healthcare field
173	Scopus	Lu et al. (2019) A new butterfly femoral artery compression device vs manual compression for hemostasis of femoral artery puncture point after peripheral endovascular interventions	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
174	Web of Science	Liu and Peng (2022) Analysis of Risk Factors for Postoperative Lower Extremity Deep Venous Thrombosis and its Treatment and Nursing	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
175	Web of Science	Melo et al. (2017) Cultural adaptation and reliability of the General Comfort Questionnaire for chronic renal patients in Brazil	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
176	Scopus	Effect of whole course seamless nursing mode on patients with chronic infectious wounds	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
177	Web of Science	Zhao et al. (2021) Factors That Influence Compliance to Long-Term Remote Ischemic Conditioning Treatment in Patients With Ischemic Stroke	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
178	Scopus	Xie et al. (2022) Pain Management of Hallux Valgus Surgery Is Achieved by Cocktail Therapy	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
179	Web of Science	Westbrook et al. (1992) Position change Effects on electrocardiograms in COPD patients	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
180	Scopus	Yu et al. (2017) The impact of the predictive nursing education process on degree of comfort and quality of life for patients in the oncology department	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
181	Scopus	Deng et al. (2023) Ultrasound-Guided Thoracic Paravertebral Block Using Paraventricular Oblique Sagittal (POS) Approach for the Treatment of Acute Herpes Zoster: A Two-Blind Randomized Controlled Trial	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
182	CINAHL	Allen et al. (2008) Analysis of the pediatric outcomes data collection instrument in ambulatory children with cerebral palsy using confirmatory factor analysis and item response theory methods	Non-adult participants
183	Scopus	Kolcaba and DiMarco (2005) Comfort Theory and its application to pediatric nursing	Non-adult participants
184	Scopus	Zhang et al. (2023) Design and application of a perioperative therapeutic play program for school-aged children with fractures based on comfort theory	Non-adult participants
185	Scopus	Abo-S-Haghi et al. (2023) Effect of a care programme based on the comfort theory on physiological indicators in paediatric candidates for endoscopy: A randomised clinical trial	Non-adult participants
186	Web of Science	Pazarcikci and Efe (2023) Effects of Comfort-Oriented Nursing Care Based on the Comfort Theory on Perioperative Anxiety and Fear in Children Undergoing Surgical Circumcision: RCT	Non-adult participants
187	Scopus	Zendrato (2023) Impact of Dance Therapy on Comfort Based on Kolcaba's Nursing Theory in Children with Cerebral Palsy	Non-adult participants
188	APA PsycInfo	Heinze and Horn (2009) Intergroup contact and beliefs about homosexuality in adolescence	Non-adult participants
189	Scopus	Khaleghi et al. (2023) The effect of the comfort care model on distress, pain, and hemodynamic parameters in infants after congenital heart defect surgery	Non-adult participants
190	MEDLINE	Solnik et al. (2013) End-state comfort and joint configuration variance during reaching	Kolcaba's Comfort Theory was not applied
191	Web of Science	Mansfield et al. (2020) Integrating and applying models of comfort	Kolcaba's Comfort Theory was not applied

NO.	Source	Author(s), Year, Title	Reasons for exclusion
192	MEDLINE	Vera-Catalán et al. (2019) A new tool to assess patients' comfort during hospitalization: The Hospital Discomfort Risk questionnaire	Kolcaba's Comfort Theory was not applied
193	MEDLINE	Meneguín et al. (2021) Psychometric analysis of the comfort scale for family members of people in critical health condition	Kolcaba's Comfort Theory was not applied
194	Scopus	Verklan (2020) To Comfort Always - One Role of the Nurse and Midwife	Kolcaba's Comfort Theory was not applied
195	MEDLINE	Freitas et al. (2015) Validation of the Comfort scale for relatives of people in critical states of health	Kolcaba's Comfort Theory was not applied
196	Embase	Gu et al. (2022) Effect of New Nursing on Patients with Acute Cerebral Infarction	Retracted paper
197	Scopus	Pazarcikci (2022) Retracted: Effect of care programme based on Comfort Theory on reducing parental anxiety in the paediatric day surgery: Randomised controlled trial (Journal of Clinical Nursing, (2022), 31, 7-8, (922-934), 10.1111: jocn.15945)	Retracted paper
198	Web of Science	Pazarcikci and Efe (2022a) RETRACTED: Effect of care programme based on Comfort Theory on reducing parental anxiety in the paediatric day surgery: Randomised controlled trial (Retracted article. See vol. 31, pg. 1721, 2022)	Retracted paper
199	Web of Science	Pazarcikci and Efe (2022b) RETRACTION: Effect of care programme based on Comfort Theory on reducing parental anxiety in the paediatric day surgery: Randomised controlled trial (Retraction of Vol 31, Pg 922, 2022)	Retracted paper
200	Web of Science	Wu et al. (2022) Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery	Retracted paper
201	Scopus	Kolcaba (1991) A Taxonomic Structure for the Concept Comfort	The Comfort Theory itself without application evidence
202	MEDLINE	Kolcaba (1995b) Comfort as process and product, merged in holistic nursing art	The Comfort Theory itself without application evidence
203	Web of Science	Kolcaba (1992) Holistic comfort: operationalizing the construct as a nurse-sensitive outcome	The Comfort Theory itself without application evidence

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
204	Scopus	Kolcaba (1995a) The Art of Comfort Care	The Comfort Theory itself without application evidence
205	Scopus	Kolcaba (2011) Comfort	The old edition of a book of which the latest edition was included
206	Scopus	Kolcaba (2015) Comfort	The old edition of a book of which the latest edition was included
207	Scopus	Ojong et al. (2022) Midwives' utilization of nonpharmacological pain relief measures for labor pain management: A descriptive cross-sectional study	Comfort theory without a recognisable reference
208	Web of Science	Melo et al. (2019) Content validation of the Brazilian version of the General Comfort Questionnaire	Not published in English

Reasons for exclusion:

- Comfort Theory was not applied: n=134;
- Abstract without information on use of Comfort Theory: n=25;
- Not healthcare field: n=13;
- Comfort questionnaire without a reference indicating from Kolcaba' Comfort Theory: n=9;
- Non-adult participants: n=8;
- Kolcaba's Comfort Theory was not applied: n=6;
- Retracted paper: n=5;
- The Comfort Theory itself without application evidence: n=4;
- The old edition of a book of which the latest edition was included: n=2;
- Comfort theory without a recognisable reference: n=1;
- Not published in English: n =1.

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Supplemental Table S6. Seven categories of Comfort Theory application in healthcare (n = 359)

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Interventions underpinned by Comfort Theory as the theoretical framework	56	2018 - 2023: n = 25, 1992 - 2017: n = 31.	USA: n = 24, China: n = 20, Turkey: n = 6, Portugal: n = 3, Indonesia: n = 2, Canada: n = 1.	Hospital: n= 45, Others: n = 11	Genitourinary system diseases: n = 9, Neoplasms: n = 8, Digestive system diseases: n = 5, Palliative care: n = 6, Pregnancy, childbirth or the puerperium: n = 1, Nervous system diseases: n = 1, Critical care patients: n = 3, Hearing people: n = 3, Circulatory system diseases: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 2, Patients with pain: n = 2, Respiratory system diseases: n = 1, Chemotherapy patients: n = 1.	Quasi-experimental study: n = 29, RCT: n = 18, MMS: n = 9.
Interventions evaluated by instruments derived from Comfort Theory	96	2018 - 2022: n = 61, 1992 - 2017: n = 35.	China: n = 72, Turkey: n = 16, Iran: n = 4, USA: n = 1, Australia: n = 1, Thailand: n = 1, Malaysia: n = 1.	Hospital: n = 93, Nursing home: n = 2, School: n = 1.	Neoplasms: n = 21, Circulatory system diseases: n = 16, Pregnancy, childbirth or the puerperium: n = 10, Digestive system diseases: n = 8, Genitourinary system diseases: n = 7, Musculoskeletal system or connective tissue diseases: n = 6, Surgical or post-surgical status: n = 6, Respiratory system diseases: n = 4, Injury, poisoning or certain other consequences of external causes: n = 4, Bedridden patients: n = 3,	RCT: n = 65, Quasi-experimental study: n = 29, MMS: n = 1, CSS: n = 1.

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Descriptive or observational studies of services or practices underpinned by Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19	USA: n = 19, China: n = 10, Pakistan: n = 2, Brazil: n = 1, Chile: n = 1, Singapore: n = 1.	Hospital: n = 23, Others: n = 2.	Nervous system diseases: n = 2, Elders: n = 2, Endocrine, nutritional or metabolic diseases: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 1, Central infectious or parasitic diseases: n = 1, Ear or mastoid process diseases: n = 1, Faecal incontinence: n = 1, Unspecified inpatient: n = 2. Neoplasms: n = 8, Healthy people: n = 6, Circulatory system disease: n = 3, Palliative care: n = 3, Respiratory system diseases: n = 2, Elders: n = 2, Pregnancy, childbirth or the puerperium: n = 2, Surgical or post-surgical status: n = 1, Genitourinary system diseases: n = 1, Neurocognitive disorders: n = 1, Injury, poisoning or certain other consequences of external causes: n = 1, Critical care: n = 1, Post traumatic loss of limb patients: n = 1, Patients with pain: n = 1.	Case study: n = 13, Service description: n = 10, CCS: n = 6, Quasi-experimental study: n = 2, MMS: n = 2, Cohort study: n = 1.
Surveys using questionnaires derived from Comfort Theory	71	2018 - 2023: n = 29, 1992 - 2017: n = 42.	China: n = 29, USA: n = 15, Turkey: n = 12, Brazil: n = 7,	Hospital: n = 56, Others: n = 15.	Neoplasms: n = 12, Genitourinary system diseases: n = 8, Pregnancy, childbirth or the puerperium: n = 7, Healthy people: n = 7, Surgical or	CSS: n = 51 (in which online survey: n = 5), Longitudinal study: n = 16, MMS: n = 3,

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
			Korea: n = 2, Austria + Germany: n = 1, Colombia: n = 1, Jordan: n = 1, Iran: n = 1, Israel: n = 1, Thailand: n = 1.		post-surgical status patients, Digestive system diseases: n = 1, Palliative care: n = 5, Circulatory system diseases: n = 4, Nervous system diseases: n = 3, Critical care: n = 3, Elder patients and nursing: n = 3, Urinary incontinence patients: n = 2, Respiratory system diseases: n = 2, Injury, poisoning or trauma in other consequences of external causes: n = 1, Certain infectious or parasitic diseases: n = 1, Multiple system: n = 1, Unspecified: n = 1.	Cohort study: n = 1.
Questionnaires development or adaption based on Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19.	China: n = 12, Austria + Germany: n = 4, Brazil: n = 4, Portugal: n = 4, Turkey: n = 4, USA: n = 3, Spain: n = 2, Indonesia: n = 1.	Hospital: n = 28, Others: n = 6.	Neoplasms: n = 5, Genitourinary system diseases: n = 5, Healthy people: n = 5, Diseases of the musculoskeletal system or connective tissue: n = 4, Surgical or post-surgical status patients: n = 4, Nervous system disease: n = 3, Circulatory system diseases: n = 2, Palliative care: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 1, Pregnancy, childbirth or the puerperium: n = 1, Unspecified participants: n = 2.	Questionnaire development: n = 15, Questionnaire cross-cultural adaption: n = 8, Questionnaire psychometric test (reliability and validity): n = 7, Questionnaire revalidation in populations: n = 2, Questionnaire validation feasibility study: n = 2.

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Qualitative studies interpreted by Comfort Theory	21	2018 - 2023: n = 13, 1992 - 2017: n = 8.	Brazil: n = 8, USA: n = 4, Australia: n = 1, Austria: n = 1, China: n = 1, Norway: n = 1, Portugal: n = 1, Sweden: n = 1, Wales: n = 1, Indonesia: n = 1, Ecuador: n = 1.	Hospital: n = 14, Others: n = 7.	Patients and staff members: n = 4, Circulatory system cases: n = 3, Palliative care: n = 2, Healthy people: n = 2, Pregnancy, childbirth or the puerperium: n = 2, Traumas: n = 1, Nervous system diseases: n = 1, Elder patients: n = 1, Surgical or post-surgical status: n = 1.	Qualitative study: n = 6, Descriptive qualitative study: n = 5, Phenomenological study: n = 3, Reflective qualitative study: n = 2, Case study: n = 2, Explorative qualitative study: n = 1, Collective subject discourse: n = 1. Secondary qualitative analysis: n = 1.
Literature reviews and discussion about Comfort Theory use	47	2018 - 2023: n = 19, 1992 - 2017: n = 27.	USA: n = 18, China: n = 11, Portugal: n = 7, Brazil: n = 5, Canada: n = 2, Indonesia: n = 1, Kazakhstan: n = 1, Spain: n = 1, Turkey: n = 1.	N/A	N/A	Literature review: n = 23 (which included: integrative review: n = 4, concept analysis: n = 3, systematic review: n = 2, theory derivation method: n = 1, scoping review: n = 1, psychometric review: n = 1.), Literature review and discussion paper: n = 11, Literature review

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
						and discussion as a book chapter: n = 6, Reflection: n = 6, Literature review and discussion as a slide presentation: n = 1.

CCS: case-controlled study; CSS: cross-sectional study; MMS: mixed methods study; N/A: Not applicable; RCT: randomized controlled trial; USA: United states of America.
The sum for column of year was 358 as one document had not this information.

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Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Line 1-2, Page 1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Line 22-50, Page 1-2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Line 73-103, Page 2-3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Line 104-112, Page 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	L144-145 Page 4 Not registered
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Line 166-179, Page 4
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Line 124-145, Page 3-4; Supplemental table S1.
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Line 142-145, Page 3-4. Supplemental table S2.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Line 153-165, Page 4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Line 180-197, Page 4
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Line 180-197, Page 4-5
Critical appraisal of	12	If done, provide a rationale for conducting a critical	Not appraised



SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
individual sources of evidence§		appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Line 198-213, Page 5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Line 216-222, Figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Line 219-221, Supplemental table S4
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not appraised
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Supplemental table S4.
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Line 223-365, Page 5-11, Figure 2-4, Table 1, Table S6.
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	Line 367-440, Page 11-12
Limitations	20	Discuss the limitations of the scoping review process.	Line 442-449, Page 13
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Line 451-460, Page 13
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Line 466-467, Page 13

JB1 = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018;169:467-473. doi: 10.7326/M18-0850.

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The application of Kolcaba's Comfort Theory in healthcare promoting adults' comfort: A scoping review

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Primary Subject Heading:	Nursing
Secondary Subject Heading:	Palliative care, Evidence based practice
Keywords:	Adult palliative care < PALLIATIVE CARE, PAIN MANAGEMENT, Systematic Review, COMPLEMENTARY MEDICINE

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The application of Kolcaba's Comfort Theory in healthcare promoting adults' comfort: A scoping review

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Keywords: Comfort care, Comfort interventions, Comfort questionnaires, Comfort Theory, Patient comfort

Word count: 5224.

ABSTRACT

Background Comfort is a primary goal of healthcare. Theory-informed interventions and measurement are essential for comfort enhancement.

Objectives To categorise and synthesize the international literature on the application of Kolcaba's Comfort Theory in research and practice aiming to promote adults' comfort.

Eligibility criteria Papers reporting the application of Kolcaba's Comfort Theory on adult participants published in English and Chinese.

Sources of evidence MEDLINE, CINAHL, APA PsycInfo, Embase, AMED, Web of Science, Scopus, The Cochrane Library, JBI EBP database, CNKI, Wan Fang; grey literature of Google Scholar, Baidu Scholar, The Comfort Line were searched from January 1991 to January 2024.

Chart methods Following the Joanna Briggs Institute guidance and PRISMA-ScR checklist, two reviewers selected papers and extracted data independently using a standardised chart embedded in NVivo software. A thematic synthesis and a descriptive analysis were provided.

Results The review included 359 papers. Approximately two thirds (n = 216, 60.2%) had been published since 2017. The majority of papers (n = 316, 88.0%) originated from China, USA, Turkey, Brazil, and Portugal. The use of Kolcaba's Comfort Theory

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was dominated in a range of hospital settings (n = 263) and with participants suffering neoplasms (n = 55). Seven categories of theory application were identified: I) interventions underpinned by Comfort Theory as the theoretical framework, II) interventions evaluated by instruments derived from Comfort Theory, III) descriptive or observational studies of services or practices underpinned by Comfort Theory, IV) surveys using questionnaires derived from Comfort Theory, V) questionnaires development or adaption based on Comfort Theory, VI) qualitative studies interpreted by Comfort Theory, and VII) literature reviews and discussion about Comfort Theory use. The most commonly evaluated interventions included music therapy (n = 31), position intervention (n = 20), and massage (n = 19) and the most commonly used questionnaire was General Comfort Questionnaire (n = 109).

Conclusions Kolcaba’s Comfort Theory has been largely used in interventions and assessments across a wide range of contexts, providing a set of options for practitioners. However, quantifying evidence is needed through further systematic reviews and continuous development of Comfort Theory is warranted based on the categorisation by this review.

Strengths and limitations of this study

- The robust methodology of JBI scoping review was employed appropriately.
- The literature search and selection were highly comprehensive and systematic.
- Three hundred and fifty-nine included papers were synthesized thematically.
- The broad scope of review undermined an in-depth analysis.
- Bias was introduced by not including publications in other languages.

INTRODUCTION

Comfort is a universal concept understood across different disciplines and cultures [1]. In healthcare, comfort is central to patients’ experience and serves as a primary goal of practice. Enhanced comfort is a positive, affirmative, and desired health outcome [2-4]. Historically, several nursing theorists have defined comfort in their theory such as Florence Nightingale’s environment theory [5] and Janice Morse’s nursing process theory [6, 7]. Comfort was first theoretically defined and operationalised in the concept analysis published in 1991 [8, 9] upon which the Comfort Theory was developed by American nursing researcher Dr. Katherine Kolcaba [8, 10, 11].

According to Kolcaba, comfort is “the immediate experience of being strengthened through having the needs for relief, ease, or transcendence met in four contexts: physical, psychospiritual, environmental, and sociocultural contexts” [11 P14]. The three types of comfort needs within four contexts form a 12-cell taxonomic structure (TS) [8, 9]. Kolcaba’s Comfort Theory proposes that comfort can be enhanced by three types of comfort measures: technical comfort measures, coaching and comfort food for the soul [2, 12]. Kolcaba developed General Comfort Questionnaire (GCQ) based on the TS to measure people’ comfort level [13].

Existing reviews show that Kolcaba’s Comfort Theory is most widely applied among the different theorists [14-16], and is most frequently described its use in guiding practice [17]. However, evidence on how to use the Comfort Theory in guiding research and practice remains limited. A systematic examination and synthesis of Comfort Theory application is needed. First, expanding the use of Kolcaba’s theory from

nursing care in gerontology where it was developed to other contexts or disciplines requires tests and adaptations [9]. Second, Kocaba's Comfort Theory needs to be tested because it was developed through concept analysis drawing upon existing concepts and theories, which is an up-bottom inductive process instead of a bottom-up inductive process from qualitative studies [4, 8]. Third, operationalising the TS constructs in application might be problematic. For example, *ease* and *transcendence* could be less practiced because they might be less presented by patients before their *relief* is addressed. Furthermore, the four contexts are intertwined and often inseparable in assessments and interventions.

Comfort assessments and interventions are complex [18, 19]. Comfort is dynamic, varying, individualized [16], multidimensional [20], with inherent properties of change over a short period of time [21, 22]. Individuals' experience of comfort can be influenced by a variety of factors including patients' personal strategies, the unique role of family, staff actions and behaviours, and factors within the clinical environment [20]. Nurses reported that they had difficulties to assess the patient to fulfil their comfort needs [23]. Comfort care practices are hindered by the lack of theory-informed experimental studies and the difficulty in assessing outcomes [16].

A scoping review is needed to produce an evidence base about how this important theory is applied in comfort enhancement practice or research for adults in an international scope. A scoping review can also be helpful precursors to systematic reviews on more focused questions in relation to the theory use [24]. The proposed scoping review in this document differs from the existing reviews by focusing on the documents reporting the application of Comfort Theory by Kolcaba rather than other theorists, and among adults instead of non-adults [25], by employing a more systematic methodology on a broader scope than other reviews [14, 15].

OBJECTIVES

Our scoping review aimed to categorise and synthesize the international literature on the application of Kolcaba's Comfort Theory in research and practice aiming to promote adults' comfort. The specific objectives were: 1) to categorise the practice or research applying Comfort Theory based on purpose and study design/ methods; 2) to identify the characteristics of Comfort Theory use in interventions, measurement, and interpretation of comfort experience; and to determine 3) if further systematic reviews are feasible to evaluate the effectiveness of Comfort Theory for guiding comfort practice and research.

METHODS

Study design

We conducted this scoping review following the Joanna Briggs Institute (JBI) guidance [26, 27]. The choice of the JBI framework was underpinned by the consideration that it is an advanced guidance to the collective work by Arksey and O'Malley [28] and Levac and Colquhoun [29] and therefore has the least deficiencies as a methodological framework for scoping reviews [26, 27, 30]. In line with the JBI framework, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting checklist was used for the report of this review [26, 31].

Search strategy and paper selection

A three-step search was conducted between 25 November 2021 and 10 January 2022, and updated from 13 October 2022 to 17 October 2022. The final update search on seven main databases was conducted between 27 December 2023 and 4 January 2024 after the manuscript was peer reviewed. The first step was an initial limited search on MEDLINE and CINAHL on the following terms: patient comfort, comfort care, comfort intervention, comfort measurement, Comfort Theory, Kolcaba. This initial search was then followed by an analysis of the text words contained in the title and abstract of retrieved relevant papers, and of the index terms used to describe the articles. A second search using all identified keywords and index terms was then undertaken across all included databases: MEDLINE (EBSCOhost), CINAHL (EBSCOhost), APA PsycInfo (EBSCOhost), Embase (Elsevier), AMED (EBSCOhost), Web of Science, Scopus, Cochrane Library, JBI EBP Database, CNKI (China National Knowledge Infrastructure), and Wan Fang. Grey literature was sought from Google Scholar, Baidu Scholar, and The Comfort Line. A brief description of each source with rationale for selection is provided in supplemental Table S1. Thirdly, the reference list of papers that were included in the review was scanned for additional papers. We contacted key authors of primary studies or reviews for further information, including Dr. Katherine Kolcaba, Dr. April Bice, and Dr. Sebnem Cinar Yucel. One journal reviewer (librarian) also offered four potential records. The full strategies of update search are listed in online supplemental Table S2. The review protocol can be accessed on request.

Papers written in English and Chinese were included as the research team is proficient in the two languages. The majority of papers published in the widely used international databases are written in English so that the consideration of papers in English allows the most extent of coverage on papers met the inclusion criteria. Databases mainly covering publications in Chinese were searched to scope evidence from the context of China. Papers published from 1991 to present were included as the first publication regarding Kolcaba's Comfort Theory is in 1991 [8, 9].

Following the search, all identified articles were imported into the software Endnote X9 (Clarivate Analytics, PA, USA). After removing duplicates, two reviewers (YZ and CC) initially screened the title and abstract of each paper against the inclusion criteria and excluded those we considered completely irrelevant respectively. Following the screening of title and abstracts, the full text of the potentially relevant papers was retrieved and reviewed in detail in software NVivo (QSR International, MA, USA) by two reviewers (YL, YZ, CC, CY and JG) independently. Any disagreements that arose between the two reviewers at each stage of the study selection process were solved through discussion with the third reviewer (YL) to achieve final consensus.

The results of search and the process of paper selection were documented and presented in a PRISMA-ScR flow diagram with the reasons for exclusion [32]. A narrative description was written aligns with the flow diagram to demonstrate the selection process.

Inclusion and exclusion criteria

Our review included adult participants who aged 18 and older, and who could be patients, their family members, and healthcare professionals (HCPs), from any geographic locations and any settings. The broad context was not limited to any particular countries or health systems while it had to be in healthcare settings where

all the activities whose primary purpose was to promote, restore or maintain health.

The review sought any types of papers reporting the application of Comfort Theory developed by Kolcaba, including but not limited to quantitative studies, qualitative studies, or mixed methods studies (MMS), literature reviews, meta-analyses or synthesis, guidelines, website reports, and grey literature [33]. The application could be an intervention to enhance comfort, an instrument to measure comfort level, qualitative interpretations of comfort experience or any other types of application of the Comfort Theory. Our review only considered papers that clearly indicated that Kolcaba's Comfort Theory was used, with cited recognisable references.

Data extraction

The full text of included papers was imported into the software NVivo (QSR International, MA, USA) for data extraction. After close reading of each paper, relevant data were coded against the charting form (see supplemental Table S3) by one reviewer (YZ or CC) and then checked for accuracy by a second reviewer (YL or CC). Discrepancies and uncertainties of data extraction were solved through discussions within the review team.

To ensure a standardised data extraction consistently carried out on each source, data items were defined for this review: a) *Study participants* included the group or individuals investigated or cared for, social demographic and/ or clinical characteristics of the participants, and sample size; b) *Interventions* were defined as the care or measures provided to enhance participants' comfort; c) *Outcomes* referred to the variables or items evaluated before and/ or after interventions showing the effects of interventions; d) *Comfort measurement* was the assessment or evaluation of comfort via a specific tool or approach; e) *Setting* referred to the specific location where the study was conducted such as a unit of hospital or an institution while f) *Country of origin* referred to which country the study was conducted; g) Any other key information related to the review question and objectives were extracted as "*Other key findings*".

Data synthesis

Following data extraction, codes of extracted from the included papers were grouped as the following categories or themes: year of publication, country, settings, participants, study design, categories of theory application in research or practice. Years of publication were divided into the last five years and years earlier. Countries were clustered according to World Health Organization (WHO) regions system [34]. Settings were grouped into different types of institutions, and those in a hospital were further classified according to the typical classification of hospital units. Participants were categorised into healthy people and patients, and patients were further categorised in accordance with the International Classification of Diseases and Related Health Problems (ICD-11) [35]. The typology of theory application was established based on study design or methodology and the purpose of using Comfort Theory by included papers. Synthesized results on year of publication and country distribution were visualised in figures. A descriptive narrative was provided accompanying the tables to demonstrate how the findings related to the review objectives.

Patient and public involvement

None.

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RESULTS

The entire PRISMA-ScR flow chart is shown in Figure 1. The initial search yielded 16,167 results. Removing duplicates and applying the eligibility criteria resulted in a total of 1,483 articles. At the end of study selection, 359 papers were included in the review, and information about the characteristics of Kolcaba's Comfort Theory application were properly extracted (see supplemental Table S4). The excluded fulltexts during update are listed in supplemental Table S5.

Year of publication

The publication year of one document was unknown and the remaining 358 papers were published between 1992 – 2023 (Figure 2). The number of papers published annually increased steadily since 1996 with fluctuations in between. The largest number of publications within a year was 39 in 2017. Approximately two thirds of the papers (n = 216, 60.2%) had been published since 2017.

Country of origin

The included 359 documents reported the application of Kolcaba's Comfort Theory in 28 countries or regions (Figure 3) covering Western Pacific (n = 161), Americas (n = 115), South-East Asia (n = 7), Europe (n = 68), and Eastern Mediterranean (n = 8). Whereas many countries published one or two papers, the majority of papers (n = 316, 88.0%) originated from the following five countries: China (n = 155), USA (n = 84), Turkey (n = 37), Brazil (n = 25), and Portugal (n = 15).

Settings

As reported in the 359 papers retrieved, the studies or practices applying Kolcaba's Comfort Theory were carried out largely in hospitals (n = 263), followed by a range of settings comprising: nursing home (n = 8), university (n = 7), hospice or palliative clinic (n = 5), online (n = 4), community (n = 4), home (n = 3) and others (n = 21). In the documents specifying the setting in hospitals (n = 192), Comfort Theory was mainly applied in: surgical ward (n = 63), internal unit (n = 61), critical care unit (n = 22), obstetrics and gynaecologic unit (n = 16), outpatient (n = 19), operating room (n = 6), and emergency (n = 5).

Participants

Participants included in the studies or practices applying Comfort Theory were dominated by those with neoplasms (n = 55), followed by genitourinary diseases (n = 30), circulatory diseases (n = 30), pregnancy, childbirth or the puerperium (n = 26), surgical or post-surgical status (n = 25), healthy people (n = 23), digestive diseases (n = 19), palliative care patients (n = 18), nervous diseases (n = 12), musculoskeletal or connective tissue diseases (n = 10), respiratory diseases (n = 7), mental, behavioural or neurodevelopmental disorders (n = 6), and injury, poisoning or certain other consequences of external causes (n = 5).

Study design

The included 359 papers adopted a range of study design or methodology with a domination of interventional studies, comprising: randomised controlled trial (RCT) (n = 83), quasi-experimental study (n = 60), cross-sectional study (CSS, n = 52), literature review and discussion (n = 47), questionnaire development or adaption (n = 34), qualitative study (n = 21), longitudinal study (n = 16), MMS (n = 15), case study/ report (n = 13), service description (n = 10), case controlled study (CCS, n = 6), and

266 cohort study (n = 2).

267 **Categories of theory application in research or practice**

268 Based on the study design and/ or methods as well as the purpose of using Kolcaba's
269 Comfort Theory by the 359 papers, theory application was synthesized into seven
270 categories (in Roman Numerals I - VII), which is presented in Table 1 and Figure 4. A
271 detailed categorisation with characteristics of each paper in every category is available
272 in supplemental Table S6.

For peer review only

Table 1 Seven categories of Kolcaba's Comfort Theory application in healthcare (n = 359)

NO.	Category title	N	Year of publication	Country of origin	Settings	Design/ methods
I	Interventions underpinned by Comfort Theory as the theoretical framework	56	2018 - 2023: n = 25, 1992 - 2017: n = 31.	USA: n = 24, China: n = 20, Turkey: n = 6, Portugal: n = 3, Indonesia: n = 2, Canada: n = 1.	Hospital: n = 29, Others: n = 27	Quasi-experimental study: n = 29, RCT: n = 18, MMS: n = 9.
II	Interventions evaluated by instruments derived from Comfort Theory	96	2018 - 2022: n = 61, 1992 - 2017: n = 35.	China: n = 72, Turkey: n = 16, Iran: n = 4, USA: n = 1, Australia: n = 1, Thailand: n = 1, Malaysia: n = 1.	Hospital: n = 55, Nursing home: n = 2, School: n = 1	RCT: n = 65, Quasi-experimental study: n = 29, MMS: n = 1, CSS: n = 1.
III	Descriptive or observational studies of services or practices underpinned by Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19	USA: n = 19, China: n = 10, Pakistan: n = 2, Brazil: n = 1, Chile: n = 1, Singapore: n = 1.	Hospital: n = 15, Others: n = 19	Case study: n = 13, Service description: n = 10, CCS: n = 6, Quasi-experimental study: n = 2, MMS: n = 2, Cohort study: n = 1.
IV	Surveys using questionnaires derived from Comfort Theory	71	2018 - 2023: n = 29, 1992 - 2017: n = 42.	China: n = 29, USA: n = 15, Turkey: n = 12, Brazil: n = 7, Korea: n = 2, Austria + Germany: n = 1, Colombia: n = 1, Jordan: n = 1, Iran: n = 1, Israel: n = 1, Thailand: n = 1.	Hospital: n = 55, Others: n = 15	CSS: n = 51 (in which online survey: n = 5), Longitudinal study: n = 16, MMS: n = 3, Cohort study: n = 1.
V	Questionnaires development or adaption based on Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19.	China: n = 12, Austria + Germany: n = 4, Brazil: n = 4, Portugal: n = 4, Turkey: n = 4, USA: n = 3, Spain: n = 2, Indonesia: n = 1.	Hospital: n = 22, Others: n = 12	Questionnaire development: n = 15, Questionnaire cross-cultural adaption: n = 8, Questionnaire psychometric test (reliability and validity): n = 7, Questionnaire revalidation in populations: n = 2, Questionnaire validation feasibility study: n = 2.
VI	Qualitative studies	21	2018 - 2023: n = 13,	Brazil: n = 8, USA: n = 4,	Hospital: n = 1	Qualitative study: n = 6,

NO.	Category title	N	Year of publication	Country of origin	Settings	Design/ methods
	interpreted by Comfort Theory		1992 - 2017: n = 8.	Australia: n = 1, Austria: n = 1, China: n = 1, Norway: n = 1, Portugal: n = 1, Sweden: n = 1, Wales: n = 1, Indonesia: n = 1, Ecuador: n = 1.	Others: n = 7.	Descriptive qualitative study: n = 5, Phenomenological study: n = 3, Reflective qualitative study: n = 2, Case study: n = 2, Explorative qualitative study: n = 1, Collective subject discourse: n = 1. Secondary qualitative analysis: n = 1.
VII	Literature reviews and discussion about Comfort Theory use	47	2018 - 2023: n = 19, 1992 - 2017: n = 27.	USA: n = 18, China: n = 11, Portugal: n = 7, Brazil: n = 5, Canada: n = 2, Indonesia: n = 1, Kazakhstan: n = 1, Spain: n = 1, Turkey: n = 1.	N/A	Literature review: n = 23 (which included: integrative review: n = 4, concept analysis: n = 3, systematic review: n = 2, theory derivation method: n = 1, scoping review: n = 1, psychometric review: n = 1.), Literature review and discussion paper: n = 11, Literature review and discussion as a book chapter: n = 6, Reflection: n = 6, Literature review and discussion as a slide presentation: n = 1.

CCS: case-controlled study; CSS: cross-sectional study; MMS: mixed methods study; N/A: Not applicable; RCT: randomized controlled trial; USA: United states of America. The sum for column of year was 358 as one document had not this information.

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274 **Category I: Interventions underpinned by Comfort Theory as the theoretical**
275 **framework**

276 Of the 359 papers, 56 (15.6%) reported interventions using Kolcaba's Comfort Theory
277 as the theoretical framework, including: music therapy (n = 13), massage (n = 8), health
278 education (n = 8), position intervention (n = 7), therapeutic touch (n = 6), guided
279 imagery (n = 6), cold and hot therapy (n = 6), aromatherapy (n = 5), coaching (n = 3),
280 traditional Chinese medicine (TCM) (n=3), progressive muscle relaxation (PMR) (n =
281 2), cognitive strategies (n = 2), positive connotation (n = 2), pet visit (n = 1), silent
282 therapy (n = 1), mindfulness (n = 1), still point induction (n = 1), and Robusta coffee (n
283 = 1). Many studies reported positive effects in improving comfort (n = 40), pain (n =
284 10), satisfaction (n = 9), anxiety (n = 8), depression (n = 4), stress (n = 3), sleep quality
285 (n = 3), urine leakage (n = 2), quality of life (QoL) (n = 1), and well-being (n = 1).

286 **Category II: Interventions evaluated by instruments derived from Comfort**
287 **Theory**

288 The largest number of papers (n = 96, 26.7%) reported interventions that did not apply
289 Kolcaba's Comfort Theory as the theoretical framework but were evaluated using
290 instruments derived from Kolcaba's Comfort Theory. The common comfort measures
291 evaluated in this group included: TCM (n = 13), health education (n = 11), music
292 therapy (n = 11), position intervention (n = 7), massage (n = 5), exercise (n = 4), cold
293 and hot therapy (n = 3), foot reflexology (n = 2), PMR (n = 2), therapeutic touch (n =
294 2), guided imagery (n = 2), shower (n = 1), doll intervention (n = 1), labour dance (n =
295 1), paradoxical intention therapy (n = 1), aromatherapy (n=1), art therapy (n=1), and
296 yoga (n = 1). The commonly used questionnaires to measure comfort before and/ or
297 after interventions included Chinese version GCQ (n = 67), Turkish version GCQ (n =
298 9), Turkish version Paranaesthesia Comfort Questionnaire (n = 5), English version
299 GCQ (n = 3) and Turkish version Postpartum Comfort Scale (n = 3). Many studies
300 reported the intervention had an effective improvement in comfort (n = 92), pain (n =
301 31), anxiety (n = 20), satisfaction (n= 19), length of hospital stay (n = 11), constipation
302 (n = 7), depression (n = 6), QoL (n = 5), nausea and vomiting (n = 4), sleep quality (n
303 = 4), loss of appetite (n = 4), swelling (n = 3), difficulty urinating (n = 3), and costs (n =
304 3).

305 **Category III: Descriptive or observational studies of services or practices**
306 **underpinned by Comfort Theory**

307 Thirty-four (9.5%) papers reported a description of a specific service or practice
308 applying Kolcaba's Comfort Theory, and some of which applied the theory at case-
309 level (n = 4), unit-level (n = 8) and institution-wide level (n = 2). The following comfort
310 measures were reported in this group: music therapy (n = 7), position change (n = 6),
311 massage (n = 6), aromatherapy (n = 3), and healing touch (n = 2). Comfort (n = 9), and
312 comfort related variables were investigated including: pain (n = 3), satisfaction (n = 3),
313 anxiety (n = 2), depression (n = 1), QoL (n = 1); and symptoms such as sleep quality
314 (n = 1), delirium (n = 1) and nausea and vomiting (n = 1).

315 Supplemental Table S7 lists the comfort interventions and comfort variables across
316 Category I - III. Music therapy (n = 31), position intervention (n = 20) and massage (n
317 = 19) were the most commonly experimented comfort measures. In addition to comfort,
318 pain (n = 44), satisfaction (n = 31) and anxiety (n = 30) were often evaluated as
319 outcomes of comfort interventions.

Category IV: Surveys using questionnaires derived from Comfort Theory

The second large group was surveys investigating comfort level and associated factors in different populations (n = 71, 19.8%). Sociodemographic factors such as education level (n = 19), age (n = 18) and gender (n = 15) were often reported to be influential to comfort. The relationship between comfort and the following variables were examined by the included papers: pain (n = 9), satisfaction (n = 9), anxiety (n = 6), QoL (n = 5), depression (n = 2), length of hospital stay (n = 2), stress (n = 1), and perceived nursing caring, social support and emotion-focused coping (n = 1). In these surveys comfort was often measured by Chinese version GCQ (n = 25), Turkish version GCQ (n = 6), and Childbirth comfort questionnaire (n = 3).

Category V: Questionnaires development or adaption based on Comfort Theory

There were 34 (9.5%) papers that reported questionnaire development or adaptation for measuring comfort among different groups, with tests of reliability and validity. The questionnaire that was widely translated and adapted was GCQ (n = 9), followed by Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ) (n = 4), Immobilization Comfort Questionnaire (ICQ) (n = 2), Radiotherapy Comfort Questionnaire (RTCQ) for patients with head and neck neoplasms (n = 2), and Holistic Comfort Questionnaire – Family (HCQ-F) (n = 2).

Category VI: Qualitative studies interpreted by Comfort Theory

A small group of papers (n = 21, 5.8%) reported a qualitative study understanding comfort experience. The authors of studies in category VI mapped their findings onto the four contexts depicted in Kolcaba's Comfort Theory: physical comfort (n = 14), psychospiritual comfort (n = 14), sociocultural comfort (n = 13), and environmental comfort (n = 9).

Category VII: Literature reviews and discussion about Comfort Theory use

The last group was literature reviews and discussion papers or book chapters (n = 47, 13.1%), that summarised the use of Kolcaba's Comfort Theory mainly surrounding the following topics: comfort care models (n = 23), comfort measures (n = 14), wide application (n = 11), questionnaires (n = 10), institution-level application (n = 5), best practices (n = 5), alternative and complementary therapies (n = 4), comfort needs (n = 3), and the usefulness of nursing theory (n = 2). The commonly discussed care model using Kolcaba's Comfort Theory included: palliative and hospice care (n = 9), paranaesthesia nursing (n = 5), childbirth care (n = 4), cardiac care (n = 3), elderly care (n = 3), and nursing in critical care (n = 1).

DISCUSSION

To our knowledge, this is the first comprehensive review mapping the international literature regarding the application of Kolcaba's Comfort Theory in healthcare to generate an evidence base for research and practice with an aim to promote adults' comfort. In addressing the three objectives, our review identified 359 papers reporting seven categories of the Comfort Theory application across different healthcare contexts for comfort enhancement over the past three decades. An overview of each category was provided with amount, scope and characteristics of evidence, on the basis of which our review has identified some pitfalls of the theory application and priorities for further studies.

Our findings show that Kolcaba's Comfort Theory has been applied in a wide range of contexts, among which the most common context was a patient in a crisis or critical situation like suffering cancer or receiving a surgery. Patients in such crisis have evident and complex comfort needs that HCPs need to assess and deliver

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368 interventions to improve comfort. Integrating a crisis concept or construct [36], into the
369 Comfort Theory might be a useful step for the continuous development of the theory,
370 specifying the characteristics of high comfort needs.

371 Within the seven categories of application identified by our review, Kolcaba's Comfort
372 Theory was often used to inform or evaluate interventional studies (Category I, II and
373 III). How effective the theory in guiding these interventions requires quantifying effects
374 through further systematic reviews. Furthermore, most of the comfort measures being
375 tested were identified as coaching or 'comfort food for the soul' according to the
376 typology by Kolcaba [11], and they are considered important as an 'expert' nurse [2].
377 However because the authors of included studies did not name these measures in
378 Kolcaba's typology, it was not easy for us to differentiate the two types on some
379 measures suggesting issues in operationalising the theory.

380 A second common application type of Kolcaba's Comfort Theory lied in quantitatively
381 measuring comfort needs and levels, as outcomes of interventions (Category I and II)
382 or for testing relationship between comfort and other variables (i.e. pain, satisfaction,
383 and anxiety, in Category IV). Although a small number of comfort questionnaires were
384 developed and adapted to particular populations (Category V), GCQ was largely used
385 across contexts and cultures; such a broad application of scales developed from a
386 middle range theory indicates the need for a further systematic review to evaluate how
387 reliable and valid Kolcaba's comfort questionnaires were in measuring comfort of
388 different populations internationally.

389 The category having the smallest number of publications was using Kolcaba's Comfort
390 Theory for explaining qualitative findings (Category VI). The included qualitative
391 studies did not explicitly report revisions or modifications of Kolcaba's Comfort Theory,
392 but we found that the three types of comfort defined by Kolcaba were less identified in
393 these studies compared to the four contexts. In terms of the contexts, environment was
394 less reported compared to other three. In addition, it was often difficult in our data
395 extraction to differentiate between physical and psychospiritual, as well as between
396 psychospiritual and sociocultural comfort. Our findings suggest operationalisation
397 challenges in validating Kolcaba's TS constructs in qualitative studies and a further
398 meta synthesis on the 21 included qualitative studies might be useful.

399 An increasing interest in applying and developing the theory can be seen from the
400 increasing trend of publications over time and from the hot discussion and reflection
401 on the theory (Category VII). However, one major limitation in the Comfort Theory
402 application across the seven categories was not informing and reporting the theory use
403 transparently. Many studies retrieved in our review did not clearly describe how the
404 Comfort Theory was used in guiding their research or practice. Limited information
405 could be extracted on how the theory was adapted in different contexts according to
406 the guidance that when a middle range theory is applied directly into practices in
407 specific context, it needs to be adapted or modified to situation-specific theories [37,
408 38]. An informed use of theory that provided the framework for the research and a clear
409 description of theory use to guide practice provides a means by which other studies
410 using the same theory can be used to build the body of scientific knowledge, thus
411 advancing best practices in healthcare [39]. More informed use of theory can
412 strengthen improvement programmes and facilitate the evaluation of their
413 effectiveness [40]. Explicit descriptions of using theory to guide practice promise a
414 substantive step toward meeting the mandate for making a difference for society
415 through theory guidance [17].

416 **Future research**

417 Based on the evidence base generated in our review, more research is needed to
418 further test and explore the effects of Kolcaba's Comfort Theory in guiding different
419 types of research and practice that aim to promote comfort. The theory needs to be
420 developed and adapted when guiding intervention or practice in specific context.
421 Further quantitative or qualitative systematic reviews can be conducted to answer
422 more focused questions in relation to the effectiveness of theory use in guiding
423 interventions, developing instruments, and interpreting qualitative findings. How the
424 theory is used in research and practice need to be more explicit and informed.

425 **Limitations**

426 Our literature search may have introduced selection bias and missed relevant articles
427 by restricting inclusion to studies written in English and Chinese. We excluded
428 literature from non-adult groups, thus limiting the application of results to adults'
429 healthcare practice. We did not formally assess the quality of included studies, as we
430 respected the scoping review approach but we took a critical stance in the overall
431 quality of evidence by considering limitations in study design and methodology.

432 **CONCLUSIONS**

433 Kolcaba's Comfort Theory has been used largely in interventions and assessments for
434 a range of participants in hospital settings. A variety of holistic comfort measures and
435 questionnaires have been proposed and tested for adults' comfort enhancement
436 offering many options for HCPs, researchers, patients and public members. Our
437 overview of evidence and categorisation of Kolcaba's Comfort Theory application can
438 serve as the first step in enabling stringency in the field as well as inspire further
439 exploration, and thereby support for the needed growing research interest in comfort
440 care. Nevertheless, there are still several issues that deserve further research by the
441 scientific community in order to match the quality of scientific evidence to the
442 undeniable complexity inherent in comfort theory use in guiding research and practice.

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445 purpose of review. We also thank Dr. April Bice for her assistant on clarification for
446 some grey literature sources.

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450 **Ethical approval**

451 Approval of IRB exemption for this study was granted by Shanghai Ethics Committee
452 for Clinical Research (approval number: SECCR/ 2022-111-01) because we
453 conducted a scoping review following the JBI and PRISMA-ScR guideline.

454 **Contributors**

455 YL conceptualized the study, drafted the protocol and wrote the manuscript. YZ and
456 CC performed searches, study selection and data extraction, supervised by YL. For
457 update search, YL conducted searches, and YL, CY and JG completed the paper
458 selection and data extraction. YZ formed tables. CC created figures. All authors have

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read and approved the final manuscript. YL acted as guarantor.

Patient consent for publication

Not applicable.

Competing interests

None.

Data Sharing Statement

All data relevant to the study are included in the article or uploaded as supplementary information.

For peer review only

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Figures

Figure 1 The PRISMA-ScR flow chart

Figure 2 Number of publications per year (n=358)

Legend: One included paper's year of publication was unknown. Each blue bar shows the number of publications (on the top of bar, vertical axis) in a year between 1992-2023 (horizontal axis). The dotted curved line is an exponential trendline showing the number of publications rose at increasingly higher rates.

Figure 3 Number of publications by country (n=359)

Legend: The blue bar shows the number of publications (vertical axis) in each country (horizontal axis) ranking from high to low, corresponding to the size of bubble summing up the number of publications in different countries within each region on the world map according to WHO regions system.

Figure 4 Number and percentage of papers in each category of application (n=359)

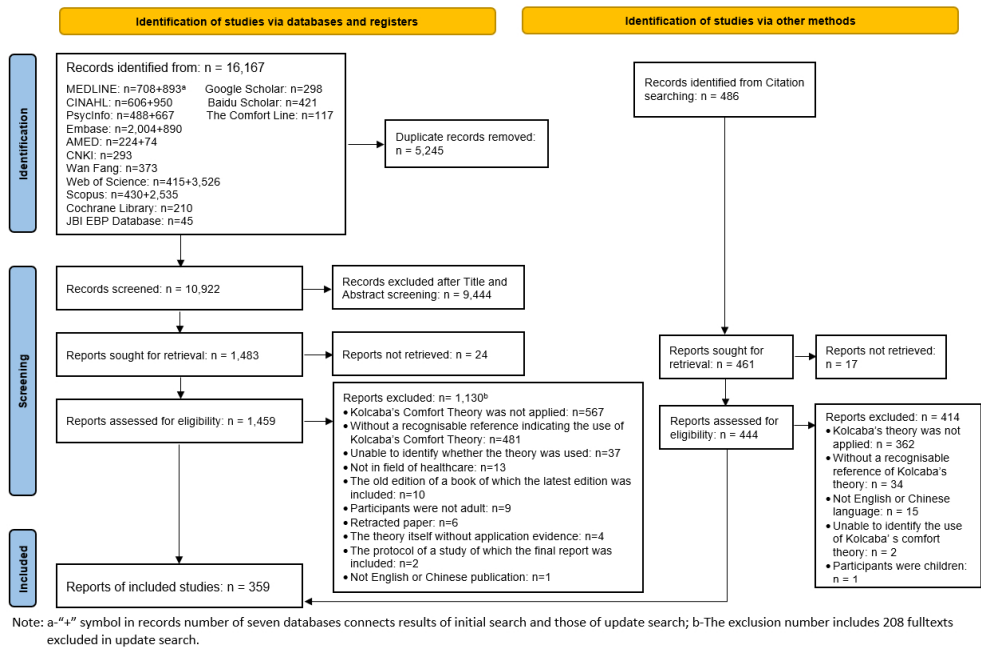


Figure 1 The PRISMA-ScR flow chart

441x294mm (72 x 72 DPI)

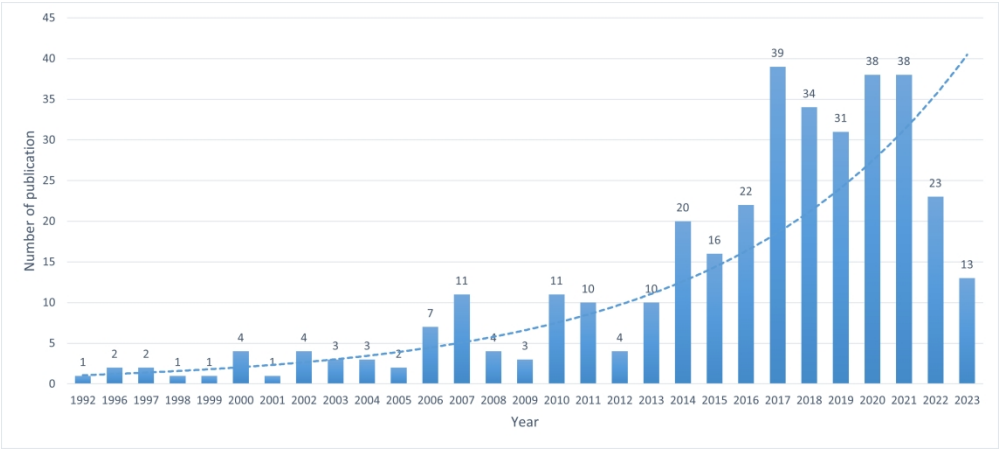


Figure 2 Number of publications per year (n=358)
One included paper’s year of publication was unknown. Each blue bar shows the number of publications (on the top of bar, vertical axis) in a year between 1992-2023 (horizontal axis). The dotted curved line is an exponential trendline showing the number of publications rose at increasingly higher rates.

632x283mm (130 x 130 DPI)

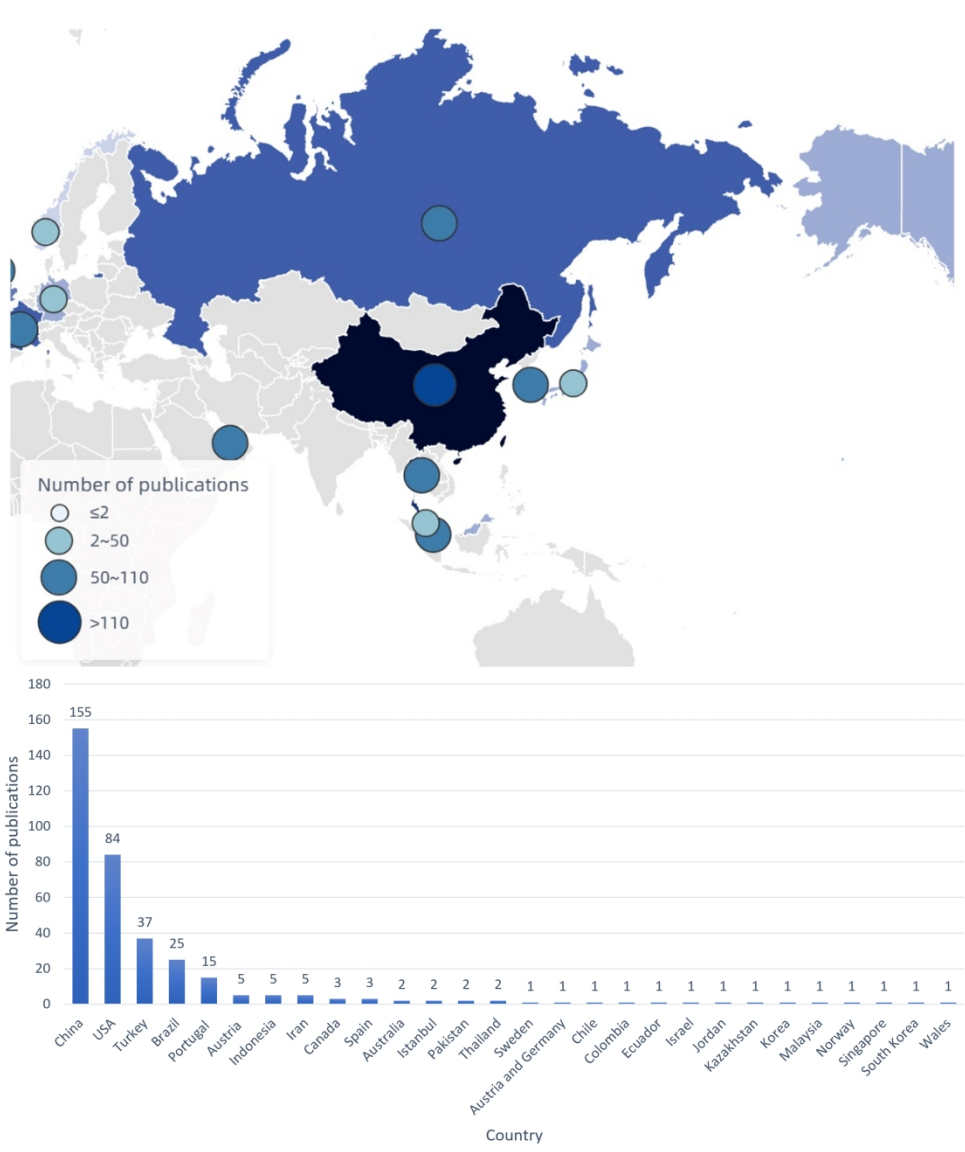


Figure 3 Number of publications by country (n=359)
The blue bar shows the number of publications (vertical axis) in each country (horizontal axis) ranking from high to low, corresponding to the size of bubble summing up the number of publications in different countries within each region on the world map based on WHO regions system.

1220x1411mm (57 x 57 DPI)

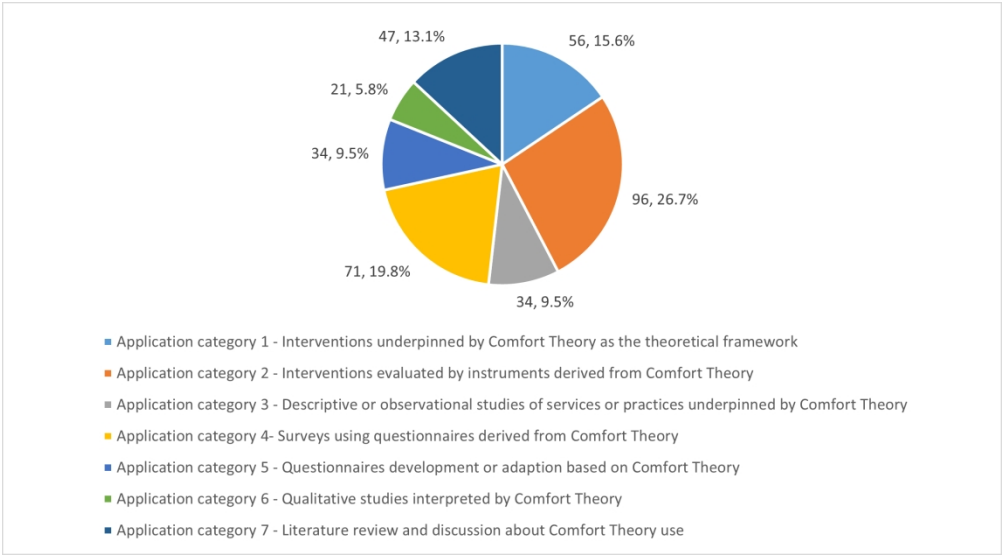


Figure 4 Number and percentage of papers in each category (n=359)

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Supplemental Table S1 The sources on Comfort Theory Application searched and rationale for inclusion (n=14)

Source	Rationale for selection
Medline with Full Text (EBSCOhost)	MEDLINE is the world's best-known medicine and clinical science database, covering literature in the fields of medicine, nursing, dentistry, as well as coverage in the areas of allied health, biological and physical sciences, humanities and information science from 1950 to the present. As the work of transfer related to clinical science and nursing it should be included in MEDLINE.
CINAHL Plus with Full Text (EBSCO host)	CINAHL (Cumulative Index of Nursing and Allied Health Literature) provides authoritative coverage of full text literature related to midwifery, nursing, occupational therapy, physiotherapy, podiatry, health education and other related subject areas. As transfer practice involved nursing practitioners, this database was chosen.
APA PsycInfo (EBSCOhost)	PsycINFO is the key database for psychology and related subjects. It contains references and abstracts for journal articles, books, book chapters and dissertations. This database was included as literature regarding the experiences and psychological aspects in the process of transfer were targeted by this review.
AMED - The Allied and Complementary Medicine Database (EBSCOhost)	AMED (Allied and Complementary Medicine Database) covers a selection of journals in complementary medicine, palliative care and several professions allied to medicine including physiotherapy, occupational therapy, podiatry and rehabilitation. As transfer involves palliative care, this database was selected.
Embase (Elsevier)	Embase covers human medicine and related biomedical research including drugs, toxicology, clinical medicine, biotechnology, health affairs, psychiatry and forensic medicine.
Web of Science (core collection)	Web of Science provides references, and in many cases abstracts, for peer-reviewed scholarly journal articles in the sciences, social sciences, arts and humanities. It was chosen because of such a comprehensive coverage of literature.
Scopus	Scopus is the largest abstract and citation database of peer-reviewed literature in the fields of science, technology, medicine, social sciences, and arts and humanities. This database was included

Source	Rationale for selection
	as it would cover literature about transfer in relation to medicine, social sciences and humanities.
Cochrane Library	The Cochrane Library is a collection of databases that contain different types of high-quality, independent evidence to inform healthcare decision-making. This online library was selected for grey literature.
The JBI EBP Database	The JBI EBP Database provides the latest research and evidence-based guidelines regarding patient care, treatment options, and interventions. It provides 5,000+ up-to-date Evidence Summaries, Recommended Practices and Best Practice Information Sheets across 30+ specialty Nursing and Allied Health fields. This database was chosen for its coverage on latest nursing evidence because Comfort Theory has been classified as a nursing theory.
CNKI	China National Knowledge Infrastructure (CNKI) is the largest source of China-based information resources covering journal articles, doctoral and master's theses, conference papers, newspapers, reference books, patents, standards, and international literature resources in medicine and health, industry, agriculture, economy education, humanity and social science, etc. Therefore, it was selected as a major source of sources based in China.
Wan Fang	Wanfang Data is an affiliate of the Chinese Ministry of Science & Technology, providing access to a wide range of database resources, serving as a gateway to Chinese culture, medicine, business, science, engineering, etc. It was chosen to retrieve literature published in Chinese.
Google Scholar	Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. It was included to search for any types of sources regarding using Kolcaba's Comfort Theory.
Baidu Scholar	Baidu Scholar (http://xueshu.baidu.com) is a free academic resource search platform of Baidu. It is dedicated to contributing resource retrieval technology and big data mining analysis capabilities to academic research and optimizing academic resources. It provides

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Source	Rationale for selection
The Comfort Line	The website was selected because it provides free access to a huge amount of Chinese and foreign literature (with an index of over 400 million literature resources).
	TheComfortLine (<u>The Comfort Line</u>) is a website introducing the Comfort Theory by Dr. Kolcaba, and offering many downloadable articles, videotapes and slides that explain the Comfort Theory, define the concepts, offer, and demonstrate how the theory should be used in practice. The website was chose because it is a useful site for grey literature regarding the theory under investigation.

Supplemental Table S2. Application of Comfort Theory Scoping Review Search Strategies

MEDLINE (EBSCOhost)

Date of Update Search: 5 January 2024

Number of results: 893

Search	Search Terms	Results
1	(MH "Patient Comfort")	619
2	"patient* comfort*"	6,629
3	"comfort*"	64,308
4	"discomfort*"	76,555
5	"patient* discomfort*"	3,889
6	"physical comfort"	433
7	"spiritual comfort"	54
8	"psychological comfort"	144
9	"psychospiritual comfort"	4
10	"social comfort"	80
11	"sociocultural comfort"	4
12	"environment* comfort"	96
13	"holistic comfort*"	23
14	"pregnancy discomfort*"	193
15	"family comfort"	30
16	"family discomfort"	9
17	"families* comfort"	4
18	"families* discomfort"	2
19	"staff comfort"	48
20	"health professional* comfort"	1
21	"healthcare professional* comfort"	1
22	"caregiver* comfort"	35
23	"caregiver* discomfort"	4
24	"carer* comfort"	59
25	"carer* discomfort"	1
26	"family caregiver* comfort"	2
27	"family caregiver* discomfort"	16,243
28	"family member* comfort"	5
29	"family member* discomfort"	0
30	"family member* discomfort"	3,033
31	"comfort* practice*"	15
32	"comfort* care"	1,017
33	"comfort* interaction*"	19
34	"comfort* support*"	73
35	"comfort* intervention*"	37

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Search	Search Terms	Results
36	"comfort* enhancement*"	9
37	"comfort* promotion*"	5
38	"comfort* alteration*"	1
39	"altered comfort"	9
40	"comfort* experience*"	147
41	"comfort* environment*"	311
42	"comfort scale*"	382
43	"comfort questionnaire*"	166
44	"General Comfort Questionnaire"	60
45	"GCQ"	100
46	"comfort level"	2,164
47	"comfort evaluation*"	108
48	"comfort measurement*"	16
49	"comfort assessment*"	150
50	OR/1-49	137,417
51	"comfort theory"	52
52	"comfort theories"	3
53	"Kolcaba"	69
54	AU "Kolcaba"	49
55	CR "Kolcaba"	62
56	"Kolcaba* comfort theory"	17
57	"Kolcaba* theory"	15
58	"Kolcaba* theories"	3
59	"Kolcaba* theory of comfort"	11
60	(MH "Nursing Theory")	6,193
61	"nursing theory"	6,964
62	"nursing theories"	3,929
63	(MH "Psychological Theory")	14,519
64	(MH "Social Theory")	540
65	"theory"	526,329
66	"theories"	79,765
67	"conceptual framework*"	18,040
68	"theoretical framework*"	19,175
69	OR/51-68	610,910
70	50 AND 69	2,526
71	70 AND Publication Date: 19910101-20241231	2,422
72	71 AND Language: -Chinese or English	2,358
73	72 AND (Age: -aged 80 and over OR young adult: 19-24 years OR aged: 65+ years OR middle aged: 45-64 years OR adult: 19-44 years OR all adult: 19+ years)	893

CINAHL (EBSCOhost)

Date of Update Search: 31 December 2023

Number of results: 950

Search	Search Terms	Results
1	(MH "Comfort")	4,724
2	"discomfort*"	22,329
3	"comfort*"	32,862
4	"physical comfort"	1,962
5	(MH "Spiritual Comfort (Saba CCC)")	1
6	"spiritual comfort"	54
7	"psychological comfort"	67
8	"psychospiritual comfort"	2
9	"social comfort"	46
10	"sociocultural comfort"	5
11	"environment* comfort"	32
12	"holistic comfort*"	28
13	(MH "Pregnancy Discomforts")	506
14	"pregnancy discomforts")	511
15	"patient* comfort*"	2,297
16	"patient* discomfort*"	1,047
17	"family comfort*"	26
18	"family discomfort*"	1
19	"families* comfort*"	3
20	"families* discomfort*"	351
21	"staff comfort"	39
22	"health professional* comfort"	2
23	"healthcare professional* comfort"	3
24	"caregiver* comfort"	28
25	"caregiver* discomfort"	3
26	"carer* comfort"	53
27	"family caregiver* comfort"	17,852
28	"family caregiver* discomfort"	1,063
29	"family member* comfort"	5
30	"family member* discomfort"	1,011
31	"carer* discomfort"	19
32	(MH "Comfort Care (Saba CCC)")	1
33	"comfort* care"	711
34	(MH "Comfort Alteration (Saba CCC)")	1
35	"comfort* alteration*"	2
36	(MH "Altered Comfort (NANDA)")	2
37	"altered comfort"	12

Search	Search Terms	Results
38	(MH "Physical Comfort Promotion (Iowa NIC)")	976
39	"physical comfort promotion"	2
40	(MH "Psychological Comfort Promotion (Iowa NIC)")	993
41	"psychological comfort promotion"	2,087
42	"comfort* promotion"	8
43	"comfort* practice*"	12
44	"comfort* interaction*"	9
45	"comfort* support*"	56
46	"comfort* intervention*"	39
47	"comfort* enhancement*"	4
48	"comfort* experience*"	78
49	"comfort* environment*"	131
50	"comfort scale*"	196
51	(MH "Comfort Level (Iowa NOC)")	4
52	"comfort level"	1,730
53	(MH "General Comfort Questionnaire")	51
54	"General Comfort Questionnaire"	67
55	"GCQ"	31
56	"comfort questionnaire*"	164
57	"comfort evaluation*"	427
58	"comfort measurement*"	4
59	"comfort assessment*"	68
60	OR/1-59	53,427
61	"comfort theory"	77
62	"comfort theories"	2
63	"Kolcaba"	102
64	AU "Kolcaba"	52
65	"Kolcaba* comfort theory"	29
66	"Kolcaba* theory of comfort"	19
67	"Kolcaba* theory"	26
68	"Kolcaba* theories"	8
69	(MH "Nursing Theory")	4,597
70	"Nursing Theory"	5,888
71	"Nursing Theories"	2,735
72	(MH "Theory")	7,126
73	"Theory"	141,745
74	"Theories"	23,802
75	"conceptual framework*"	59,728
76	"theoretical framework*"	15,325
77	OR/61-76	203,131

Search	Search Terms	Results
78	60 AND 77	2,553
79	78 AND Publication Date: 19910101-20241231	2,518
80	79 AND (Language: -Chinese OR English)	2,424
81	80 AND (Age: -aged 80 and over OR young adult: 19-24 years OR aged: 65+ years OR middle aged: 45-64 years OR adult: 19-44 years OR all adult: 19+ years)	950

APA PsycINFO (EBSCOhost)

Date of Update Search: 1 January 2024

Number of results: 667

Search	Search Terms	Results
1	"comfort"	6,491
2	"discomfort"	5,280
3	MM "Physical Comfort"	824
4	"physical comfort"	1,450
5	"spiritual comfort"	19
6	"psychological comfort"	39
7	"psychospiritual comfort"	2
8	"social comfort"	54
9	"sociocultural comfort"	1
10	"environment* comfort"	16
11	"holistic comfort"	1
12	"pregnancy discomfort*")	5
13	"patient* comfort*"	143
14	"patient* discomfort*"	32
15	"family comfort"	5
16	"family discomfort*"	2
17	"families* comfort*"	407
18	"families* discomfort*"	1
19	"staff comfort"	11
20	"health professional* comfort"	3,241
21	"healthcare professional* comfort"	1,206
22	"caregiver* comfort"	2
23	"carer* comfort"	14
24	"family caregiver* comfort"	1,208
25	"comfort* practice*"	8
26	"comfort* care"	115
27	"comfort* interaction*"	11
28	"comfort* support*"	6
29	"comfort* intervention*"	6

Search	Search Terms	Results
30	"comfort* enhancement*"	1
31	"comfort* promotion*"	276
32	"comfort alteration"	8
33	"altered comfort"	44
34	"comfort* experience*"	40
35	"comfort* environment*"	37
36	"comfort scale*"	132
37	"comfort questionnaire*"	51
38	"General Comfort Questionnaire"	8
39	"GCQ"	26
40	"comfort level"	272
41	"comfort evaluation*"	22
42	"comfort measurement*"	2
43	"comfort assessment*"	43
44	OR/1-43	11,222
45	"comfort theory"	6
46	"comfort theories"	110
47	"Kolcaba"	5
48	AU "Kolcaba"	3
49	"Kolcaba* theory of comfort"	5
50	"Kolcaba* comfort theory"	2
51	"Kolcaba* theory"	1
52	"Kolcaba* theories"	1
53	"nursing theory"	308
54	"nursing theories"	23
55	"theory"	215,366
56	"theories"	66,770
57	"conceptual framework*"	7,611
58	"theoretical framework*"	10,590
59	OR/45-58	257,753
60	44 AND 59	1,043
61	60 AND Publication Date: 1991-2024	973
62	61 AND (Language: -Chinese OR English)	963
63	62 AND (Age: -aged 80 and over OR young adult: 19-24 years OR aged: 65+ years OR middle aged: 45-64 years OR adult: 19-44 years OR all adult: 19+ years)	667

Embase

Date of Update Search: 4 January 2024

Number of results: 890

Search	Search Terms	Results
1	'comfort':ab,kw,ti,de AND [embase]/lim	51,223
2	'discomfort':ab,kw,ti,de AND [embase]/lim	90,876
3	'physical comfort'/mj	1
4	'spiritual comfort'	73
5	'psychological comfort'	196
6	'psychospiritual comfort'	3
7	'social comfort'	107
8	'sociological comfort'	0
9	'sociocultural comfort'	3
10	'environment* comfort'	118
11	'holistic comfort'	24
12	'pregnancy discomfort*'	26
13	'patient comfort'/mj	704
14	'patient* comfort*'	13,559
15	'patient* discomfort*'	5,655
16	'family comfort'	60
17	'family discomfort'	25
18	'families* comfort'	8
19	'families* discomfort'	1
20	'staff comfort'	115
21	'health professional* comfort'	2
22	'healthcare professional* comfort'	2
23	'caregiver* comfort'	66
24	'caregiver* discomfort'	7
25	'carer* comfort'	2
26	'carer* discomfort'	0
27	'family caregiver* comfort'	2
28	'family caregiver* discomfort'	0
29	'family member* comfort'	8
30	'family member* discomfort'	0
31	'comfort* practice*'	27
32	'comfort care'/mj	3
33	'comfort* care'	2,846
34	'comfort* interaction*'	23
35	'comfort* support*'	100
36	'comfort* intervention*'	52
37	'comfort* enhancement*'	9
38	'comfort* promotion*'	7
39	'comfort alteration'	1
40	'altered comfort'	11
41	'comfort* experience*'	203
42	'comfort* environment*'	424

Search	Search Terms	Results
43	'comfort scale*'	657
44	'comfort questionnaire*'	216
45	'general comfort questionnaire'	65
46	'gcq'	143
47	'comfort level*'	5,205
48	'comfort evaluation*'	119
49	'comfort measurement*'	24
50	'comfort assessment*'	209
51	OR/1-50	142,751
52	'comfort theory':ab,kw,ti	55
53	'comfort theory'	56
54	'comfort theories':ab,kw,ti	4
55	'comfort theories'	4
56	'kolcaba':ab,kw,ti	64
57	'kolcaba':au	49
58	'kolcaba* comfort theory'	0
59	'kolcaba* comfort theories'	0
60	'kolcaba* theory of comfort'	0
61	'kolcaba* theories of comfort'	0
62	'kolcaba* theory'	1
63	'kolcaba* theories'	0
64	'nursing theory'	7,135
65	'nursing theories'	409
66	'theory'	536,399
67	'theories'	86,116
68	'conceptual framework'	50,445
69	'conceptual framework*'	51,450
70	'theoretical framework*'	19,948
71	#52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70	646,909
72	#51 AND #71	1,989
73	#51 AND #71 AND ([chinese]/lim OR [english]/lim) AND ([adult]/lim OR [young adult]/lim OR [middle aged]/lim OR [aged]/lim OR [very elderly]/lim) AND [humans]/lim AND [embase]/lim AND [1991-2024]/py	890

AMED (EBSCOhost)

Date of Update Search: 1 January 2024

Number of results: 74

Search	Search Terms	Results
1	(ZU "comfort")	2
2	"comfort"	1,262
3	"discomfort"	1,282
4	"physical comfort"	20
5	"spiritual comfort"	7
6	"psychological comfort"	7
7	"psychospiritual comfort"	2
8	"sociological comfort"	0
9	"social comfort"	2
10	"sociocultural comfort"	2
11	"environment* comfort"	1
12	"holistic comfort"	6
13	"pregnancy discomfort*"	1
14	"patient* comfort*"	86
15	"patient* discomfort*"	30
16	"family comfort"	2
17	"family discomfort*"	2
18	"families* comfort*"	1
19	"families* discomfort*"	20
20	"staff comfort"	2
21	"health professional* comfort"	472
22	"healthcare professional* comfort"	127
23	"caregiver* comfort"	23
24	"caregiver* discomfort"	7
25	"carer* comfort"	6
26	"carer* discomfort"	1
27	"family caregiver* comfort"	204
28	"family caregiver* discomfort"	66
29	"family member* comfort"	561
30	"family member* discomfort"	558
31	"comfort* practice*"	184
32	"comfort* care"	74
33	"comfort* interaction*"	2
34	"comfort* support*"	6
35	"comfort* intervention*"	2
36	"comfort* enhancement*"	2
37	"comfort* promotion*"	1

Search	Search Terms	Results
38	"comfort alteration"	1
39	"altered comfort"	11
40	"comfort* experience*"	4
41	"comfort* environment*"	5
42	"comfort scale*"	18
43	"comfort questionnaire*"	7
44	"General Comfort Questionnaire"	194
45	"GCQ"	2
46	"comfort level"	83
47	"comfort evaluation*"	3
48	"comfort measurement*"	1
49	"comfort assessment*"	5
50	OR/1-49	2,496
51	"comfort theory"	3
52	"comfort theories"	3
53	"Kolcaba"	11
54	AU "Kolcaba"	11
55	"Kolcaba* theory of comfort"	11
56	"Kolcaba* comfort theory"	2
57	"Kolcaba* theory"	2
58	"Kolcaba* theories"	0
59	(ZU "nursing theory")	3
60	"nursing theory"	32
61	"nursing theories"	6
62	"theory"	5,592
63	"theories"	1,323
64	"conceptual framework*"	416
65	"theoretical framework*"	362
66	OR/51-65	7,166
67	50 AND 66	74
68	67 AND Publication Date: 19910101-20241231 AND (Language: -Chinese OR English)	74

Scopus

Date of Update Search: 2 January 2024

Number of results: 3,526

Search	Search Terms	Results
	((TITLE-ABS-KEY (comfort)) OR (TITLE-ABS-KEY (discomfort)) OR (TITLE-ABS-KEY (physical AND comfort)) OR (TITLE-ABS-KEY (spiritual AND comfort)) OR (TITLE-ABS-KEY (psychological AND comfort)) OR (TITLE-ABS-KEY (psychospiritual AND comfort)) OR (TITLE-ABS-KEY (social AND comfort)) OR (TITLE-ABS-KEY (sociological AND comfort)) OR (TITLE-ABS-KEY (sociocultural AND comfort)) OR (TITLE-ABS-KEY (environment* AND comfort)) OR (TITLE-ABS-KEY (holistic AND comfort)) OR (TITLE-ABS-KEY (pregnancy AND discomfort*)) OR (TITLE-ABS-KEY (patient* AND comfort*)) OR (TITLE-ABS-KEY (patient* AND discomfort*)) OR (TITLE-ABS-KEY (family AND comfort)) OR (TITLE-ABS-KEY (family AND discomfort)) OR (TITLE-ABS-KEY (families*AND comfort)) OR (TITLE-ABS-KEY (families* AND discomfort)) OR (TITLE-ABS-KEY (staff AND comfort)) OR (TITLE-ABS-KEY (health AND professional*AND comfort)) OR (TITLE-ABS-KEY (healthcare AND professional* AND comfort)) OR (TITLE-ABS-KEY (caregiver* AND comfort)) OR (TITLE-ABS-KEY (caregiver* AND discomfort)) OR (TITLE-ABS-KEY (carer* AND discomfort)) OR (TITLE-ABS-KEY (family AND caregiver* AND comfort)) OR (TITLE-ABS-KEY (family AND caregiver* AND discomfort)) OR (TITLE-ABS-KEY (comfort* AND practice*)) OR (TITLE-ABS-KEY (comfort* AND care)) OR (TITLE-ABS-KEY (comfort* AND interaction*)) OR (TITLE-ABS-KEY (comfort* AND support*)) OR (TITLE-ABS-KEY (comfort* AND intervention*)) OR (TITLE-ABS-KEY (comfort* AND enhancement*)) OR (TITLE-ABS-KEY (comfort* AND promotion*)) OR (TITLE-ABS-KEY (comfort AND alteration)) OR (TITLE-ABS-KEY (altered AND comfort)) OR (TITLE-ABS-KEY (comfort*AND experience*)) OR (TITLE-ABS-KEY (comfort* AND environment*)) OR (TITLE-ABS-KEY (comfort AND scale*)) OR (TITLE-ABS-KEY (comfort AND questionnaire*)) OR (TITLE-ABS-KEY (general AND comfort AND questionnaire)) OR (TITLE-ABS-KEY (gcq)) OR (TITLE-ABS-KEY (comfort AND level*)) OR (TITLE-ABS-KEY (comfort AND evaluation*)) OR (TITLE-ABS-KEY (comfort AND measurement*)) OR (TITLE-ABS-KEY (comfort AND assessment*))) AND (TITLE-ABS-KEY-AUTH (comfort AND theory) OR TITLE-ABS-KEY (comfort AND theories) OR TITLE-ABS-KEY(kolcaba) OR AUTH (kolcaba) OR TITLE-ABS-KEY (kolcaba* AND comfort AND theory) OR TITLE-ABS-KEY (kolcaba* AND theory AND of AND comfort)) AND (LIMIT-TO (LANGUAGE, "English") OR LIMIT-TO (LANGUAGE, "Chinese")) AND (LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "MEDI") OR LIMIT-TO (SUBJAREA, "ENVI") OR LIMIT-TO (SUBJAREA,"PSYC") OR LIMIT-TO (SUBJAREA, "NURS") OR LIMIT-TO (SUBJAREA,"ARTS") OR LIMIT-TO (SUBJAREA, "MULT") OR LIMIT-TO (SUBJAREA, "HEAL") OR LIMIT-TO (SUBJAREA, "PHAR") OR LIMIT-TO (SUBJAREA, "DENT") OR LIMIT-TO (SUBJAREA, "IMMU") OR LIMIT-TO (SUBJAREA, "NEUR"))	3,526

Web of Science
Date of Update Search: 01 January 2024
Number of results: 3,526

Search	Search Terms	Results
1	TS=(comfort)	106,868
2	TS=(discomfort*)	61,753
3	TS=(physical comfort)	8,706
4	TS=(spiritual comfort)	701
5	TS=(psychological comfort)	3,096
6	TS=(psychospiritual comfort)	25
7	TS=(social comfort)	7,268
8	TS=(sociological comfort)	90
9	TS=(sociocultural comfort)	131
10	TS=(environment* comfort)	27,532
11	TS=(holistic comfort*)	976
12	TS=(pregnancy discomforts)	1,105
13	TS=(patient* comfort*)	28,980
14	TS=(patient* discomfort*)	31,838
15	TS=(family comfort)	4,952
16	TS=(family discomfort)	2,202
17	TS=(families* comfort)	1,777
18	TS=(families* discomfort)	616
19	TS=(staff comfort)	2,297
20	TS=(health professional* comfort)	1,640
21	TS=(healthcare professional* comfort)	568
22	TS=(caregiver* comfort)	1,186
23	TS=(caregiver* discomfort)	588
24	TS=(carer* comfort)	174
25	TS=(carer* discomfort)	74
26	TS=(family caregiver* comfort)	521
27	TS=(family caregiver* discomfort)	193
28	TS=(family member* comfort)	929
29	TS=(family member* discomfort)	394
30	TS=(comfort* practice*)	12,239
31	TS=(comfort* care)	17,734
32	TS=(comfort* interaction*)	8501
33	TS=(comfort* support*)	17,082
34	TS=(comfort* intervention*)	9,434
35	TS=(comfort* enhancement*)	1,528
36	TS=(comfort* promotion*)	961
37	TS=(comfort alteration)	439

Search	Search Terms	Results
38	TS=(altered comfort)	1,171
39	TS=(comfort* experience*)	19,884
40	TS=(comfort* environment*)	33,985
41	TS=(comfort scale*)	10,400
42	TS=(comfort questionnaire*)	7,575
43	TS=(General Comfort Questionnaire)	868
44	TS=(GCQ)	164
45	TS=(comfort level*)	23,739
46	TS=(comfort evaluation*)	13,124
47	TS=(comfort measurement*)	10,500
48	TS=(comfort assessment*)	10,541
49	OR/1-48	183,043
50	TS=(comfort theory)	3,572
51	TS=(comfort theories)	3,572
52	AU=(Kolcaba)	22
53	TS=(Kolcaba)	54
54	TS=(Kolcaba* comfort theory)	30
55	TS=(Kolcaba* theory of comfort)	30
56	TS=(Kolcaba* theory)	32
57	TS=(Kolcaba* theories)	32
58	OR/50-57	3,613
59	49 AND 58	3,603
60	59 AND (2024 or 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 or 2009 or 2008 or 2007 or 2006 or 2005 or 2004 or 2003 or 2002 or 2001 or 2000 or 1999 or 1998 or 1997 or 1996 or 1995 or 1994 or 1993 or 1992 or 1991) (Publication Years)	3,599
61	60 AND (English or Chinese) (Languages)	3,526

Supplemental table S3. Data extraction charting form for Comfort Theory Application

Author, year	Country of origin	Aim	Study participants	Setting	Design/methods	Interventions	Outcomes	Comfort measurement	Other key findings

Supplemental Table S4. An overview of included papers reporting the application of Comfort Theory (N=359)

NO.	Category of theory application	Authors (Year)	Country	Aim	Participants	Settings	Study design/ methods	Key findings
1	Application category 1: Virtual reality glasses and mobile-assisted education group	Bal and Kulakaç (2023)	Turkey	To examine the effect of comfort theory-based nursing care on pain and comfort in women	Women undergoing hysterosalpingography: n=126 (42 vs 42 vs 42)	Obstetric outpatient clinics of a public hospital	RCT	The comfort theory-based nursing care (virtual reality glasses and mobile-assisted education group) was effective in increasing women's comfort with painful invasive procedures such as hysterosalpingography and reducing pain.
2	Application category 1: A multimodal, multidisciplinary, evidence-based EPC programme	Liu et al. (2023)	China	To develop and implement a multimodal, multidisciplinary, evidence-based EPC programme underpinned by Kolcaba's comfort theory for patients undergoing elective neurosurgery and to conduct an RCT to assess the feasibility, effectiveness and safety of this EPC programme	Patients admitted for elective neurosurgery: n=110	Department of Neurosurgery of Xi'an International Medical Center	RCT	The primary outcome is patient satisfaction and comfort measured by the Chinese Surgical Inpatient Satisfaction and Comfort Questionnaire.
3	Application category 1: Labour support	Unutkan and Balci Yangin (2023)	Turkey	To examine the effects of nursing care structured according to Kolcaba's theory on duration, pain, and comfort of childbirth	Women: n=46 (21 intervention vs 25 control)	The gynaecology outpatient clinics of a university hospital	RCT	The women in the intervention group had shorter latent and active phases, lower pain scores, and higher levels of birth comfort.
4	Application category 1: Nursing comfort care integrating with the	Rustam et al. (2021)	Indonesia	To investigate the effect of nursing comfort care integrating with the daily Islamic rituals on comfort among mechanically ventilated Muslim patients	Mechanically ventilated Muslim patients: n=56 (28 vs 28)	ICUs of three public hospitals	Pretest-posttest with control group design	Nursing comfort care integrated with daily Islamic rituals increased comfort (CQMVP) in Muslim patients while receiving mechanical ventilation. This nursing comfort care program can be recommended to use in practice.

	daily Islamic rituals							
5	Application category 1: Comfort management plan for high flow nasal cannula	Luo (2021)	China	To construct a comfort management plan for high flow nasal cannula, to improve patient comfort, reduce concurrency, shorten the length of ICU stay, reduce reinsertion and test the effectiveness of management rate and mortality rate, improve patient satisfaction and other aspects	Patients using high flow nasal cannula after extubated: n = 102 (51 vs 51)	One ICU at a tertiary hospital	MMS	Increased comfort after intervention 24h, 48h (p<0.05); Improved satisfaction (p<0.05); No significant decrease in duration of ICU stay (p>0.05).
6	Application category 1: Music therapy, reposition, therapeutic backrub, training	Doe (2021)	USA	To determine if the implementation of assessments combined with the use of non-pharmacologic comfort measures would reduce the narcotic dose and increase the patients' comfort levels in post-cardiopulmonary surgical intensive care	Patients post cardiopulmonary surgery: n = 105 (23 vs 82)	One cardiopulmonary surgical ICU	Quasi-experiment study	Enhanced comfort: pre intervention (M=3.05, SD=2.66) vs post intervention (M=5.27, SD=3.28) (p=0.000); Decreased in narcotic dose from comparative (M=6.61, SD=8.83) to implementation (M= 2.47, SD=4.46) (p=0.000).
7	Application category 1: Heat application, massage	Türkmen and Oran (2021)	Turkey	To determine the effects of sacral massage and heat application on the perceptions of labour pain and comfort level in pregnant women	Primiparous pregnant women: n = 90 (30 vs 30 vs 30)	One delivery room of a public hospital	Quasi-experiment study	Enhanced comfort (p<0.05); Reduced pain (p<0.05). Childbirth Comfort Questionnaire (CCQ) scores: heat application group (HAG): 31.06±3.46, CG: 27.66±3.85; physical comfort scores: HAG: 13.16±1.89, control group (CG): 11.03± 1.80); relief comfort level score: HAG: 11.23±1.43, CG: 10.00±2.01); transcendence comfort level scores: HAG: 19.83±2.37, CG: 17.66±2.15; Pain score: during 4-5 cm of cervical dilation: HAG: (4.56±0.67), massage group (MG), (5.03±1.06), CG (5.23±0.72); during 6-7 cm of cervical dilation: HAG (6.80±0.7), MG (7.30±0.8), CG (7.70±0.5).
8	Application category 1: Ear acupoint	Jiang (2021)	China	To explore the effect of ear acupoint burying bean on delivery	Women using epidural labour	One maternity ward of a women	RCT	GCQ scores after intervention: Intervention group: 83.11±7.86 vs Control group: 80.88±9.86; Enhanced comfort after

	burying bean therapy			outcome, urination, anxiety, depression, pain and comfort of women using epidural labour analgesia	analgesia: n = 208 (105 vs 103)	and children hospital		intervention (p<0.05); No significant difference in anxiety and depression between two groups (p>0.05).
9	Application category 1: Interventions of environmental context	Wang et al. (2021)	China	To improve patients' comfort and satisfaction by reducing noise	Patients receiving colorectal surgery: n = 568 (287 vs 281)	One colorectal surgical unit	Quasi-experimental study	Reverse results presented in table and main text: comfort, QoL, nursing satisfaction (indicating a low quality of study).
10	Application category 1: Interventions of four contexts: environmental, physical, psychospiritual, and sociocultural, music therapy, silent therapy, aromatherapy	Yang (2021)	China	To explore the effects of comfort care on patients undergoing gynaecological surgery	Patients undergoing gynaecological surgery: n = 92 (46 vs 46)	One preoperational waiting room at a tertiary general hospital	MMS	Enhanced comfort after intervention (p<0.05): intervention group: 92.52±6.42 vs control group: 83.41±9.42; Decreased anxiety (p<0.05); Increased satisfaction (p<0.05).
11	Application category 1: Modified inspiratory position in bronchoscopy	Lian (2021)	China	To evaluate the effect of modified inspiratory position in bronchoscopy with moderate sedation	Patients receiving moderate sedation bronchoscopy: n = 124 (62 vs 62)	One bronchoscopy room in a tertiary general hospital	MMS	Enhanced comfort (p<0.001); Increased healthcare professionals' satisfaction (p<0.05).
12	Application category 1: Inhaler aromatherapy	Kasar et al. (2020)	Turkey	To examine the effects of inhaler aromatherapy on the level of pain, comfort, anxiety, and cortisol during trigger point injection in individuals with	Patients: n=66 (22 vs 22 vs 22)	The Algology Polyclinic of a university hospital	RCT	Lavender oil inhalation was found to reduce pain and anxiety during trigger point injection and to improve patient comfort (GCQ), but it did not affect the saliva cortisol level.

				myofascial pain syndrome				
13	Application category 1: Music listening	Uzamere-Ogbeide (2020)	USA	To determine if or to what degree the implementation of music listening sessions, when compared with no music, reduced agitation in adult dementia	Patients with dementia-related agitation associated with Alzheimer's disease: n = 10	One urban assisted living facility	Quasi-experimental study	Significant decrease in agitation (p=0.000): before intervention (65.3 or 93.2%) vs after intervention (23.7 or 33.8%).
14	Application category 1: Education program on EoL care	Hare (2020)	USA	To develop a project guided by Kolcaba's theory on caring	Nurses: n = 36	One CCU	Quasi-experimental study	92% staff nurses provided care to dying patients; Extended knowledge.
15	Application category 1: Training	Kacaroglu Vicdan (2020)	Turkey	To determine the effect of training in accordance with the Comfort Theory to haemodialysis patients	Haemodialysis patients: n = 68 (34 vs 34)	One haemodialysis unit of a teaching university hospital	RCT	Increased comfort (p<0.001).
16	Application category 1: Interventions of four contexts: environmental, physical, sociocultural, music therapy	Xiong (2020)	China	To explore the effect of two double-tube drainage in patients with enterocutaneous fistula	Patients with enterocutaneous fistula: n = 79 (40 vs 39)	One gastrointestinal surgery unit of a tertiary hospital	Quasi-experimental study	Higher GCQ scores after intervention: intervention group: 89.65±10.91 vs control group: 75.31±9.04; Enhanced comfort (p<0.05).
17	Application category 1: Comfort nursing based on Roy adaptive model, massage, music therapy, position intervention,	Luo (2020)	China	To investigate comfort and factors of comfort, develop comfort care measures, and build a comfort care plan based on Roy adaptive model	Pituitary adenoma patients: n = 121 (60 vs 61)	One neurosurgery unit	MMS	Comfort scores after intervention: Intervention group: 95.12±8.68 vs Control group: 83.78±10.11; Enhanced comfort (p<0.05); Significant decrease in anxiety and depression: intervention group higher than control group (p<0.05); Improved satisfaction (p<0.05): intervention group: 71.66% vs control group: 11.48.

	positive verbal communication							
18	Application category 1: Interventions of environmental context	Chen et al. (2020)	China	To evaluate the effects of a quiet surgical unit	Surgical patients and clinicians: n = 84 (not specified number in each group)	One surgical unit	Quasi-experimental study	Improved satisfaction (p<0.05) from 85.7 to 94.8; Decreased noise level (p<0.05) from 66.0 to 59.0 dB(A).
19	Application category 1: Mindfulness-based intervention	Wang et al. (2019)	China	To evaluate the effectiveness of a modified short-term mindfulness-based intervention on improving the mindfulness, comfort, and ambulation ability of stroke survivors undergoing inpatient rehabilitation	Stroke survivors: n = 50 (25 vs 25)	Rehabilitation Medicine Unit and Neurology unit	Quasi-experimental study	Enhanced comfort (p<0.05); No significant difference in environmental subscale, Berg Balance Scale, 10-Meter Walk Test, and Functional Ambulation Classification scale (p>0.05).
20	Application category 1: Interventions of three contexts: physical, psychospiritual, sociocultural	Xiong et al. (2019)	China	Investigating the effects of comfort care on symptoms, gastric motility, and mental state of patients with functional dyspepsia	Patients with functional dyspepsia: n = 100 (50 vs 50)	One gastroenterology unit	RCT	Significant reduction in symptoms: comfort care group: 8.3±2.4 vs routine nursing group: 10.2±2.4 (p<0.001); Significant decrease in anxiety: comfort care group: 41.1±7.2 vs routine nursing group: 46.3±6.9, (p<0.001); Significant decrease in depression: comfort care group: 42.5±6.9 vs routine nursing group: 47.3±6.4 (p=0.001).
21	Application category 1: Interventions of environmental context	Liu et al. (2019)	China	To discuss the effect of the noise management in cardiac unit	Cardiac patients	One cardiology unit at a tertiary hospital	Quasi-experimental study	Decreased noise level at daytime and nighttime (Z=-13.0, -12.8, p<0.01).
22	Application category 1: Aromatherapy	Stallings-Welden et al. (2018)	USA	To determine effectiveness of aromatherapy compared with standard care for postoperative	Ambulatory surgical patients: n = 221 (108 vs 113)	One 537-bed teaching hospital	RCT	Effectiveness: the aromatherapy group: 100% vs the standard care group: 67%.

				and post discharge nausea and vomiting in ambulatory surgical patients				
23	Application category 1: Robusta coffee	Susanti et al. (2018)	Indonesia	To evaluate the effects of Robusta coffee as an alternative for oral hygiene media in increasing the comfort level	Patients with head neck cancer undergoing radiotherapy: n = 32 (16 vs 16)	One central hospital	Quasi-experimental study	Significant increase in comfort level (p<0.05): before intervention: 5.4 vs after intervention: 6.4.
24	Application category 1: Guided imagery	Coelho et al. (2018)	Portugal	To evaluate the effects of guided imagery on the comfort of patients in palliative care	Palliative care patients: n = 26	One palliative care unit of a hospital	Quasi-experimental study	Enhanced comfort (p=0.001); Decreased heart rate (p=0.001) and respiratory rate (p=0.001); Reduced pain (p=0.001).
25	Application category 1: APP of transitional care model	Zhang (2018)	China	To develop and evaluate an APP of a transitional care model in relieving pain, improving comfort, meeting the needs of care of lung cancer patients with pain	Lung cancer patients with pain: n = 396 (195 vs 191)	One oncology unit	MMS	GCQ scores after discharge 1 month: intervention group:85.54±11.24 vs control group: 62.43±13.54; Enhanced comfort after intervention (p<0.05); Decreased pain after intervention (p<0.05).
26	Application category 1: A web-based application for monitoring comfort	Pinto et al. (2017)	Portugal	To introduce a web-based application for monitoring comfort in patients receiving palliative care	Patients receiving palliative care: n=7	Two hospitals providing home care visits	A pilot design to assess the feasibility and acceptability of the developed app	Phases I and II: the knowledge about monitoring comfort; Phase III: 11 self-reported items (pain, tiredness, drowsiness, nausea, lack of appetite, shortness of breath, depression, anxiety, fear of the future, peace and the will to live); Phase IV: 117 messages retrieved. Participants considered the app simple, easy to use and useful.
27	Application category 1: Warmed blanket	Parks et al. (2017)	USA	To assess the difference in the level of comfort between psychiatric inpatients who received a warmed blanket and psychiatric inpatients who did not receive a warmed blanket	Psychiatric patients: n = 37 (21 vs 16)	One acute psychiatric adult unit	Quasi-experimental study	Comfort score: experimental group 7.29 vs control group 6.81.
28	Application category 1: Environmental comfort,	Su and Dong (2017)	China	To explore the influence of comfort care model in the postoperative conscious patients with	Patients intubated post Level four	One ICU	Quasi-experimental study	Enhanced comfort (p<0.05); Improved nursing satisfaction (p<0.05); Increased compliance behaviour (p<0.05)

	music therapy, position intervention			tracheal intubation in ICU	surgery: n = 264 (127 vs 137)			
29	Application category 1: Online end-of-life care education	Tyler (2017)	USA	To implement and test the effectiveness of an end-of-life care educational program	Registered nurses: n = 34	One CCU in an acute care hospital	Quasi-experiment study	Improved knowledge: from pretest (68% - 100% correct answers) to post-test (93%-100% correct answers).
30	Application category 1: Training	Aksoy Derya and Pasinlioğlu (2017)	Turkey	To determine the effect of nursing care based on comfort theory on women's postpartum comfort levels after C-sections	Women after C-sections: n = 100 (50 vs 50)	One birth clinic of a teaching hospital	Quasi-experiment study	Enhanced comfort, physical (p=0.000), psychospiritual (p=0.249), and sociocultural subdimension (p=0.001): experiment group:138.70±8.79 vs control group:131.06±9.30.
31	Application category 1: Holistic techniques (aromatherapy, music therapy, massage, acupuncture)	Charles et al. (2016)	USA	To provide simple, evidence-based, holistic/ alternative remedies for women who experienced nonemergent pain during pregnancy	Women with nonemergent pain during pregnancy: n = 31	Bay Area Hospital	Quasi-experiment study	Enhanced comfort from 17.5 to 30 (p= 0.00); Reduced pain from 5.8/10 to 3.5/10 (p=0.00).
32	Application category 1: Interventions of environmental and psychospiritual context, music therapy	Zhang et al. (2016)	China	To evaluate the efficacy of perioperative application of comfort nursing in patients with gallstone disease undergoing endoscopic retrograde cholangial pancreatography (ERCP)	Patients receiving endoscopic retrograde cholangial pancreatography : n = 166 (106 vs 60)	One hospital	Quasi-experiment study	Improved sleep quality (p=0.034); Increased patient satisfaction (p=0.02); Decreased postoperative food intake without permission (p=0.018).
33	Application category 1: Positive verbal communication, progressive prone	Gao (2016)	China	To explore the effectiveness of application of Comfort Theory among patients with uterine fibroids receiving ultrasound ablation	Patients with uterine fibroids: n = 210 (102 vs 108)	One ultrasound ablation centre	MMS	Enhanced comfort (p<0.05): intervention group: 93.22±9.56 vs control group: 81.90±10.68; Decreased pain (p<0.05); Increased satisfaction (p<0.05).

	training, peer education, music therapy, therapeutic touch, position intervention, guided imagery, PMR							
34	Application category 1: Massage, still point induction, music therapy, aromatherapy	Townsend et al. (2014)	USA	To determine whether complementary techniques provide pain relief and comfort in patients with chronic pain	Chronic pain patients: n = 22 (9 vs 13)	Unspecified	RCT	Significant improvement in both groups: enhanced comfort; reduced pain (p<0.05).
35	Application category 1: Isothermal haemodialysis	Li et al. (2014)	USA	To demonstrate the feasibility and safety of isothermal haemodialysis	Haemodialysis patients: n = 59 (28 vs 31)	Dialysis Unit at Saint Joseph's Hospital	Quasi-experimental study	No significant difference between two groups: blood pressure; comfort (p>0.05).
36	Application category 1: Interventions of four contexts: environmental, physical, psychospiritual, and sociocultural	Jia (2014)	China	To explore the effect of comfort nursing on comfort and QoL of patients receiving Percutaneous Transhepatic Cholangial Drainage	Patients receiving Percutaneous Transhepatic Cholangial Drainage: n = 81 (40 vs 41)	One general hospital	Quasi-experimental study	Enhanced comfort (p<0.001): intervention group: 82.03±4.560 vs control group: 72.17±10.833; Improved QoL (p<0.001); Shortened hospitalization stay.
37	Application category 1: Reiki therapy	Catlin and Taylor-Ford (2011)	USA	To determine whether provision of Reiki therapy during outpatient chemotherapy is associated with	Patients receiving chemotherapy: n = 189 (63 vs 63 vs 63)	Outpatient chemotherapy in an infusion clinic	RCT	Enhanced comfort: Reiki therapy group (p=0.020) and sham Reiki placebo group (p=0.003) vs standard care group; Increased well-being: Reiki therapy group (p=0.005) and sham Reiki placebo group (p=0.005) vs standard care group.

				increased comfort and well-being				
38	Application category 1: Positioning	Devitt et al. (2011)	USA	To determine which of three positions (left lateral, right lateral, or supine) was the most effective to encourage passing the insufflated room air and to provide patient comfort after a colonoscopy	Postcolonoscopy patients: n=512 (168-174 patients per position)	One 526-bed hospital-based GI endoscopy unit	Quasi-experiment study	Most patients passed the insufflated room air and were comfortable.
39	Application category 1: Auricular point magnetic bead plaster therapy	Zhao (2011)	China	To evaluate the effects of magnetic bead plaster therapy on auricular point on sleep disorders and comfort in haemodialysis patients	Haemodialysis patients: n = 60 (30 vs 30)	One blood purification unit of a hospital	MMS	Higher comfort scores after intervention: intervention group: 82.50 vs control group: 74.50; Enhanced comfort (Z=-1.385, p=0.001); Treatment effective rate: intervention group: 86.67% vs control group: 76.67%; Improved treatment effective rate (p=0.019).
40	Application category 1: Warmed chemotherapy solution	Whyte (2010)	Canada	To measure the comfort levels of patients with gynaecologic type cancer before and after the administration of warmed intraperitoneal chemotherapy on day one and day eight	Patients with gynaecologic type cancer who received intraperitoneal chemotherapy: n = 10	Outpatient at a tertiary level cancer facility	Quasi-experiment study	No significant change in comfort before and after receiving warmed intraperitoneal chemotherapy (p=0.630) or over the three chemotherapy cycles (p=0.603).
41	Application category 1: End-of-Life Nursing Education Consortium training program	Whitehead et al. (2010)	USA	To assess the ongoing impact of the End-of-Life Nursing Education Consortium training program on RNs' death anxiety, concerns about dying, and knowledge of the dying process utilizing the principles of the Comfort Theory and Practice by Kolcaba at the institutional level	Registered nurses: n = 38 (11 vs 27)	One primary care medical centre	Quasi-experiment study	Improved knowledge about dying: at 2 weeks, 12 months (p=0.01).
42	Application category 1: Interventions of four	Wu et al. (2010)	China	To explore the effectiveness of comfort care interventions on the comfort of elderly	Old stroke patients: n = 118 (58 vs 60)	One hospital	Quasi-experimental study	Enhanced comfort (p<0.05): intervention group: 74.32±11.11 vs control group: 68.45±13.93.

	contexts: environmental, physical, psychospiritual, sociocultural, massage, music therapy, therapeutic touch, position intervention			stroke patients in recovery stage				
43	Application category 1: Guided imagery	Apóstolo and Kolcaba (2009)	Portugal	To describe imagery intervention for decreasing depression, anxiety, and stress and increasing comfort in psychiatric inpatients with depressive disorders	Depressive patients: n = 60 (30 vs 30)	Three psychiatric unities/ facilities	Quasi-experiment study	Enhanced comfort (t=-2.01, p=0.03); Decreased depression, anxiety, stress (t=-2.48, p=0.01).
44	Application category 1: Healing Touch, Coaching	Dowd et al. (2007)	USA	To measure and compare the effects of 3 nursing interventions for increasing students' comfort and decreasing their stress-related symptoms	Students: n = 52 (12 vs 14 vs 13 vs 13)	Midwest state university	RCT	Enhanced comfort; Decreased stress; Healing touch had better immediate results on comfort and stress. Coaching had better carryover effects on comfort and stress.
45	Application category 1: Healing touch, coaching	Dowd and Kolcaba (2007)	USA	To study the effects of two types of holistic interventions for effective stress management	Students: n = 58	Midwestern university	RCT	Improved comfort: HTCQ of comfort (F=4.27, p=0.01) and numerical rating scale of comfort (p=0.0001); Decreased stress: numerical rating scale of stress (p=0.0001); No significant differences in stress.
46	Application category 1: PMR	Xiao (2007)	China	To evaluate the effects of progressive muscle relaxation (PMR) on relieving anxiety and depression and promoting comfort among kidney transplant recipients	Kidney transplant recipients: n = 87 (42 vs 45)	One urology surgery unit	MMS	Enhanced comfort (p=0.02): intervention group: 84.17±9.20 vs control group: 79.67±8.68; Decreased anxiety (p=0.04) and depression (p=0.03).

47	Application category 1: Comfort contract (Warming Blanket (Recovery Room), Music, Pillows - location, Massage, Pet Visitation, Cold Wash Cloth, Family Visits)	Patrol (2006)	USA	To address how to increase patient comfort post cardiac bypass surgery	Adult patients: n = 90 (45 vs 45)	One urban hospital.	RCT	No results reported.
48	Application category 1: Warmed cotton blankets versus patient-controlled warming gowns	Wagner et al. (2006)	USA	To compare the effects of preoperative warming with warmed cotton blankets versus patient-controlled warming gowns on patients' perceptions of thermal comfort and anxiety	Patients with scheduled for surgery: n = 118 (60 vs 58)	One large public hospital	RCT	Enhanced NVAS thermal comfort P = 0.005; Decreased anxiety p=0.06.
49	Application category 1: Hand massage	Kolcaba et al. (2006)	USA	To test the effectiveness of hand massage that affects nursing home residents' comfort and satisfaction	Nursing home residents: n = 60 (35 vs 25)	Two nursing homes	Quasi-experimental study	No significant difference in comfort: groups (p=0.15) or over time (p=0.29); At T2: treatment group higher than comparison group (p=0.07); No significant difference in satisfaction between two groups (p=0.64).
50	Application category 1: Music therapy	Besel (2006)	USA	To assess the effects of music therapy on comfort in acute mechanically ventilated patients in the ICU	Mechanically ventilated patients: n = 5	One ICU	Quasi-experimental study	No significant change in comfort (t=-1.378, p=0.206), anxiety (t=1.250, p=0.247) and pain (t=0.909, p=0.390): before vs after the intervention; No significant change in comfort (t=0.302, p=0.770), anxiety (t=-1.512, p=0.169) and pain (t=-0.956, p=0.367): before vs after the control.
51	Application category 1:	Kolcaba et al. (2004)	USA	To determine the beneficial effects of	Hospice patients: n = 31 (16 vs 15)	Three hospice agencies	RCT	No significant change between groups: comfort (p=0.445); symptom distress (p=0.698).

	Hand massage			hand massage on patients near EoL				
52	Application category 1: Cognitive strategies, coaching	Dowd et al. (2003)	USA	To determine effectiveness of coaching added to cognitive strategies and bladder health information for independent, community dwelling persons experiencing compromised urinary bladder syndrome	Patients with compromised urinary bladder syndrome: n = 51 (14 vs 17 vs 16, some participants dropout)	Community	Quasi- experiment study	Persons at level 1 and level 3 showed modest gains over time, whereas persons at level 2 did not improve. The second hypothesis, that persons at level 2 would show less improvement on the outcomes than persons at level 3, was supported for comfort, incontinence episodes, and frequency because persons at level 2 did not perform as well as persons at level 3. The hypothesis was not supported for bladder function or perception of health because persons at both levels 2 and 3 improved on bladder function but neither showed significant differences on perception of health. These findings support the theoretic recursive relationship between comfort and HSBs.
53	Application category 1: Guided imagery	Kolcaba and Steiner (2000)	USA	To test four propositions about the nature of comfort	Breast cancer women: n = 53 (26 vs 27)	Two radiation oncology sites	RCT	RTCQ scores: treatment group higher than the control group at Times 2 and 3 (p=0.04); RTCQ scores in control group: higher at Time 2 and 3 than Time 1 (p=0.04); Comfort had more state characteristics.
54	Application category 1: Cognitive strategies	Dowd et al. (2000)	USA	To test the abilities of cognitive strategies to augment the effects of an educational program designed to treat compromised urinary bladder syndrome	Patients with compromised urinary bladder syndrome: n = 40 (21 vs 19)	Recruited through local newspapers	Quasi- experiment study	Enhanced comfort; Improved compromised urinary bladder syndrome.
55	Application category 1: Guided imagery	Kolcaba and Fox (1999)	USA	To measure the effectiveness of customized guided imagery for increasing comfort in women with early-stage breast cancer	Breast cancer patients undergoing radiation therapy: n = 53 (26 vs 27)	Two radiation oncology units	RCT	Increased differences in comfort between two groups; Higher comfort: treatment group than control group.
56	Application category 1: Guided imagery	Kolcaba (1997)	USA	To test the effectiveness of guided imagery in enhancing comfort of women experiencing negative side effects of	Breast cancer patients post breast conserving	Two hospital radiation oncology units	RCT	Higher comfort in treatment group: p=0.04 (at alpha .10); Differences in comfort between two groups increased steadily over time.

				breast conserving therapy	surgery: n = 53 (26 vs 27)			
57	Application category 2: Guided imagery	Gunes et al. (2023)	Turkey	To examine the effect of guided imagery applied to geriatric orthopaedic patients on preoperative anxiety and comfort	Geriatric patients: n=80 (40 vs 40)	Orthopaedics and traumatology clinic of a university hospital	RCT	The anxiety of the experimental group decreased and their comfort improved.
58	Application category 2: Guided imagery	Ozdemir et al. (2023)	Turkey	To investigate the effects of guided imagery on postoperative pain and comfort in geriatric orthopaedics patients	Patients: n=80 (40 vs 40)	Orthopaedic and Traumatology Inpatient Clinic of a university hospital	Pre- and post-RCT	The pain levels of the experimental group decreased. Their perceived comfort was improved.
59	Application category 2: Mandala art therapy	Özsavran and Ayyıldız (2023)	Turkey	To determine the effect of mandala therapy applied to mothers who have children with special needs on the mothers' comfort and resilience levels	Mothers who had children with special needs: n=51 (24 experimental group vs 27 control group)	One special education school	RCT	Mandala Art Therapy is a method that improves the comfort levels and resilience of mothers.
60	Application category 2: Regular nursing rounds	Roustaei et al. (2023)	Iran	To examine the effect of regular nursing rounds on patients' comfort, satisfaction, and violence against nurses	Patients: n=100; Nurses: n=35	One surgery ward	Quasi-experimental study	The patients' satisfaction and comfort (GCQ) increased and violence against nurses.
61	Application category 2: Aromatherapy and music therapy	Wen et al. (2023)	China	To investigate the effects of aromatherapy and music therapy on alleviating anxiety during MRI examinations	Patients undergoing MRI examinations: n=200 (50 vs 50 vs 50 vs 50)	Department of Radiology at First People's Hospital of Zunyi	Single-centre, double-blinded, RCT	Aromatherapy combined with music therapy is effective for reducing patients' anxiety and improving their comfort level (GCQ) during MRI scans.
62	Application category 2: Cluster nursing methods	Zou et al. (2023)	China	To assess the efficacy of cluster nursing methods in the recovery of patients after laparoscopic partial nephrectomy	Patients with renal tumours: n=96 (48 vs 48)	Laparoscopic partial nephrectomy for kidney tumours in one hospital	Quasi-experimental study	Position management and diversified health education may enhance post-surgery recovery, shorten the hospitalization time, and improve inpatient comfort (GCQ).
63	Application category 2: A flushable double-	Jiang et al. (2022)	China	To investigate the effect of preventive care in conjunction with the use of a flushable	Patients with severe faecal incontinence: n = 164 (82 vs 82)	One hospital	RCT	Enhanced comfort: higher GCQ score in the observation group than in the control group (p<0.05); Improved faecal incontinence QoL (p<0.05).

	cavity colostomy bag			double-lumen stoma bag in the prevention of incontinent dermatitis in critically ill patients				
64	Application category 2: Dental-implant placement in the hydraulic maxillary sinus lift (MSL) without bone grafting	Zhang et al. (2022)	China	To examine the clinical effects of placement of dental implants using the hydraulic maxillary sinus lift (MSL), without bone grafting	Tooth defects patients: n = 68 (unspecified group size)	One stomatology unit of a hospital	RCT	No difference in pain and comfort (GCQ score) at day 1 after surgery (p>0.05); Enhanced comfort and reduced pain: at day 3 and day 7 after surgery (p<0.05); No difference in prognostic QoL (p>0.05); Reduced treatment costs.
65	Application category 2: Acupressure, shower	Solt Kirca and Kanza Gul (2022)	Turkey	To determine the effects of acupressure and shower on labour pain and postpartum comfort	Pregnant women: n = 120 (80 vs 40)	One maternity unit of a private hospital	RCT	Enhanced postpartum comfort (Postpartum Comfort Questionnaire (PPCQ)) (p<0.016); Reduced pain (VAS): dilation 6–7 cm (p<0.001); No significant difference in pain: dilation 8–10cm (p>0.05).
66	Application category 2: Labour dance	Akin et al. (2022)	Turkey	To evaluate the effect of labour dance on traumatic childbirth perception and comfort	Primiparous pregnant women: n = 120 (60 vs 60)	One maternity hospital	RCT	Increase comfort levels (Turkish version Childbirth Comfort Questionnaire (CCQ) and Turkish version Postpartum Comfort Scale); Decreased traumatic childbirth perception (p<0.01)
67	Application category 2: Acupressure	Hsu et al. (2022)	China	To assess the effectiveness of practicing acupressure on the Shenmen and Neiguan acupoints in reducing anxiety and improving comfort and physical health of patients undergoing thoracoscopic surgery	Patients undergoing thoracoscopic surgery: n = 100 (49 vs 51)	One cardiothoracic unit of a medical centre	RCT	Insignificant difference in comfort between two groups (Chinese version GCQ) (F=2.953, p= 0.057); Insignificant difference in anxiety between two groups as time progressed; Insignificant difference in health insurance expenses for hospitalization (t=0.81, p=0.073) and hospitalization duration days (t=1.25, p=0.216). Significant difference in anxiety(STAI-YI scores) in the pre-test and post-test interactions between the two groups (β=-4.72, p=0.031); decreased significant: the average STAI-Y1 score in the experimental group from pre-intervention to T3 (β=-7.33, p≤0.001), significant difference

								between two groups in T3 pre-test and post-test interactions ($\beta=4.72$, $p=0.031$).
68	Application category 2: Portable electronic drug infusion pump	Zhao et al. (2022b)	China	To investigate the clinical safety of portable electronic drug infusion pump in performing hepatic arterial infusion chemotherapy and its impact on patient comfort	Liver cancer patients: n = 70 (50 vs 20)	One interventional treatment unit of a university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Improved Barthel Index; Decreased incidence of symptoms: difficult defecation and loss of appetite ($p<0.05$).
69	Application category 2: FOLFOX-hepatic arterial infusion chemotherapy (FOLFOX-HAIC) for relieving bed restriction activity program	Zhao et al. (2022a)	China	To investigate the safety and feasibility of relieving bed restriction during hepatic arterial infusion chemotherapy	Patients with primary hepatocellular carcinoma: n = 70 (50 vs 20)	One interventional treatment unit of a university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Improved Barthel Index; Decreased incidence of symptoms: sleep disorders, constipation, loss of appetite, limb numbness, lumbar acid ($p<0.05$).
70	Application category 2: Paradoxical intention therapy	Chen et al. (2022)	China	To investigate the application value of paradoxical intention therapy in patients undergoing Percutaneous coronary intervention (PCI)	Patients receiving percutaneous coronary intervention: n = 116 (58 vs 58)	One hospital unit of Structural Cardiology	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Decreased incidence of symptoms: anxiety, depression; Reduced heart rate and blood pressure ($p<0.05$).
71	Application category 2: Kegel pelvic floor muscle training combined with clean intermittent self-catheterization	Zong et al. (2022)	China	To investigate the effect of Kegel pelvic floor muscle training combined with clean intermittent self-catheterization on patients with cervical cancer, and to analyse the risk factors affecting urinary retention	Patients with cervical cancer receiving radical resection: n=166 (83 vs 83)	Department of Reproductive Medicine	RCT	With Kegel pelvic floor muscle exercise combined with clean intermittent self-catheterization results in improved bladder function, reduced incidence of urinary tract infections and urinary retention, as well as increased patient comfort (GCQ).

72	Application category 2: Two different hemostasis methods	Zhou and Xu (2022)	China	To explore the effects of two different haemostasis methods, namely, arterial compression devices and vascular closure devices, in the ischemic cerebrovascular intervention to provide a theoretical basis for clinical selection of haemostasis methods	Patients receiving ischemic cerebrovascular intervention: n=302 (151 vs 151)	Taizhou First People's Hospital	RCT	The use of vascular closure devices can stop the bleeding quickly, which can significantly shorten the bleeding time, and the postoperative braking time of patients is short, with high comfort (Kolcaba Comfort Scale) and fewer complications.
73	Application category 2: Helmet Non-invasive Ventilation Therapy	Majid et al. (2021)	Malaysia	To measure the patients' comfort behaviour level after completion of helmet NIV therapy	Acute Respiratory Failure (ARF) patients: n=67	Emergency and Trauma Department in Perak state tertiary hospital	Quantitative descriptive, observation study	The comfort level (CBC) of patients is moderate. The helmet NIV can be considered as comfortable NIV interface for ventilatory support therapy.
74	Application category 2: Modified cervicothoracic compression band	Hu et al. (2021)	China	To investigate the effect of modified cervicothoracic compression band on successful haemostasis and postoperative complications of patients with endoscopic radical thyroidectomy via breast areola approach and to provide reference for postoperative nursing of thyroid cancer	Patients with endoscopic radical thyroidectomy via breast areola approach: n=128 (64 vs 64)	One university hospital	RCT	Modified cervicothoracic compression band can significantly alleviate the symptoms of postoperative patients with endoscopic radical thyroidectomy, reduce postoperative complications and improve patient comfort (GCQ).
75	Application category 2: Music therapy	Demir et al. (2021)	Turkey	To determine the effect of music therapy on fatigue, comfort and vital signs of the liver transplant patients	Patients: n=120 (60 vs 60)	The Liver Transplant Institute	RCT	Fatigue reduced, comfort (PCQ) was enhanced, and vital signs were normal, with a statistical significance in the experimental group compared with the control group in all measurements before and after music therapy.
76	Application category 2:	Mardaneh et al. (2021)	Iran	To evaluate the effects of Thai massage on comfort and symptoms	Female patients with cancer receiving	Bu-Ali Hospital	RCT with a two-group	Massage therapy is effective in significantly reducing symptoms among female cancer patients receiving chemotherapy.

	Thai massage			among female cancer patients receiving chemotherapy	chemotherapy: n=60		pretest-posttest design	
77	Application category 2: Incentive nursing intervention (INI), intervention s of physical context	Ren et al. (2021)	China	To observe the effect of application of incentive nursing intervention on recovery in burn patients undergoing vacuum sealing drainage	Burn patients using vacuum sealing drainage: n = 82 (41 vs 41)	One university affiliated hospital	RCT	Enhanced comfort (GCQ); Reduced pain; Increased satisfaction; Shorter wound healing time and hospital stay time (p<0.05).
78	Application category 2: Removing bed restriction	Zhao et al. (2021)	China	To investigate the safety of relieving bed restriction in hepatic arterial infusion chemotherapy and its effects on patient comfort	Patients with malignant liver tumour: n = 90 (60 vs 30)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): 88.78±6.705 vs 78.47±9.519; Improved self-care ability; Reduce pain; Improved poor defecation symptom (p<0.001).
79	Application category 2: Foot reflexology	Kapıkıran and Özkan (2021)	Turkey	To determine the effect of foot reflexology on the levels of pain, comfort and beta endorphins in patients receiving liver transplantation	Liver transplantation patients: n = 120 (60 vs 60)	One organ transplantation clinic of a liver transplantation institute	RCT	Enhanced comfort in both groups (Turkish version Perianesthesia Comfort Questionnaire): post-test vs pre-test (p<0.05); No significant differences in comfort between two groups after intervention (p>0.05); Decreased pain (p<0.001).
80	Application category 2: Therapeutic touch	Alp and Yucel (2021)	Turkey	To find out the effects of therapeutic touch on comfort and anxiety of nursing home residents	Old people: n = 60 (30 vs 30)	One nursing home	Quasi-experimental study	Enhanced comfort (Turkish version Perianesthesia Comfort Questionnaire (RCQ)); Decreased anxiety (p<0.05).
81	Application category 2: Enhanced recovery after surgery using the multidisciplinary team model	Zhang et al. (2021a)	China	To explore the application value of enhanced recovery after surgery with the multidisciplinary team model in laryngeal cancer surgery	Laryngeal cancer patients: n = 72 (38 vs 34)	One hospital unit of Otorhinolaryngology Head and Neck Surgery	RCT	Enhanced comfort Chinese version GCQ (Z=-4.370, p<0.001); Decreased anxiety (Z=-4.179, p<0.001); Shorter duration of hospitalization stay (p<0.05); Improved hungry and thirsty symptoms (p<0.001).
82	Application category 2: Modified	Hu et al. (2021)	China	To investigate the effect of a modified pressurized band of	Patients receiving endoscopic	One unit of Thyroid Surgery of a	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural and environmental dimensions;

	cervicothoracic compression band			neck and chest for patients with endoscopic radical thyroidectomy via breast areola approach	radical thyroidectomy via breast areola approach: n = 128 (64 vs 64)	university affiliated hospital		Increased well-being; Reduced incidence of symptoms (p<0.05).
83	Application category 2: Health education	Zhang et al. (2021b)	China	To investigate the effect of health education on the comfort level, pain degree, psychological state and degree of cancer-related fatigue of patients with primary hepatic carcinoma undergoing interventional therapy	Patients with primary hepatic carcinoma undergoing interventional therapy: n = 98 (49 vs 49)	One university affiliated hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Decreased anxiety and depression; Improved QoL; Increased satisfaction; Decrease incidence of symptoms: dysuria, numbness of the lower limbs, irritability and insomnia (p<0.05).
84	Application category 2: Shenque acupoint dialectical paste	Wen (2021)	China	To evaluate the effects of dialectical paste on Shenque acupoint in elderly patients with Qi deficiency constipation after hip fracture	Elderly patients with Qi deficiency constipation after hip fracture: n = 75 (37 vs 38)	One hospital unit of hip injury	RCT	Enhanced comfort (Chinese version GCQ); Increased treatment efficiency; Improved constipation symptom (p<0.05).
85	Application category 2: Compression gloves	Wang (2021)	China	To investigate the use of pressurized gloves on hand swelling, hand pain, hand hypoxia and comfort of patients after percutaneous radial coronary intervention	Patients with coronary heart disease: n = 176 (88 vs 88)	One cardiologic unit of a tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions (p>0.05); Reduced hand pain; Reduced finger swelling (p<0.05).
86	Application category 2: The optimized intraoperative cooperation	Shen et al. (2021)	China	To evaluate an optimized cooperation protocol during operation for treatment of lower extremity arteriosclerosis obliteran	Patients undergoing interventional therapy of lower extremity arteriosclerosis obliteran: n = 196 (98 vs 98)	One general hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased perioperative anxiety (p<0.05); No difference in perioperative depression (p>0.05); Decrease postoperative complications incidence: 6.2% vs 20.41% (p<0.05).
87	Application category 2: Acupoint paste, low-	Li and Jia (2021)	China	To evaluate the influence of acupoint application, low-frequency pulse	Gastric cancer patients: n = 158 (79 vs 79)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased anxiety and depression; Reduced

	frequency pulse electric therapy, clinical psychological guidance			electrotherapy combined with clinical psychological guidance on postoperative complications of patients with gastric cancer				pain; Decreased incidence of postoperative complications: 5.06% vs 15.19% (p<0.05).
88	Application category 2: 5S health education inventory management mode	Li (2020)	China	To develop, apply and evaluate a list of 5s health education management mode in perioperative patients with chronic sinusitis	Chronic sinusitis patients: n = 120 (60 vs 60)	One otolaryngology unit of a university affiliated hospital	Quasi-experimental study	Enhanced comfort (Chinese version adapted comfort questionnaire for postoperative patients with chronic sinusitis) (p<0.05); Decreased anxiety (p<0.001); Improved QoL (p<0.001); Increased satisfaction (p<0.001).
89	Application category 2: Enhanced recovery after surgery, interventions of physical context	Gao et al. (2020)	China	To evaluate the benefits of Enhanced Recovery After Surgery (ERAS) protocol compared to traditional care following endoscopic sinus surgery	Chronic rhinosinusitis patients: n = 55 (11 vs 11 vs 10 vs 10 vs 13)	One hospital	Quasi-experimental study	Patients in enhanced recovery after surgery (ERAS) group demonstrated significantly higher general comfort scores (GCQ) and lower anxiety scores compared to patients in traditional care with Flubiprofen Axetil or analgesia pump group and control groups (p<0.05); Reduced pain: at 6, 24, 48h after surgery (p<0.05); Decreased anxiety (p<0.05); Improved satisfaction (p<0.05).
90	Application category 2: Hand massage, therapeutic touch	Yücel et al. (2020)	Turkey	To investigate the effects of hand massage and therapeutic touch on comfort and anxiety in older people	Old patients: n = 30 (10 vs 10 vs 10)	One nursing home	RCT	Enhanced comfort (Turkish version GCQ); Decreased anxiety (p<0.05).
91	Application category 2: Early mobilization	Yang et al. (2020)	China	To explore improvements of postoperative mobilization protocol	Patients received vascularized free flap reconstruction for head and neck defect: n = 149 (38 vs 37 vs 38 vs 36)	One oral and 5 Maxillofacial surgical unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version adapted comfort questionnaire for perioperative patients with oral and maxillofacial surgery; Reduced pain; Increased sleep time; Shorter catheter removal time (tracheal incision, nasogastric tube, urethral catheter) (p<0.05).
92	Application category 2: Peripherally inserted	Wen and Huang (2020)	China	To explore the application effect of peripherally inserted central catheter (PICC)	Patients with gastrointestinal cancer receiving 5-FU pump	One university cancer centre	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort, psychospiritual context; Improved satisfaction; Increased health-related knowledge (p<0.05).

	central catheter (PICC) based on Orem self-care model			combined with Orem self-care model in patients with gastrointestinal cancer receiving 5-fluorouracil (5-FU) pump chemotherapy	chemotherapy: n = 88 (42 vs 46)			
93	Application category 2: PMR	Gökşin and Ayaz-Alkaya (2020)	Turkey	To evaluate the effect of progressive muscle relaxation (PMR) on the postpartum depression risk and general comfort levels in primiparas	Primipara women: n = 70 (35 vs 35)	One teaching and research hospital	Quasi-experimental study	Enhanced comfort (GCQ score): at the first, second, and third follow-ups; Decreased depression (p<0.05).
94	Application category 2: Preoperative education	Pazar and Iyigun (2020)	Turkey	To evaluate the effects of preoperative education on hemodynamic parameters, patient comfort and anxiety, and patient-ventilator synchrony provided to patients before cardiac surgery	Patients with mechanical ventilation receiving cardiac surgery: n = 200 (100 vs 100)	One cardiovascular surgical clinic of a teaching hospital	RCT	Enhanced Perianesthesia comfort (Turkish version Perianesthesia Comfort Questionnaire (PCQ)); Decreased anxiety; Improved patient ventilator synchrony levels (p<0.05).
95	Application category 2: Hydrogel cold media with mint	Yin et al. (2020)	China	To observe effects of the hydrogel containing mint as the cold medium for local and external treatment on pain, bleeding, swelling, fatigue and discomfort of patients with closed fracture of limbs	Patients with closed fractures of extremities: n = 195 (97 vs 98)	One Orthopaedics unit of a TCM hospital	RCT	Enhanced comfort (Chinese version GCQ); Reduced pain; Improved limb swelling (p<0.05).
96	Application category 2: Fast rehabilitation nursing	Zhang et al. (2020)	China	To explore the effects of rapid rehabilitation nursing care on postoperative comfort and complications in patients undergoing permanent cardiac pacemaker implantation	Patients receiving permanent cardiac pacemaker implantation: n = 86 (43 vs 43)	One hospital unit of Cardiology	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Increased satisfaction; Decreased incidence of back pain, difficulty urinating, difficulty defecating, urinary retention; Reduced costs and shortened duration of hospital stay (p<0.05).
97	Application category 2:	Chen (2020)	China	To evaluate the effects of ginger paste on	Patients receiving total	One hospital unit of orthopaedics	RCT	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological

	Ginger paste on umbilical			umbilical in patients eating early after knee replacement	knee arthmoplasty: n = 88 (44 vs 44)			dimensions; Decreased incidence of symptoms: nausea and vomiting (p<0.05).
98	Application category 2: TCM in rapid rehabilitation	Tang et al. (2020)	China	To investigate the application of TCM intervention in rapid rehabilitation after perianal abscess and anal fistula	Patients with perianal abscess or anal fistula: n = 79 (39 vs 40)	One hospital unit of anorectology	RCT	Enhanced comfort (Chinese version GCQ) at day 7 post surgery; Reduced pain in day 3, day 5, day 7 post surgery (p<0.05).
99	Application category 2: Foot reflexotherapy	Shen (2020)	China	To explore the effect of foot reflexotherapy on lactation and postpartum comfort of parturient after caesarean section	Parturients receiving caesarean section: n = 100 (50 vs 50)	One hospital unit of Obstetrics	RCT	Enhanced comfort (Chinese version GCQ) (p<0.001); Increased breastfeeding satisfaction (p<0.05); No significant difference in pain between two groups (p>0.05).
100	Application category 2: Orem nursing model	Zhang and Zhu (2019)	China	To observe the effects of Orem nursing mode intervention on preventing subcutaneous fat hyperplasia caused by insulin injection in patients with type 2 diabetes mellitus and its effect on patients' comfort and self-management behaviour	Patients with type 2 diabetes mellitus: n = 220 (110 vs 110)	One endocrinology unit	RCT	Enhanced comfort (Chinese version GCQ); Improved self-management: self-care behaviours (p<0.05).
101	Application category 2: Self-oral care based on Orem nursing theory	Fan (2019)	China	To explore the effect and methods of using Orem self-care theory in oral care and comfort of postoperative patients with gastric cancer	Patients with gastric cancer post surgery: n = 99 (50 vs 49)	One gastrointestinal surgical unit	RCT	Enhanced comfort (Chinese version GCQ); Improved self-care ability; Decreased oral symptoms: xerostomia, halitosis, parched lips and pharyngalgia (p<0.05)
102	Application category 2: Music therapy	Karadag et al. (2019)	Turkey	To examine the effect of a music listening intervention applied during radiation therapy on the anxiety and comfort level experienced by women	Breast cancer patients receiving radiation therapy: n = 60 (30 vs 30)	One radiation oncology outpatient clinic of a university hospital	RCT	Enhanced comfort (Turkish version RTCQ); Decreased anxiety and depression (p<0.001).

				with early-stage breast cancer.				
103	Application category 2: Fast track surgery	Ruan et al. (2019)	China	To explore the effectiveness of rapid rehabilitation surgery concept applied to tympanic membrane repair	Patients with chronic suppurative otitis media: n = 60 (30 vs 30)	One hospital unit of otolaryngology, head and neck surgery	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Reduced pain; Shortened duration of hospital stay (p<0.05); No changes in costs (p>0.05).
104	Application category 2: Quality control circle	Yang et al. (2019)	China	To explore the application and effectiveness of quality control circle activities in improving comfort of patients treated with abdominal thermal perfusion	Patients receiving hyperthermic intraperitoneal chemotherapy: n = 76 (38 vs 38)	One hospital unit of gynaecology	Quasi-experiment study	Increased comfort (Chinese version GCQ) from 62% to 81.75% (p<0.05).
105	Application category 2: Finger gymnastic	Xie (2019)	China	To probe into the impacts of finger gymnastic on the degree of hand swelling, pain in the wrist and palm, oxygen saturation, extent of anxiety, and comfort level after transradial coronary intervention	Patients with coronary heart disease: n = 90 (45 vs 45)	One hospital unit of Cardiology	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Reduced pain; Decreased swelling (p<0.05).
106	Application category 2: A bundle of measures named as comfort care	Wang and Wang (2019)	China	To explore the application value of comfort scale in patients with acute leukaemia chemotherapy	Patients with acute leukaemia receiving chemotherapy: n = 80 (40 vs 40)	One hospital unit of Hematologic Tumour	RCT	Enhanced comfort (Chinese version GCQ); Reduced pain; Increased satisfaction; Decreased complication incidence (p<0.05).
107	Application category 2: Acupoint paste with Fructus Evodiae	Wu et al. (2019)	China	To evaluate the effect of acupoint paste with Fructus Evodiae on the recovery of postoperative gastrointestinal function in patients undergoing ureteroscopic lithotripsy with the holmium: YAG laser	Patients undergoing ureteroscopy with holmium: n = 79 (37 vs 42)	One unit of Urology Surgery of a hospital integrating Traditional Chinese and Western Medicine	Quasi-experimental study	Enhanced postoperative comfort (Chinese version GCQ); Increased postoperative satisfaction; Shortened time to first flatus, time to first stool (p<0.05).

108	Application category 2: A new gastric tube fixation bag	Chen (2019)	China	To explore the effect of a new fixation bag for gastric tube in patients post surgery	Patients with gastric tube post surgery: n = 138 (69 vs 69)	One university affiliated cancer hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased incidence of pressure sore, incidence of gastric tube dislocation and displacement (p<0.05).
109	Application category 2: A bundle of measures named as comfort care	Wang (2019a)	China	To improve the comfort of patients with myocardial infarction after thrombolysis	Patients with myocardial infarction after thrombolysis: n = 60 (30 vs 30)	One hospital unit of cardiology	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions (p<0.05).
110	Application category 2: TCM fumigation combined with auricular point sticking pressure	Meng (2019)	China	To evaluate the effect of TCM fumigation combined with auricular acupoint paste pressure on pruritus symptoms, comfort level, life quality and satisfaction of patients with diabetic pruritus	Diabetic pruritus patients: n = 184 (60 vs 62 vs 62)	Two tertiary TCM hospitals	RCT	Enhanced comfort (Chinese version GCQ) (p<0.05); Improved QoL (p<0.05); No significant difference in adherence and satisfaction (p>0.05).
111	Application category 2: Podiatric nursing care	Wang (2019b)	China	To explore the influence of podiatric nursing intervention on comfort and occurrence of foot ulcers among patients with diabetes foot	Diabetic foot patients: n = 134	One tertiary hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Improved behaviours of foot self-examination and self-care (p<0.05).
112	Application category 2: Neiguan point (P6) acupressure	Ünülü and Kaya (2018)	Turkey	To determine how wristband acupressure at pericardium 6 (P6) Neiguan point affects nausea, vomiting, and comfort level in the postoperative period	Patients receiving gynaecologic surgery other than caesarean section: n = 97 (47 vs 50)	One obstetrics hospital	RCT	Enhanced comfort (Perianesthesia Comfort Questionnaire (PCQ)) (p<0.001); Improved nausea and vomiting (p<0.05); No significant differences in anxiety between two groups (p>0.05).
113	Application category 2: A bundle of measures named as comfort care	Ling et al. (2018)	China	To summarize factors affecting comfort of patients after heart valve surgery, to develop targeted comfort care measures, to improve comfort and satisfaction of	Patients after heart valve surgery: n = 101 (50 vs 51)	One hospital	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Improved oral cleanliness; Shortened mechanical ventilation and duration of ICU stay (p<0.05).

				postoperative patients, and to shorten length of stay in ICU				
114	Application category 2: Doll intervention	Gong et al. (2018)	China	To evaluate the effect of doll intervention in psychiatric patients	Psychiatric female patients: n = 61 (30 vs 31)	One mental health unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): 87.07±9.58 vs 79.81±7.94 (p=0.002); Improved social interest, retardation and depression (p<0.05).
115	Application category 2: Perioperative nursing measures	Chen et al. (2018)	China	To analyse the effect of perioperative nursing care for patients receiving laparoscopic precise hepatectomy	Patients receiving laparoscopic precise hepatectomy: n = 110 (55 vs 55)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased QoL at 1 month, 3 months and 6 months post-surgery; Reduced pain at day 3, day 7 post surgery; Shortened duration of hospital stay; Improved preoperative symptoms: thirst and hungry (p<0.05).
116	Application category 2: Warming blanket machine	Ye et al. (2018)	China	To explore the effect of applying a warming blanket machine on postoperative chills in patients undergoing prostate transurethral resection	Patients scheduled for transurethral resection of prostate: n = 120 (60 vs 60)	One university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased body temperature in 30 min, 1h and 2h after admission (p<0.05).
117	Application category 2: Three therapies of TCM, and a bundle of measures named as comfort care	Xun (2018)	China	To explore the effect of TCM Three therapies combined with comfort nursing care on the prognosis of AECOPD patients with invasive mechanical ventilation	Patients with acute exacerbation chronic obstructive pulmonary disease: n = 189 (94 vs 95)	One ICU of a tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Improved satisfaction; Shortened duration of hospital stay (p<0.05).
118	Application category 2: Comfort education brochure	Garlock et al. (2017)	USA	To determine if providing education on comfort and comfort options available in the hospital setting increases level of comfort during labour	Maternal women: n = 80 (39 vs 41)	One labour and delivery unit of a nonprofit hospital	Quasi-experimental study	No difference in pain and maternal comfort (Childbirth Comfort Questionnaire (CCQ)) (p>0.05); Increased use of comfort measures during labour (p=0.000); Increased probability of continuation with original plans for pain control during labour
119	Application category 2: Music therapy	Bilgiç and Acaroğlu (2017)	Turkey	To determine if listening to music affects patients suffering from the undesirable consequences of chemotherapy	Patients receiving chemotherapy: n = 70 (35 vs 35)	Outpatient chemotherapy of a public hospital	Quasi-experimental study	Enhanced comfort (Turkish version GCQ): total comfort and physical, psychospiritual, and sociocultural comfort (p<0.05); Improved chemotherapy symptoms: pain, tiredness, nausea, depression, anxiety, drowsiness, lack

								of appetite, not feeling well, and shortness of breath ($p<0.05$).
120	Application category 2: Face to face training, reflective massage	Tabiee et al. (2017b)	Iran	To determine the effect of comfort-cantered nursing care, including reflective massage and education, on the comfort of patients undergoing coronary artery bypass grafting	Patients with coronary artery bypass grafting (CABG): $n = 70$ (35 vs 35)	One heart centre of a hospital	RCT	Enhanced comfort in two groups (Hospice Comfort Questionnaire (HCQ)): before/ after intervention ($p<0.001$); No significant differences in comfort between two groups after intervention ($p>0.05$).
121	Application category 2: Cold gel pads	Senol and Aslan (2017)	Turkey	To determine the efficacy of cold gel pad application for relieving perineal pain and possibly increasing mothers' comfort after vaginal delivery	Mothers: $n = 200$ (50 vs 50 vs 50 vs 50)	One postpartum unit of hospital	RCT	Enhanced postpartum comfort (Turkish version Postpartum Comfort Scale (PCQ)); Reduced perineal pain; Decreased perineal temperature ($p<0.05$).
122	Application category 2: Back massage, patient and family education	Tabiee et al. (2017a)	Iran	To evaluate the effects of comfort-based interventions (back massage along with patient and family education) on the level of comfort among haemodialysis patients	Haemodialysis patients: $n = 40$ (20 vs 20)	One haemodialysis unit of hospital	RCT	Enhanced comfort before / after intervention (hospice comfort questionnaire (HCQ)): intervention group: environmental and psychospiritual dimensions; control group: psychospiritual dimension ($p<0.001$); Enhanced comfort between two groups: total comfort and environmental dimension ($p=0.02$).
123	Application category 2: Training	Gurcayir and Karabulut (2017)	Turkey	To define the effects of training to patients who are scheduled for hip prosthesis surgery on the level of postoperative comfort and activities in their daily lives	Patients receiving total or partial hip prosthesis surgery: $n = 60$ (30 vs 30)	Clinics (Number of clinics was not specified) of Orthopaedic and Traumatology of two teaching and research hospitals	Quasi-experiment study	Enhance comfort (Turkish version Perianesthesia Comfort Questionnaire (PCQ) and Turkish version GCQ) ($p<0.001$); No significant difference in preoperative daily activities ($p=0.171$); Improved daily activities one month after surgery ($p<0.001$).
124	Application category 2: Modified Trendelenburg position intervention	Wang (2017)	China	To observe the influence of modified surgical position on the comfort and position related complications in elderly patients with gynaecological laparoscopic surgery	Old patients undergoing gynaecological laparoscopic surgery: $n = 100$ (50 vs 50)	One operating room of a university affiliated hospital	RCT	Enhanced operation position comfort (Chinese version Operation Position Comfort Questionnaire): 73.18 ± 4.38 vs 67.80 ± 4.05 ; Reduced pain; Decreased incidence of limbs postoperative complications ($p<0.05$).

125	Application category 2: Early ambulation	Xu (2017)	China	To investigate the effect of early ambulation on patients after ablation, to provide a safe protocol that promote patients' comfort without increasing the risk of vascular complications	Patients receiving radiofrequency catheter ablation via femoral vein approach: n = 116 (39 vs 39 vs 38)	One cardiologic unit of a teaching hospital	RCT	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Reduced pain; Decreased incidence of symptoms: urinary discomforts, numbness of limb, loss of appetite and severity of back pain (p<0.05).
126	Application category 2: Deep breathing exercises and acupoint sticking therapy	Ji (2017)	China	To explore the effects of deep breathing exercises combining with acupoint paste therapy on preventing constipation and improving general comfort and satisfaction for middle aged and elderly patients who are bedridden with hip fracture	Middle aged and elderly patients with hip fracture: n = 60 (30 vs 30)	One hospital trauma unit	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Improved constipation symptom (p<0.05).
127	Application category 2: Automatic shower systems	Ji et al. (2017)	China	To explore the effectiveness of automatic shower systems in the comfort care of elderly patients with disabilities	Elderly patients with disabilities: n = 80 (40 vs 40)	One unit of Geriatric model, one unit of stroke and one unit of orthopaedics of a hospital	RCT	Enhanced comfort (Chinese version GCQ): 79.85±4.61 vs 71.68±7.42; Decreased time of providing nursing intervention: 21.75±3.14 vs 39.08±5.47 (p<0.01).
128	Application category 2: Improved low semi-recumbent position intervention	Zhang and Liu (2016)	China	To investigate the safety and efficiency of improved low semi-recumbent in postoperative nursing care after replacement of total hip	Patients receiving total hip replacement: n = 100 (50 vs 50)	One hospital of TCM	RCT	Enhanced comfort (Chinese version GCQ): at 1h, 3h, 6h post-surgery (p<0.05); Insignificant change of pain; No significant difference in vomiting, pulmonary infection and length of hospital stays (p>0.05).
129	Application category 2: Fast track surgical nursing, acupressure	Li (2016)	China	To investigate the effects of perioperative nursing interventions based on track surgery fast theory for patients with hepatic bile duct stones hunger and thirst before operation	Patients receiving hepatectomy for hepatolithiasis: n = 75 (35 vs 35)	One hepatobiliary surgical unit	Quasi-experimental study	Enhanced comfort (Chinese version GCQ); Improved hungry and thirsty symptoms; Reduced pain: postoperative 72h and 1 week; Shorter cost and duration of hospital stay (p<0.05).

130	Application category 2: The optimized pressing time after transradial coronary intervention	Zheng et al. (2016)	China	To investigate the safety and superiority of the optimized pressing time after transradial coronary intervention	Patients receiving transradial coronary intervention: n = 238 (120 vs 118)	One cardiology unit of a teaching hospital	RCT	Enhanced comfort (Chinese version GCQ): at 2h, 4h post-surgery; Increased SpO ₂ at 24h post-surgery (p<0.05).
131	Application category 2: Washing formulas that clear Damp-Heat	Yang et al. (2016)	China	To observe the effectiveness of the external cleansing formula for postpartum lateral perineal incision rinsing	Maternal women: n = 350 (175 vs 175)	One unit of obstetric of a TCM hospital	RCT	Enhanced comfort (Chinese version GCQ) at 72h after delivery; Reduced pain: Day 1-3 after delivery (p<0.05).
132	Application category 2: A bundle of measures named as comfort care	Zuo and Long (2016)	China	To investigate the effects of comfort nursing care on the degree of comfort, negative emotions and compliance in haemodialysis patients with diabetic nephropathy	Haemodialysis patients with diabetic nephropathy: n = 60 (30 vs 30)	One blood purification unit of a hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased depression; Improved treatment adherence (p<0.05).
133	Application category 2: A bundle of measures named as comfort care	Shi et al. (2016)	China	To explore the effectiveness of comfort care in patients after electrodesiccation of the prostate	Postoperative patients with prostatic hyperplasia: n = 90 (45 vs 45)	One university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Increased satisfaction; Decreased bladder spasm and incidence of urinary catheter blockage (p<0.05).
134	Application category 2: Position intervention	Ye et al. (2016)	China	To evaluate the effects of different degrees of semi reclining position on comfort and pain of patients after laparotomy in postanesthetic care unit (PACU)	Patients scheduled for laparotomy: n = 120 (30 vs 30 vs 30 vs 30)	One unit of Operation and Anaesthesiology and one unit of General Surgery, at a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ): group II and group III than in the group I and group IV after 30° and 45° semi-recumbent position; Improved pain: group IV than group I, II, III after 15° and 60° semi-recumbent position (p<0.05).
135	Application category 2: Person-	Rose and Yates (2015)	Australia	To describe patients' responses to nursing care following the	Patients receiving a curative course of radiation	One radiotherapy unit in a major tertiary referral hospital	MMS	No significant difference in comfort (Radiation Therapy Comfort Questionnaire), anxiety, depression, QoL, satisfaction between two cohorts (p>0.05).

	cantered care model			implementation of a person-cantered model	therapy: n = 194 (86 vs 108)			
136	Application category 2: Position intervention	Liu and Wang (2015)	China	To study the effects of recumbent position changes on comfort and postoperative complications of patients after total hip replacement	Patients receiving total hip arthmoplasty: n = 200 (100 vs 100)	One hospital unit of arthrology	RCT	Enhanced comfort (Chinese version GCQ): Day 3 post surgery; No significant difference in joint dislocation complications (p>0.05).
137	Application category 2: Self-made three-end bandage	Deng et al. (2015)	China	To explore the effect of a self-made bandage with three ends on preventing complications related to the use of pacemaker pouch	Patients implanted with permanent pacemakers: n = 120 (60 vs 60)	One hospital unit of cardiology	RCT	Enhanced postoperative comfort (Chinese version GCQ); Decreased incidence of pouch hematoma and pouch rupture (p<0.05).
138	Application category 2: Pressurized with underwear model	Chen (2014)	China	To investigate the effect of a pressurized panties of inguinal region on patients' comfort	Patients receiving inguinal hernia surgery: n = 60 (30 vs 30)	One gastrointestinal surgical unit of a university affiliated hospital	RCT	Enhanced comfort (Chinese version GCQ) (p<0.05); Reduced waist and back pain (p<0.05); No significant difference in postoperative wound pain (p>0.05); Reduced occurrence of bleeding; Insignificant difference in swelling.
139	Application category 2: Adding glucose to dialysate	Zhang et al. (2014)	China	To explore the effects of dialysate with glucose on blood pressure and comfort of patients with nondiabetic chronic haemodialysis associated hypotension	Patients with non-diabetic chronic haemodialysis associated hypotension: n = 102 (Cross-referencing, 51 vs 51)	One hospital unit of Blood Purification	Quasi-experiment study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Reduced heart rate (p<0.05).
140	Application category 2: Music therapy	Tian (2014)	China	To explore the influence of music therapy on comfort in patients with lower limb arterial occlusion disease stent implantation	Patients with limb arterial occlusion disease stent implantation: n = 60 (30 vs 30)	One hospital unit of Interventional Medicine	RCT	Enhanced comfort (Chinese version GCQ): Intervention group: low comfort: 3 cases; middle comfort: 21 cases; high comfort: 6 cases vs Control group: low comfort: 11cases; middle comfort: 17 cases; high comfort: 2 cases (p<0.05).
141	Application category 2: Two types of oral-nasal and	Lu (2014)	China	To evaluate the effects of two types of oral-nasal and oropharyngeal nursing measures in patients	Patients with gastric intubation after gastroscop	One digestive unit of hospital	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions at 24h, 48h, 72h after gastric intubation (p<0.01); Reduced pain at 24h, 48h, 72h after

	oropharyngeal nursing measures			with gastric intubation after gastroscopy surgery	surgery: n = 78 (40 vs 38)			gastric intubation (p<0.05); Decreased symptoms incidence: dryness of mouth, nose and throat, difficulty in expelling sputum (p<0.05).
142	Application category 2: Dual-use air mattress for bed bathing and pressure sore prevention	Hu et al. (2014)	China	To explore the effect of a self-made dual-use air mattress for bed bathing and pressure sore prevention for elderly bedridden patients	Elderly bedridden patients: n = 82 (41 vs 41)	One tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction (p<0.05).
143	Application category 2: Fast-track surgery	Ni et al. (2013)	China	To compare the short-term outcomes of partial hepatectomy for liver cancer managed with fast-track surgery or with conventional surgery	Liver cancer patients: n = 160 (80 vs 80)	One hepatic surgical unit of a specialised hospital	RCT	Enhanced comfort (GCQ); Decreased complication, durations of nausea/vomiting, paralytic ileus and duration of hospital stay (p<0.05).
144	Application category 2: A bundle of measures named as comfort care	Tang et al. (2013)	China	To explore the efficacy of comfort nursing care for patients with severe hepatitis receiving artificial liver plasmapheresis	Patients with severe hepatitis: n = 80 (40 vs 40)	One hospital unit of Epidemiology	RCT	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased adverse effects incidence (p<0.05).
145	Application category 2: A bundle of measures named as comfort care	Zhong (2013)	China	To explore the effectiveness of comfort care in patients with auditory neuroma resected by posterior suboccipital sigmoid sinus approach	Patients with auditory neuroma: n = 80 (40 vs 40)	One hospital unit of Neurosurgery	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort, physical and psychological dimensions; Increased satisfaction (p<0.05).
146	Application category 2: A bundle of measures named as comfort care	Xu et al. (2013)	China	To observe the effect of comfort nursing care on patients receiving ultrasound-guided transvaginal oocyte retrieval	Patients receiving ultrasound-guided transvaginal oocyte retrieval: n = 1469 (704 vs 765)	One hospital unit of Assisted Reproductive	Quasi-experimental study	Enhanced comfort (Chinese version GCQ): total comfort and physical, psychological, sociocultural, environmental dimensions; Decreased anxiety; Increased satisfaction (p<0.05).

147	Application category 2: A bundle of measures named as comfort care	Yao et al. (2013)	China	To explore the application of comfort care on women during breast-feeding after C-section	Maternal women: n = 100 (50 vs 50)	One university affiliated hospital	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Decreased anxiety; Increased lactation (p<0.05).
148	Application category 2: Dual-use air mattress for bed bathing and pressure sore prevention	Hu and Wang (2012)	China	To explore the effect of a dual-use medical cushion for bathing and preventing press sore	Bedridden patients: n = 66 (33 vs 33)	A tertiary hospital	RCT	Enhanced comfort (Chinese version GCQ); Increased satisfaction (p<0.01).
149	Application category 2: Music therapy	He and Lv (2010)	China	To explore the effect of music therapy on comfort of critically ill patients	Critically ill patients: n = 157 (78 vs 79)	One hospital CCU	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Reduced anxiety and depression (p<0.05).
150	Application category 2: Yoga	Chunthara pat et al. (2008)	Thailand	To determine the effects of using a yoga program during pregnancy on maternal comfort, labour pain and birth outcomes	Primigravid Thai women: n = 74 (37 vs 37)	Two public hospitals	RCT	Enhanced maternal comfort (maternal comfort questionnaire (MCQ)): at 2h after birth (p<0.05); Decreased pain (p<0.05); No significant differences in the first and fifth minute newborn Apgar scores, use of augmentation and pethidine (p>0.05).
151	Application category 2: A bundle of measures named as comfort care	Huang (2008)	China	To apply comfort care in needle removal of venipuncture	Hospitalized patients: n = 82	One hospital unit of general surgery	Quasi-experiment study	Enhanced comfort (Chinese version GCQ); Reduced pain (p<0.05).
152	Application category 2: Two different patient-controlled analgesia	Jia (2007)	China	To compare comfort of thoracic patients who use i.v. Patient-Controlled Analgesic (PCA) in 24h and 48h after surgery and comfort of thoracic patients who use epidural PCA in 24h and 48h after surgery	Postoperative thoracic patients: n = 74 (37 vs 37)	One hospital unit of Thoracic Surgery	RCT	Enhanced comfort (Chinese version GCQ): total comfort, physical dimension; Reduced pain (p<0.05); No significant difference in sedation effects (p>0.05).
153	Application category 3:	El-Shami (2023)	USA	To determine if a "Commit to Sit"	Outpatient surgeries: n=469	An urban, short-term, acute care	Service description	Nurses sitting with their patients for 3 to 5 minutes improved patient satisfaction

	"Commit to Sit" initiative			initiative, compared with usual practice, would affect patient satisfaction scores		hospital with 72 beds		regarding nurse-patient communication. The staff was also satisfied with the initiative.
154	Application category 3: Two theories with nursing practice	Ali (2022)	Pakistan	To compare the mentioned theorists, their impacts on the outcomes, and their relationships with the clinical scenario in their own approaches	One 65-year-old male with acute coronary syndrome	ICU	Case study	Through therapeutic communication and collaborative teamwork, the patient had an improved hospital stay and better overall outcomes. This practice aids me in addressing the issue which I was facing in my practice through theoretical knowledge.
155	Application category 3: PI education intervention and Plan-Do-Study-Act (PDSA) performance improvement model.	Seton et al. (2022)	USA	To develop and implement an interactive, evidence-based pressure injury (EB PI) education program and evaluate the impact on frontline hospice nursing staff knowledge and practice	Staff attended the EB PI education workshop: n=19	One 12-bed inpatient hospice unit in a tertiary care Veterans Affairs (VA) Medical Center	Quality improvement project with audit and interviews	Frontline hospice nursing staff knowledge and practice improved after attendance at our evidence-based PI education program. Staff comfort with job duties (NCQ) was stable, and satisfaction with the workshop education was high (100% agreement with trainer effectiveness).
156	Application category 3: Vascular closure devices	Wang et al. (2022)	China	To investigate the effect of vascular closure devices in thrombolytic therapy for inferior vena cava	patients with acute inferior vena cava thrombosis receiving thrombolytic therapy: n = 118 (56 vs 62)	One vascular surgical unit of a hospital	CCS	Higher improved comfort at 6h and 12h postoperatively (p<0.05).
157	Application category 3: TMC-Five-Element Music Therapy	Chen et al. (2022)	China	To observe the effect of five-element music therapy of Traditional Chinese Medicine (TCM) on delirium and negative emotions of ICU patients with severe pneumonia	Pneumonia patients: n = 86 (43 vs 43)	One hospital ICU	Cohort study	Lower comfort score in observational group than those in control group (p<0.05).
158	Application category 3: Self-selected pain management	Such and Denny (2021)	USA	To determine if comfort and satisfaction with the birth experience differed among women who used nitrous oxide	Women with spontaneous vaginal birth at term gestation: n = 84 (N ₂ O = 28	Maternity care units in three hospitals	CCS	No statistically significant differences in comfort and satisfaction with the birth experience between groups which highlights the need to present comprehensive pain

	<i>t method: N₂O and oxygen only, epidural analgesia</i>			(N ₂ O), epidural analgesia, or no analgesia during labour and birth	vs Epidural = 28 vs No analgesia = 28)			management options to women for labour and birth, such as N ₂ O.
159	Application category 3: Text messaging	Vestal (2021)	USA	To evaluate the effectiveness of text messaging initiative in increasing patient satisfaction with the communication between perioperative staff and patients' family members	Surgical patients: Inpatient: Preimplementation: n = 94, Postimplementation: n = 115; Outpatient: Preimplementation n = 139, Postimplementation: n = 172; Ambulatory: Preimplementation n = 89, Postimplementation: n = 97.	Surgical units (Number of units was not specified)	Quasi-experiment study	Increased satisfaction score.
160	Application category 3: Intravenous infusion ports at different sites	Yang et al. (2021)	China	To study the effect of left and right arm port and left and right chest wall port in chemotherapy of malignant tumour patients	Patients undergoing chemotherapy implanted in the infusion port: n = 135 (30 vs 33 vs 34 vs 38)	One teaching hospital	CCS	Comfort scores at different times after surgery: a difference (p<0.05); pain within 24 hours after port placement: no difference (p>0.05).
161	Application category 3: Interventions of physical, psychospiritual, sociocultural, and environmental context; Aromatherapy, music therapy,	Liu et al. (2021)	China	To summarize the early hospice care for a patient with intrahepatic cholangiocarcinoma	Hepatocellular Carcinoma patient: n = 1	One teaching hospital	Case study	A peaceful death and a supported bereavement without regret.

	<i>position change</i>							
162	Application category 3: <i>Totally implanted venous access port vs Peripherally inserted central venous catheter</i>	Wan (2020)	China	To compare peripherally inserted central venous catheters (PICC) and totally implanted venous access port (TIVAP) of administrated chemotherapy in gastric cancer patients	Gastric cancer patients received chemotherapy: n = 142 (72 vs 70)	Oncology surgical unit at a teaching hospital	CCS	Comfort score: TIVAP group>PICC group (p<0.05).
163	Application category 3: A yearlong education and mentoring program to train direct care clinicians	Lafond et al. (2019)	USA	To describe the application of a nursing theory framework for an evidence-based practice/quality improvement project that embedded paediatric primary palliative care into a hospital-based setting using unit-specific projects	Direct care clinicians: n=149	One hospital-based paediatric primary palliative care	Evidence-based practice/quality improvement project	The Comfort Theory guided integration of palliative care for children with serious illness and their families. Improvements in interdisciplinary collaboration in care were demonstrated through 21 unit-based projects, the development of triggers for specialty palliative care consults in several high-risk populations, and the development of institutional guidelines for end-of-life care.
164	Application category 3: <i>A training module for nurses</i>	Robinson (2019)	USA	To determine whether a training module for nurses would assist in the identification of signs and symptoms of mental health issues in Operation Enduring Freedom (OEF)/ Operation Iraqi Freedom (OIF) veterans	nurses and social workers: n = 17	Veterans affairs Medical Centres	Quasi-experiment study	Assisting nurses in identifying the signs and symptoms of mental health issues and educating the nurses on various interventions.
165	Application category 3: <i>Learning comfort</i>	Bice and Bramlett (2019)	USA	To explain and expand upon the role of teaching from a holistic comfort perspective	Undergraduate student and Graduate student: n = 2	University of North Carolina Wilmington	Case study	Meeting the student's needs in the psychospiritual and sociocultural domains by providing (a) reassurance, (b) positive reinforcement, (c) empathy, and (d) help with the development of a plan for course success. students experiencing decreased

								stress and increased relaxation. a met need (relief) and calming (ease) in the physical and environmental domains. Applicable and pertinent to nursing education, implications for nursing education, organizational policy, and nursing practice.
166	Application category 3: <i>Home-based nursing process care</i>	Puchi et al. (2018)	Chile	To apply Kolcaba's comfort theory in the development of the NP care for an older adult treated under Hospital at Home	Pneumonia patient: n = 1	One Hospital at Home	Case study	The theory's application was simple and could be used in the domiciliary context: an adequate assessment, a holistic view of the situation, the nursing care objectives, interventions, and evaluation of these interventions through both internal and external behaviours. The comfort theory can be applied in the context of hospital at home and facilitates the development of the NP and the provision of holistic, person-centred nursing care, incorporating family into the care plan.
167	Application category 3: <i>Two different tube feeding interventions</i>	Zhang (2018)	China	To provide guidance for postoperative comfort care of patients with gastric cancer	patients with gastric cancer: n = 144 (72 vs 72)	One general surgical unit at a cancer hospital	CCS	Higher improved comfort at day1, day7 postoperative (p<0.05).
168	Application category 3: <i>Interventions of physical, psychospiritual and sociocultural context; position change</i>	Awal khan (2017)	Pakistan	To explain the practical application of nominated theory to critical scenario of patient	Patient with post traumatic loss of limb: n = 1	Unspecified	Case study	Actively participating in care related activities, reduction in pain, mobilized with help, used to touch his residual limb confidently and looking relax, fast recovery and reduced hospital stay as health seeking behaviours and institutional integrity.
169	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural</i>	NG. (2017)	Singapore	To demonstrate the application of Kolcaba's comfort theory for the management of a patient with hepatocellular carcinoma	Patient with hepatocellular carcinoma patient: n = 1	One emergency room	Case Study	An increase in the management of pain with a reduction in pain, sodium level improved from 119 mmol/ L to 122 mmol/ L, his oxygen saturation improved from 95% to 96% via 3 litres on nasal prong and respiratory rate decreased from 25 to 20 breaths/ minute, decreased anxiety upon

	, and environmental context							discharge and could identify factors that promote anxiety and ways to modify his response to them, an understanding of role expectations in relation to his illness, and were able to identify and utilise support services to promote and support his role performance. No falls during hospitalization.
170	Application category 3: Telephone follow-up, Nursing consultation	Barros Ferreira et al. (2017)	Brazil	To evaluate telephone follow-up as a strategy to provide comfort	Malignant neoplasm patients: n = 21	One Chemotherapy Outpatient Clinic	MMS	The main signs and symptoms: nausea, weakness, vomiting, inappetence, alopecia and decreased food intake. Thematic categories: "Relief in the Physical Context", "Transcendence in the Psychospiritual and Physical Contexts" and "Tranquillity in the Physical, Psycho-Spiritual and Sociocultural Contexts "
171	Application category 3: Position change	Wang et al. (2017)	China	To explore the clinical efficacy of percutaneous kyphoplasty (PKP) via unilateral transverse process pedicle approach under lateral position for osteoporotic vertebral compression fracture (OVCF)	patients with osteoporotic vertebral compression fracture (OVCF): n = 36 (17 vs 19)	One spine surgical unit at a teaching hospital	CCS	Comfort score: A group was higher than B group (p<0.05).
172	Application category 3: Interventions of physical and psychospiritual context; massage	Liu et al. (2017)	China	To summarize the methods of comfort care for patients undergoing extracorporeal shock wave lithotripsy after coronary stenting	Patients undergoing extracorporeal shock wave lithotripsy for combined urinary tract stones after coronary stenting: n = 68	One urology unit at teaching hospital	Case study	Improved comfort and satisfaction.
173	Application category 3: An evidence-based practice application project	Tacy et al. (2017)	USA	To (1) establish support from staff nurses and providers for the application of the primary care EBP, (2) establish the use of the guidelines for the care	Patients with back pain: n=277	One freestanding ED affiliated with a large multicampus health system in an urban area	Service description	More application. More than 50% of patients were managed on the basis of the guidelines. Patient pain at discharge was reduced by 45%. Satisfaction with the overall pain management exceeding the benchmark. The recidivism rate for CLBP for the pilot period is

				of adult patients with CLBP, (3) increase awareness of available community resources for patients with CLBP, (4) increase patient knowledge on the evidence-based management of CLBP, and (5) increase satisfaction with pain management for adult patients with CLBP who use the ED.				3.91%, meeting the goal of less than 5%. More patients were referred directly to PT.
174	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context; aromatherapy, auricular acupuncture, healing touch, mindfulness, Tai chi</i>	Boudiab and Kolcaba (2015)	USA	To demonstrate how comfort theory has been applied throughout one Veterans Administration System to fulfill the goal of providing quality veteran-centric care	Nurses (number was not specified)	Midwestern Veterans Administration (VA) Health System	Service description	Most patients were found to experience increased comfort and a decrease in pain and anxiety. Few patients who did not experience a decrease in pain intensity have expressed a change in the quality of pain (pain became dull instead of sharp) or a deeper sense of calm and relaxation. Almost all patients report increased relaxation, and most report increased satisfaction with the options and modalities offered.
175	Application category 3: <i>Quiet time intervention</i>	Krinsky et al. (2014)	USA	To describe comfort theory as applied in care of cardiac patients and to demonstrate the use of a specific intervention called quiet time, derived from comfort theory, to improve cardiac patients' experiences of	patients with suspected acute coronary syndrome: n = 2	One chest pain unit in Emergency	Case study	James reported no further episodes of chest pain and was awaiting the results of pending blood work to rule out acute coronary syndrome. He was able to close his eyes and sleep. The Comfort Theory-based intervention of Quiet Time provided an improved standard of care and outcome for this patient as well as other cardiac patients. Explicit applications of comfort theory can benefit nursing practice.

				comfort across four domains of care				
176	Application category 3: Physical context, psychospiritual context, environmental context comfort interventions; Aromatherapy, music therapy, massage	Su and Wu (2014)	China	To describe the application of comfort theory in care for an old woman with bleeding and short-term readmission	Elder woman: n = 1	One hospital unit	Case study	Increasing physical comfort and establishing good therapeutic interpersonal relationships, respecting the culture and beliefs of the case to change the outcome of the interaction between the individual and the environment, discussing with the caregiver about the care of the case and using the life review approach to strengthen the spiritual level; The case could integrate the tasks of the past developmental stage and relieve the mental discomfort and stress of the case.
177	Application category 3: <i>Music therapy, massage, position change</i>	Lin et al. (2014)	China	To report the nursing care for a patient with end-stage oral cancer, with a long history of self-injurious behaviours	Oral cancer patient: n = 1	One hospital	Case study	To assess the causes of respiratory failure and pain, and symptom management to alleviate the physical discomfort, providing a comfortable and warm environment to achieve peace and stability.
178	Application category 3: ICU family members' needs	Nolen and Warren (2014)	USA	To explore and identify the perceptions of family members' needs and to ascertain if those needs were perceived as met or unmet by the family members of patients housed in the intensive care units	Family members of intensive care patients: n=31 (survey), n= 4 (interview)	One hospital that has 3 ICUs with 3 separate waiting rooms: cardiac, medical, and surgical	MMS	Physical needs: "Comfortable zone"; Communication needs: "Not what we wanted it to be"; Family members visiting loved ones in the ICU had a wide range of emotions stemming from their current experiences. Participants had a positive experience and perceived their needs as being adequately met.
179	Application category 3: <i>A fast-track nursing education program.</i>	Miki et al. (2007)	USA	To discuss how aspects of a holistic comfort theory were adapted to create a taxonomic structure to apply its concepts to a fast-track nursing education program	First-year and senior students: n = 40	Idaho State University	Service description	Considerably less stressed and more relaxed in their affect. Further incorporation of the theory into the nursing curriculum is warranted.

180	Application category 3: <i>Institute-based comfort care practice; massage, guided relaxation</i>	Kolcaba et al. (2006)	USA	To describe how Kolcaba's Comfort Theory was used by a not-for-profit New England hospital to provide a coherent and consistent pattern for enhancing care and promoting professional practice, as well as to serve as a unifying framework for applying for Magnet Recognition Status	Staff nurses, nursing leaders, and the chief nursing officers	One hospital	Service description	The hospital expanded its service recovery program and launched several points-of-care surveys, each showing that patient satisfaction scores are rising. Hospital leaders are fully dedicated to supporting a comfort place. The institution's commitment to achieving a higher level of care for patients/families and improving the organizational culture became aligned around the focus of comfort. We continue to examine how we can incorporate Comfort Theory in all dimensions of practice.
181	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context; Massage healing touch, music therapy, position change</i>	Wilson and Kolcaba (2004)	USA	To define comfort, identify comfort interventions, and discuss the importance of a goal for enhanced comfort in patients in the perianesthesia setting	Colon cancer patient: n = 1	One perianesthesia setting	Service description	A foundational and holistic approach to comfort management, which is proactive, energized, intentional, and longed for by patients and families in all settings.
182	Application category 3: <i>A holistic model-Acute care for elders</i>	Panno et al. (2000)	USA	To help orthopaedic nurses develop an awareness of the Acute care for elders (ACE) model and techniques to achieve desired outcomes in hospitalized elders	Elders (Number of elders was not specified)	One acute care unit	Service description	The Theory of Comfort provides a holistic framework for nurses to assure that all comfort needs are addressed.
183	Application category 3: <i>Interventions of physical,</i>	Jones and Krysa (1998)	USA	To present nursing interventions for the care and comfort of individuals and families	A couple seeking preimplantation genetic testing: n = 2	One genetics and IVF clinic	Case study	Achieved ease, relief, and transcendence.

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	<i>psychospiritual, sociocultural, and environmental context</i>			seeking Preimplantation Genetic Testing (PGT)				
184	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context; massage, music therapy, position change</i>	Vendlinski and Kolcaba (1997)	USA	To describe a theory of comfort care that offers definitions and a grid for the art of comfort care that are relevant to hospice nursing practice	Heart failure patient: n = 1	One hospice setting	Case study	Nurses can be comprehensive and consistent in assessing comfort and in designing interventions to enhance comfort. Assessment is an ongoing process. Interventions are modified according to the needs being identified and the feedback obtained. The framework for comfort care offers a theory-based foundation upon which to build patterned, individualized methods for the practice of comforting, the essence of hospice nursing.
185	Application category 3: <i>Interventions of physical, psychospiritual, sociocultural, and environmental context</i>	Kolcaba and Fisher (1996)	USA	To present a framework for holistic comfort care, with strategies to guide the interdisciplinary team through the process of implementing comfort care designing comfort measures, deciding on specific medical management, and assisting the patient and family through the dying process	Metastatic melanoma patient and post-coronary artery bypass graft surgery patient: n = 2	One ICU	Case study	The practice will enable staff to empower patients and families to work through the dying process with optimal comfort.
186	Application category 3: <i>Unit comfort care practice; Art therapy,</i>	Kolcaba (1992)	USA	To develop a framework for gerontological nursing practice that includes comfort as a multidimensional construct for planning	Dementia patients: n = 15	One dementia unit at a teaching nursing home	Service description	The framework is dynamic, describing the essential phenomena in strong gerontological nursing care, explaining what to observe and what to do based on those observations, predicting successful outcomes of effective care, advocating for a

	<i>music therapy</i>			and evaluating nursing interventions				gerontological nursing approach that is warm, skilful, and holistic.
187	Application category 4	Egger-Rainer et al. (2022)	Austria	To find out which variables may be associated with comfort of patients in an epilepsy monitoring unit	Adult hospitalized patients: n = 267	Ten epilepsy monitoring units	CSS	Comfort score (Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ)): 181.32±25.95 (83-235 points). Factors of comfort: gender (women had a total comfort score 4.69 points higher than men), occupation (retired persons 28.2 points higher than high school students ≥18 years); Insignificant: age, marital status, and educational levels.
188	Application category 4	Xiong et al. (2022)	China	To analyse the comfort and factors in patients with enterocutaneous intestinal fistula on hospital admission and propose targeted nursing intervention countermeasures	Patients with enterocutaneous intestinal fistula: n = 193	One unit of gastrointestinal surgery of hospital	CSS	Comfort scores: Total score: 60.12±12.16; physiological: 11.40±3.89, physiological: 24.30±8.36, social: 13.70±3.63, environmental: 14.11±2.34. Factors of comfort: education level, family location, religious belief, skin condition, number of fistulas; Psychological comfort: educational level, family location, family income per capita, medical payment method, religious beliefs, skin condition, number of fistulas; Social comfort: age level, education level, family location, family income per capita, medical payment methods, religious beliefs, skin conditions; Environmental comfort: education level, skin condition.
189	Application category 4	Kim and Uhm (2022)	Korea	To identify the levels of comfort-care provided by trans-arterial chemoembolization (TACE) nurses and examine the discriminant factors thereof	Nurses caring for trans-arterial chemoembolization patients: n = 146	Online	Online survey	The proportions of nurses in comfort-care groups level: low: 18.5%, moderate: 60.3%, and high: 21.2%; Perception of post-embolization syndrome (PES) score: 4.75±1.73; Symptom interference score: 4.54±2.01; Factors of comfort: supportive care competence (0.864), caring attitude (0.685), perception of symptom interference (0.395), perception of PES (0.321), barriers to nausea/ vomiting management (-0.343).
190	Application category 4	Pequeno et al. (2022)	Brazil	To investigate the relationship between the sociodemographic characteristics, the single nucleotide variants, and the holistic	Family caregivers of head and neck cancer patients in palliative care: n = 95	One university Hospital	CSS	Comfort total score (HCQ-caregiver): data were not reported. Factors of comfort: employed family caregivers (p=0.04), those youngest (p=0.04), smokers (p=0.04), those with IL1R2 GA or AA genotypes (p=0.03).

				comfort of family caregivers of head and neck cancer patients in palliative care				
191	Application category 4	Zeng et al. (2022)	China	To investigate the sleep quality and its influencing factors of patients with nasal packing after endoscopic sinus surgery for chronic sinusitis	Patients with chronic sinusitis using nasal packing after endoscopic sinus surgery: n = 360	One unit of Otorhinolaryngology in a university affiliated hospital	CSS	Comfort score (Chinese version Modified Kolcaba Comfort Scale): 66.83±10.02, sociocultural dimension: 18.17±1.51(22-15), spiritual psychological dimension: 21.56±4.56(32-12), environmental dimension: 12.43±2.61(18-6), physiological dimension: 14.68±3.34(22-8). Comfort level: moderate: 234 cases (65.0%), low: 126 cases (35.0%). Sleep quality score: 34.21±5.36. Sleep problems: mild: 63 cases (17.5%), moderate: 221 cases (61.4%), severe: 63 cases (17.5%). Pain score: 5.34±1.54. Pain level: mild: 52 cases (14.4%), moderate: 226 cases (62.8%), severe: 82 cases (22.8%). Correlation: comfort and sleep quality (p<0.05).
192	Application category 4	Sayin Kasar et al. (2021)	Turkey	To determine the comfort level and influencing factors in caregivers of palliative care patients	Caregivers of palliative care patients: n = 102	One palliative care clinic of a teaching and research hospital	CSS	Comfort (Turkish version End-of-Life Comfort Scale (Caregiver/ Family)): 109.6±12.49, from 86-146. Factors of comfort: the patient's performance status, the caregivers' age, their economic situation, the length of the caregiving period and receiving help in care (social support) (p<0.05); Higher: 65 years of age, incomes were greater than their expenditures, care for the patient for 12 hours a day, and received social support while providing care; Insignificant: patients' ESAS symptoms. Symptom score: appetite: 5.4 , drowsiness: 5.2 , fatigue: 4.9, pain: 3.7.
193	Application category 4	Sarıtaş and Özdemir (2021)	Turkey	To determine how compliance with immunosuppressive therapy affected the well-being of liver transplant patients	Patients undergoing liver transplant surgery: n = 103	One liver transplant unit of a teaching hospital	CSS	Comfort score (GCS): data were not reported. Factors of comfort: adherence status (r=0.543, p<0.001) (The patients who adhered to immunosuppressive therapy experienced higher levels of comfort).

194	Application category 4	Demir and Bulbuloglu (2021)	Turkey	To investigate the effect of immunosuppression therapy on activities of daily living and comfort level after liver transplantation	Liver transplant patients: n = 148	One liver transplant unit of a teaching hospital	CSS	Moderate comfort level (Turkish version GCQ): 3.65±0.26 (3.07-4.29). Factors of comfort: independent level in ADL, length of hospital stay and the duration of immunosuppressive drug use (p=0.041, p=0.026).
195	Application category 4	Gong et al. (2021)	China	To understand the comfort level of patients during nasal packing and analyse its influencing factors	Patients with nasal packing: n = 130	One unit of Otorhinolaryngology, Head and Neck Surgery at four tertiary hospitals	CSS	Comfort score (Chinese version Nasal Packing Patient Comfort Questionnaire): 51.73±11.04, item: 2.75±0.92, physical dimension: 2.34±0.65, environmental dimension: 2.78±0.81, psychospiritual dimension: 3.45±0.93, sociocultural dimension: 3.63±0.73. Factors of comfort: gender, per capita monthly income, packing materials, accompanying with family members (p<0.05); Insignificant: age and type of medical insurance.
196	Application category 4	Yu et al. (2021)	China	To explore the impact of trait versus state loneliness, social support and activity of daily living on the comfort of elderly people in nursing homes	Old patients: n = 347	Seven nursing homes	CSS	Comfort score (Chinese version GCQ): 83.52±7.39. Factors of comfort: emotional trait loneliness: -0.849, state loneliness: -0.470; degree of trait loneliness: -0.469; social support: 0.303; ADL: indirectly through state loneliness: -0.042; traits of social loneliness; different religious beliefs, whether they have children, monthly income, marital status, education level, whether they have received chronic disease education, satisfaction with institutions, frequency of leisure activities.
197	Application category 4	Jia (2021)	China	To understand the sleep quality and comfort in patients undergoing maintenance haemodialysis	Patients with end stage renal disease undergoing maintenance haemodialysis: n = 128	One blood purification room of nephrology unit at a tertiary hospital	CSS	Comfort score (Chinese version Maintenance Haemodialysis Patient Comfort Scale): 66.90±9.86. Pittsburgh Sleep Quality Index (PSQI) score: 11.91±4.40; Sleep disorders: 80.5% of patients. Factors of comfort: PSQI with total comfort and various dimensions (r=-0.621 to -0.177); Factors of sleep quality: religious beliefs, occupational status, economic level, comfort level.
198	Application category 4	Yilmaz and Çankaya (2020)	Turkey	To determine the factors that affect the birth worry of primipara	Primiparous women: n = 240	One Maternity and Children Hospital	CSS	Comfort score (Turkish version PPCQ): 122.2±16. Factors of comfort: labour worry in caesarean delivery women, concerns or fears about labour or delivery, not emotionally supported by their family during

								pregnancy, experiences of health problems during delivery, a vaginal delivery vs a caesarean section. Positive significant correlation between OWLS scores and PPCQ scores.
199	Application category 4	Fowler et al. (2020)	USA	To explore patient perceptions of nurse-driven comfort interventions and satisfaction with care during the perioperative phase of surgical care	Ambulatory surgical patients: n = 48	One surgical unit of a nationally recognized, not-for-profit, comprehensive community non-Magnet hospital	Online survey	High comfort level: the highest score of perceived most nursing interventions: connecting with the patient as a person; The lowest percentage of yes responses to comfort: setting a collaborative pain goal (54%), and the highest percent of yes responses: the inclusion of family or caregivers (92%); Factors of comfort: encouragement of use of measures to prevent discomfort (p=0.00), providing a comfortable environment; High satisfaction score: 4.7±0.71; Thirty-eight (79%) extremely satisfied; Factors of satisfaction: (a) medications/ treatments, (b) emotional support, (c) education or teaching, (d) listening, (e) connecting as a person (r: 0.62-0.85, p=0.00).
200	Application category 4	Marques and Alves (2020)	Brazil	To identify clusters of nursing diagnoses and repercussions for patient comfort and survival	66 patients with cancer at EoL: n = 66	One palliative oncology care unit	Cohort study	Three diagnostic groups and 23 nurse diagnoses were used: First and most prevalent diagnosis cluster related to less comfort: intestinal tract disorders and sleep; Second: neuropsychological characteristics, fatigue associated with lower survival; Third: functionality and perception.
201	Application category 4	Cardoso et al. (2020)	Brazil	To identify nursing diagnoses in hospitalized elderly patients in an ICU, and to categorize diagnoses according to the dimensions of comfort in Kolcaba's theory	Elderly patients: n = 103	One hospital ICU	CSS	In 26 titles and six domains of NANDA-I Taxonomy: Physical comfort dimension: 80.77% (Chronic confusion, Excess fluid volume, Impaired swallowing, Risk for electrolyte imbalance, Risk for imbalanced fluid volume, Risk for unstable blood glucose level, Dysfunctional gastrointestinal motility, Impaired gas exchange, Constipation, Impaired urinary elimination, Dysfunctional gastrointestinal motility, Hyperthermia, Risk for vascular trauma, Risk for aspiration, Risk for shock, Risk for bleeding, Impaired skin integrity, Decreased cardiac output, Risk for

								ineffective cerebral tissue perfusion, Impaired spontaneous ventilation, Ineffective breathing pattern); Sociocultural comfort dimension: 11.54% (Readiness for enhanced self-care, Impaired physical mobility, Impaired verbal communication); Environmental comfort dimension: 3.58% (Risk for infection); Psychospiritual comfort dimension: 3.58% (Anxiety).
202	Application category 4	Zeynep et al. (2020)	Istanbul	To determine the comfort levels of patients regarding the pre-operative period in operating room	Patients undergoing elective surgery: n = 130	One general surgery clinic of a university hospital	CSS	Comfort score (Perianesthesia Comfort Scale): 4.85±0.65. Factors of comfort: experience of surgery, being calm while waiting in the operating room in the preoperative period (p<0.05).
203	Application category 4	Türkmen et al. (2020)	Turkey	To examine the effect of labour comfort on traumatic childbirth perception, posttraumatic stress disorder (PTSD), and breastfeeding after the fourth postpartum week	Pregnant women: n = 102	One delivery room	Longitudinal study	Comfort (Childbirth Comfort Questionnaire (CCQ)): data were not reported. Significant relationship: physical labour comfort (p=0.003), transcendence (p=0.023), family history of labour difficulty (p=0.027), feelings about birth before labour begins (p=0.005) and traumatic childbirth perceptions 4 weeks after childbirth; physical labour comfort (p=0.001), psychospiritual labour comfort (p=0.006), transcendence (p=0.001), primiparity (p=0.009), place of residence (p=0.044), and traumatic childbirth perceptions (p<0.001) and PTSD 4 weeks after childbirth. Consequences of comfort: physical labour comfort affected traumatic childbirth perceptions 3 and 6 months after childbirth (p<0.05), affected breastfeeding self-efficacy 4 weeks and 3 months after childbirth (p<0.05).
204	Application category 4	Zhang (2020)	China	To analyse the symptom clusters and comfort of patients with nasopharyngeal carcinoma	Nasopharyngeal Carcinoma patients receiving radiotherapy: n = 153	Two tertiary hospitals	Longitudinal study	Comfort score (Chinese version Radiotherapy Comfort Questionnaire (RTCQ)): from 85.84±8.30 to 104.44±9.71. Factors of comfort: radiotherapy progress-the scores of overall comfort and comfort in all dimensions of nasopharyngeal Carcinoma patients at different time points were statistically significant (F= 9.152-260.826, p<0.05); symptom clusters (r=-0.194--0.892,

								p<0.05) , physiological comfort during T1-T6 (r=-0.214--0.883, p<0.05); fatigue sleep emotion symptom cluster and the oral mucosa symptom cluster with psychological comfort and environmental comfort during T1-T6 (r=-0.249--0.794, p<0.05); oral mucosa symptom cluster, dysphagia symptom cluster and social dimension comfort during T5-T6 (r=0.163-0.184, p<0.05).
205	Application category 4	Pang et al. (2020)	China	To investigate comfort level of caesarean women and explore its influencing factors	Caesarean women: n = 154	One maternity ward	CSS	Medium to high level of comfort (Chinese version GCQ): 79.70±7.82. Factors of comfort: per capita monthly income, whether analgesia before delivery. Moderate comfort level (Chinese version GCQ): 85.43±11.14, lowest item score in environmental dimension comfort: (2.67±0.48).
206	Application category 4	Kizilkaya and Gul (2019)	Turkey	To investigate whether fasting time and anxiety parameters affect pregnant women's preoperative comfort levels	Pregnant women receiving elective caesarean section: n = 110	One Obstetrics and Gynaecology Hospital	CSS	Moderate comfort level (GCQ): 129.82±12.66; State Trait Anxiety Inventory (STAI) subscale scores: 46.72±9.37, 43.65±7.95. Fasting time: 13.16±2.38 hours for solid food, 10.57±2.91 hours for liquid food. Factors of comfort: STAI scores, total fasting duration for solids; Insignificant: total fasting duration for liquids; Factors of STAI score: thirst sensation and mouth dryness.
207	Application category 4	Li et al. (2019)	China	To identify the correlation between comfort related to the position during anal surgery and the preoperative frailty of elderly patient	Elderly patients receiving anal surgery: n = 174	One operating room of a general hospital	CSS	Comfort score (Chinese version Surgical Posture Comfort Questionnaire): 61.56±11.34. FRail Frailty Scale score: 1.37±1.06, 59 (33.9%) without frailty, 71 (40.8%) with pre-frailty, 44 cases (25.3%) with frailty. Negative significant correlation: comfort dimension and total comfort with frailty scale scores (r=-0.508, -0.347, -0.206, -0.263, -0.438, p<0.05); Factors of comfort: age, body mass index, exercise, preoperative comorbidities, preoperative weakness (p<0.05).
208	Application category 4	Estridge et al. (2018)	USA	To determine a potential relationship between comfort and fluid retention (a proxy	Patients receiving haemodialysis: n = 51	Two for-profit dialysis clinics	CSS	Comfort (Haemodialysis Questionnaire): 203.25±26.09, from 146-258 (inconsistent maximum comfort score reported in text and table indicating a low quality of report).

				for adherence) in adults with end stage renal disease receiving haemodialysis				Factors of comfort: insignificant association: adherence to fluid restrictions, sex, whites and non-whites. Awareness of comfort as a consideration for adherence to prescribed treatment regimens may improve treatment adherence.
209	Application category 4	Gayoso et al. (2018)	Brazil	To verify the association between the level of comfort of the caregiver and sociodemographic variables related to caregiving, and the patient's functional status and symptoms	Informal caregivers of cancer patients in palliative care: n = 50	One outpatient clinic and home care of a tertiary hospital	CSS	Comfort (Holistic Comfort Questionnaire–caregiver (HCQ-caregiver)): 4.52 points. Factors of comfort: better functional status of the patients, the Palliative Performance Scale(PPS) scores and the HCQ-caregiver (p=0.009); older caregivers who received helped in the care activities (p=0.018), physical comfort of caregiver and PPS (p=0.006), psycho-spiritual comfort and caregiver's age (p=0.012), psychospiritual comfort and patient tiredness (p=0.022); Caregivers classified the functional status of the patients as 50 to 70% in 25 cases (50%), 80 to 100% in 14 cases (28%), 0 to 40% in 11 cases (22%), with a mean: 60% (20-100%).
210	Application category 4	Mosleh (2018)	Jordan	To evaluate the impact of a cancer diagnosis on Jordanian cancer patients' health-related QoL and its relationship with social support and emotional status	Patients with cancer: n = 226	Outpatient clinics of a tertiary hospital (Number of clinics was not specified)	CSS	Comfort score (HCQ): 4.25±0.055; Unsatisfactory QoL; Fatigue; Factors of comfort: high educational level, less rehospitalization, high anxiety and depression scores; Factors of QoL: social support, hospitalization readmission, being a non-smoker, anxiety and depression; Factors of functioning scores and symptom complaints: social support, anxiety and depression.
211	Application category 4	Nural and Alkan (2018)	Turkey	To determine the factors affecting comfort and the comfort levels of patients hospitalized in the CCU	Patients in the CCU for at least 2 days: n = 119	One CCU of a state hospital	CSS	Comfort score (Turkish version GCQ): 3.22±0.33; Factors of comfort: age (r=-0.19, p=0.03), communication by nurses and physicians (p<0.05), sufficient communication by physicians, education level, age, and having a companion, having visitors(p<0.05); Insignificant: gender, place of residence, family structure, the information level of patients and families, being informed about procedures, and

								conditions causing concern in the intensive care.
212	Application category 4	Ramirez (2018)	USA	To assess therapists' comfort level in providing psychotherapy in a home-based setting and how therapeutic competency, therapeutic relationship, and advanced therapeutic training related to the comfort level	Psychotherapists who provided: n = 76	One non-profit home-based psychotherapy agency	CSS	Comfort score (Therapist Comfort Scale): 28.23±18.50. Positive relationship between: therapeutic relationship and comfort level, therapeutic training and comfort level, advanced therapeutic training and comfort level.
213	Application category 4	Ding et al. (2018)	China	To understand the comfort and its influencing factors of patients within 24 hours after gynaecological surgery	Patients receiving gynaecological surgery: n = 98	One unit of Gynaecology in a municipal hospital	Longitudinal study	Moderate comfort (Chinese version GCQ): 6 hours after surgery total: 82.59±0.75, physical dimension: 13.41±0.63, environmental dimension: 21.21±1.00, psychospiritual dimension: 29.44±0.49, sociocultural dimension: 19.29±0.44; 24 hours after surgery total: 81.21±1.42, physical dimension: 13.95±0.75, environmental dimension: 19.54±0.80, psychospiritual dimension: 28.75±0.51, sociocultural dimension: 18.47±0.62. comfort level at 24 hours after gynaecological surgery. Highest demand for physical comfort: at 6 hours after surgery. Highest demand for social and cultural comfort: at 24 hours after surgery. Factors of comfort: age, education, surgical methods, surgical procedures.
214	Application category 4	Zhu et al. (2018)	China	To explore usefulness of the Comfort Scale in accelerated rehabilitation surgical care	Patients with gastric cancer receiving laparoscopic accelerated recovery surgery: n = 60	One unit of Gastrointestinal Surgery of a medical college hospital	Longitudinal study	Comfort (Chinese version Modified general comfort questionnaire): 1 day after surgery: total: 66.39±15.08, physical dimension: 11.85±3.42, psychological dimension: 17.21±3.52, spiritual dimension: 18.32±4.63, sociocultural and environmental dimension: 19.01±3.51; 7 day after surgery: total: 70.06±14.45, physical dimension: 13.85±4.15, psychological dimension: 18.41±3.96, spiritual dimension: 19.23±4.43,

								sociocultural and environmental dimension: 19.11±1.91; Factors of comfort: physiological dimensions: postoperative pain, time post operation: higher comfort at 7 days than those at 1 day after surgery, higher satisfaction at 7 days (58 (96.7%)) vs those at 1 day after surgery(42 (70%)), indwelling catheter causing fear and then affecting the time and frequency of patients' early ambulation, postoperative dry mouth and thirst, economic factors with psychological pressure.
215	Application category 4	Shang and Fang (2018)	China	To investigate the comfort level and its influencing factors of patients after coronary artery intervention	Patients receiving percutaneous coronary intervention: n = 87	One unit of Cardiology of a tertiary hospital	CSS	Moderate comfort score (Chinese version GCQ): 73.64±7.899, physiological dimension: 12.90±2.146, social and cultural dimension: 17.06±1.985, environmental dimension: 17.29±2.623, psychological dimension: 26.40±3.472. Factors of comfort: physical dimension and overall comfort: residence, education level and payment method (p<0.05)-living in cities higher than living in rural areas, senior high school and technical secondary school higher than junior college and above, junior high school and below.
216	Application category 4	González Gómez et al. (2017)	Colombia	To determine the association between the sociodemographic factors and the dimensions of comfort present in patients hospitalized in the intensive and intermediate care units	Patients hospitalized in the intensive and intermediate care units: n = 160	Intensive and intermediate care units of four institutions (Number of units was not specified)	CSS	Comfort score (GCQ): data not reported. Type of comfort: transcendence in social, psychospiritual, and physical dimensions, tranquillity in environmental dimension; Factors of comfort: being from a socioeconomic level above two and having secondary or higher education.
217	Application category 4	Song et al. (2017)	China	To analyse the related influencing factors of comfort degree after permanent pacemaker implantation for elderly patients to provide evidence for improving patients' comfort degree	Elderly patients after permanent dual chamber pacemaker implantation: n = 80	One tertiary hospital	Longitudinal study	Comfort (Chinese version GCQ): 70.16±8.06 (53-92). Self-Rating Anxiety Scale(SAS) score: 32-78, 52.45±9.20, 27 normal cases, 53 with anxiety; Numeric Rating Scale (NRS) score: incision before sandbag compression: 0-4, 2.44±0.81, no pain: 1 case, pain: 79 cases; incision after sandbag compression: 1-5, 3.26±0.87, no pain: 0 case, pain: 80 cases; low back pain: 52 cases, no pain: 28 cases.

								Factors of comfort: anxiety, incision pain before and after sandbag compression, incidence of low back pain ($p<0.05$).
218	Application category 4	Li et al. (2017a)	China	To analyse the factors for the comfort of otolaryngology patients	Hospitalised patients: $n = 82$	One hospital unit of Otolaryngology Head and Neck Surgery	CSS	High comfort level (Chinese version GCQ) in social-culture dimension and low in mental, physical and environmental dimension. Number of people whose dimension scores are lower than Xi-Si and Xi-2Si: 12, 20, 11, 10 and 3, 0, 4, 3.
219	Application category 4	Li et al. (2017b)	China	To investigate the comfort of patients after haemodialysis temporary central venous catheterization	Patients on haemodialysis using temporary central venous catheterization: $n = 74$	One kidney centre	CSS	Low comfort level (Chinese version GCQ): 61.73 ± 14.49 , lowest in physiological dimension, highest in environmental dimension. Factors of comfort: different income, medical insurance reimbursement methods, catheterization sites ($p<0.05$); Factors of psychological comfort: different ages, marital status ($p<0.05$), lower in unmarried, widowed and separated patients than married patients, higher in patients with neck catheterization than femoral static vein catheterization.
220	Application category 4	Wen et al. (2017)	China	To observe the effect of comfort levels in patients during long-term video electroencephalographic (VEEG) monitoring on the monitoring effect	Patients with consecutive epilepsy: $n = 168$	One unit of Neurosurgery of a hospital	Longitudinal study	Comfort score (video - electroencephalogram (VEEG) Monitoring Patient Comfort Scale) before VEEG: physiological: 2.87 ± 1.04 , psychological: 2.63 ± 0.98 , social: 2.40 ± 1.25 , environmental: 2.84 ± 0.90 , overall comfort: 2.69 ± 1.07 . Comfort score after VEEG: physiological: 2.06 ± 1.38 , psychological: 1.66 ± 1.40 , social: 1.89 ± 0.57 , environmental: 1.83 ± 1.24 , overall comfort: 1.86 ± 1.19 . Factors of comfort: 2 groups ($t=4.011-6.353$, $p<0.05$); blinks or eye movement artifacts, physical artifacts, chewing or swallowing artifacts, electrocardiogram artifacts ($r=-0.843-0.585$, all $p<0.05$); Insignificant: sweating, skin artifacts, electrocardiogram artifact ($r=-0.204-0.158$, $p>0.05$).
221	Application category 4	Pehlivan et al. (2016)	Turkey	To examine the relationship between comfort and quality of life in breast cancer	Patients with breast cancer undergoing	One Radiation Oncology Unit of a cancer hospital	Longitudinal study	Comfort (Radiation Therapy Comfort Questionnaire Turkish version (RTCQ)): 3.75 ± 0.61 (before radiation therapy), 3.75 ± 0.71 (after radiation therapy).

				patients undergoing radiation therapy	radiation therapy: n = 61			Factors of comfort: significant association: comfort and functional and general QoL, comfort and the symptom QoL (p<0.01), pain and symptom QoL (p<0.05); insignificant association: QoL (p>0.05), educational status, marital status, place of residence, duration of disease, stage of disease, previous treatments applied, type of surgery, being informed about radiation therapy and experiencing problems during the treatment period and comfort and QoL (p>0.05).
222	Application category 4	Meneguín et al. (2016)	Brazil	To analyse the comfort of formal and informal caregivers to palliative care patients, identifying the variables associated with the difficulties for home care	Caregivers of palliative care patients: n = 50	One primary health care network of an interior city	CSS	Comfort score (GCQ): 235 points (202-263); Factors of comfort: caregiver's report of some difficulty in care delivery to palliative care patients (OR=0.90; 95.0% CI 0.81-1.01); Insignificant: female participants with a partner, practicing some religion, illiterate/unfinished primary education.
223	Application category 4	Richards (2016)	USA	To evaluate reasons for the low use of hospice care among the terminally diagnosed members of this population, between the ages of 18 and 64	Military patients with terminal illness: n = 32	One military ambulatory care setting located in the North-eastern portion	CSS	No differences between groups in: knowledge of hospice care, attitudes and beliefs about hospice, distrust in the health care system, advanced care plans based on race.
224	Application category 4	Hansen et al. (2015)	USA	To explore family relationships at the EoL and investigate associations among perceived comfort, relatedness states, and life closure	Hospice patients: n = 30	One large not-for-profit hospice	MMS	Hospice Comfort Questionnaire (HCQ): Cronbach's alpha: 0.86, Concurrent validity: Verbal Rating Comfort Questionnaire and HCQ: r=0.66, p=<0.001. Factors of comfort: life closure (r=0.69, p=0.001), residing in an inpatient setting vs in the home setting.
225	Application category 4	Rondinelli et al. (2015)	USA	To examine the factors related to the nurse's comfort in fulfilling interventions during the perinatal loss, and to examine the comments related to barriers and facilitators to nurses'	Nurses who cared for parents and families during perinatal loss: n = 172	One large integrated healthcare system	Online survey	Comfort score (a revised perinatal bereavement scale): 56.49±22.76; Comfort scale reliability: Cronbach's alpha=0.98. Factors of comfort: experience, number of perinatal loss cases cared for (r=0.374, p<0.001); Top five bereavement role components: discussing baby's gender, contacting social services, allowing time with the baby during the hospital stay, contacting

				comfort reported in open-ended questions				spiritual advisor, and holding their baby (scores from 3.16 to 3.06 (range=0-4)); Five lowest bereavement role components: retrieving baby from the morgue, discussing autopsy and genetic testing with parents, discussing funeral options, the grief process, discussing with parents the option to bathe and dress their baby (scores from 1.81 to 2.6.). Barriers or Facilitators to Comfort: Structure: organizational support: education on bereavement care, time and space with and for the grieving family, Knowing what to say, having supplies and materials to provide care; Process: experiential knowing, personal knowing, professional knowing, acknowledgment of diverse cultural and spiritual beliefs, not being alone when completing bereavement care. Outcome: comfort, always difficult and uncomfortable, I am comfortable.
226	Application category 4	Twohig et al. (2015)	USA	To create a survey to capture the family experience in the surgical intensive care unit (SICU) based on Kolcaba's "Enhanced Comfort Theory"	ICU patients and their families: n = 331	One 14-bed closed surgical ICU in a 1,171-bed tertiary hospital	Online survey	High satisfaction: high in quality of care provided to patients, communication and availability of nurses and doctors, explanations from staff, inclusion in decision making, the needs of patients being met, quality of care provided to patients, cleanliness of the unit. Length of stay: 13 days (range 1-91), 47% (17/ 36) 7 days or greater. "What is one thing you would change about the SICU?" responses: lack of responsiveness to beeping machines, patient's access to the call bell and food, and the need for a liver transplant protocol for donors and recipients, the need for more patient mobility and wound care, ill-maintained family facilities (the waiting room and bathroom), more timely meetings for families , doctors and family involvement in rounds, comment on the negative attitude of staff. "What is the best thing about the SICU?" responses: Positive attitude of staff

								toward patients (n = 18): caring, compassion, dedication and commitment to patients of nurses, doctors and other staff; Positive comments on patient care (n = 9): high quality of care, attentiveness, close monitoring and cleanliness of patient; Information and communication (n = 3): staff being available for and answering questions, and the quality and regularity of updates received. Other: cleanliness of the unit (n = 3), support in the form of 'special accommodation' or attitude that made 'a stressful time easier' for families (n =2).
227	Application category 4	Karabulut et al. (2015)	Turkey	To determine patient satisfaction with pain management and comfort levels after undergoing open heart surgery	Patients who had undergone open heart surgery: n = 52	One cardiovascular surgery clinic of a Region Training-Research hospital	Longitudinal study	Comfort level (GCQ) at discharge: 3.16±0.2. Pain score: 7.07±2.6 immediately after surgery, 6.71±2.7 at first post-operative ambulation, 6.32±2.4 at 24 hours before discharge, one patient: no pain at discharge: 4.57±2.3. High satisfaction in pain management: 80.8% patients. Insignificant difference: comfort level and pain rating at discharge (r=-0.225, p>0.05).
228	Application category 4	Aktaş (2015)	Turkey	To investigate the prevalence and the affecting factors of dysmenorrhea and its effects on overall comfort among female university students	Female students: n = 200	One university	CSS	Prevalence of dysmenorrhea: 84% of students; Comfort score (GCQ) for students with dysmenorrhea: 2.57±0.25, without dysmenorrhea: 2.65±0.23; Pain score (VAS): 5.78±2.45; Moderate pain: 45.8% of students; Most common co-occurring symptoms: irritability (34.6%), fatigue (21.5%); Most commonly used methods for pain: analgesics (69%), heat application (56.5%), rest (71.4%). Factors of comfort: family history of dysmenorrhea, education about menstruation, frequency of menstrual cycle (p<0.05); use of the methods for management of dysmenorrhea.
229	Application category 4	Yuan (2015)	China	To investigate comfort and its factors of patients receiving choledochoscope operation	Patients receiving choledochoscope surgery: n = 330	One unit of Hepatobiliary Surgery of one university affiliated hospital	CSS	Comfort score (Chinese version GCQ): 76.19±3.99, psychological domain: 2.56±0.23, physiological field: 1.98±0.38, social studies: 2.86±0.22, environment: 2.49±0.26. SAS score: 45.43±8.06. Pain: grade 0: 12.1%, grade 1: 39.7%, grade 2:

								37.6%, grade 3: 10.6, grade 4 and 5: 0%. Factors of comfort: room temperature, saline temperature, posture, moist skin, abdominal distention, nausea and vomiting, pain, anxiety, self-recumbent position, ages, family economic level, medical payment ($p<0.05$); Insignificant: gender, occupation, education level, marital status, religious beliefs ($p>0.05$).
230	Application category 4	Zhao et al. (2015)	China	To discuss the associated factors induced discomfort in gynaecological laparoscopic surgery patients	Patients receiving gynaecological laparoscopic surgery: n = 205	One women's and children's hospital	CSS	Comfort score (Chinese version GCQ): data were not reported. Factors of comfort: marital status, indwelling catheter feeling, sleep, nausea and vomiting ($p<0.05$).
231	Application category 4	Lamino et al. (2014)	Brazil	To assess the comfort of cancer patients' primary caregivers and verify the association between comfort and variables related to patients, the disease and the principal caregivers	Caregivers of patients with Karnofsky scores lower than 50: n = 88	One oncology outpatient clinic	CSS	Comfort score (GCQ): 203.9; Factors: age of the caregiver, care time, current occupation, caregivers who didn't have a paid job or leisure's activities; Factors of physical, environmental dimensions and spirituality: caregivers felt loved; Caregivers' GCQ scale: Cronbach's alpha: 0.814.
232	Application category 4	Tuncer and Yucel (2014)	Istanbul	To determine the comfort and anxiety levels of women with breast cancer receiving radiotherapy	Women with breast cancer receiving radiotherapy at an early stage: n = 66	One radiation oncology breast polyclinic of a university hospital	CSS	Moderate comfort: Radiation Therapy Comfort Questionnaire (RTCQ): 3.73 ± 0.31 . Low anxiety: State Anxiety Inventory (SAI): 29.1 ± 5.88 , Trait Anxiety Inventory (TAI): 37.8 ± 6.91 . Factors of comfort: no differences regarding marital status, educational status, presence comorbidities, menopause status of the women, and history of cancer in the family ($p>0.05$).
233	Application category 4	Seyedfate mi et al. (2014)	Iran	To explore the relationship between comfort and hope in the preanesthetic stage in patients undergoing surgery	Surgical patients: n = 191	One teaching hospital	CSS	Comfort (Perinaesthesia Comfort Questionnaire Iranian version (PCQ)): 107.37 ± 11.53 , from 70-144. Factors of comfort: hope ($p\leq0.001$, $r=0.65$), educational level and marital status ($p\leq0.01$), university education, males, age between 18 and 37 years, duration of disease less than 1 month, and patients undergoing orthopaedic surgery ($p\leq0.05$).

234	Application category 4	Álvares de Medeiros et al. (2014)	Brazil	To identify the perceptions of hospital nurses about the concept of comfort and discomfort that affect the elderly in the postoperative period	30 nurses: n = 30	One university hospital	CSS	Nurses (96.7%) conceptualized comfort as well-being. Two or more discomforts of the four contexts (physical, environmental, socio-cultural and psycho-spiritual) were observed by more than 50% of the nurses. More frequent discomforts identified by nurses: pain (100%), excessive noise (56.7%), feeling of displacement of home environment (76.7%), and anxiety (93.3%). Greater emphasis on physical discomforts, especially pain.
235	Application category 4	Zheng (2013)	China	(1) based on comfort theory to construct a clinical nursing care and quality evaluation standard for AIDS patients so as to standardize nursing process and improve the quality of AIDS patients care. (2) to evaluate the clinical care of AIDS patients by the evaluation standard for AIDS patients, summarize and analyse effect factors, to improve the clinical care standard and quality evaluation system	AIDS patients: n = 105	One infectious disease hospital	MMS	Clinical care standard and care quality evaluation system for AIDS patients 4 dimensions: environmental comfort, physical comfort, psychological comfort, cultural comfort; 7 class-I indicators, 21 class-II indicators and 48 class-III indicators. Retest reliability: Pearson Correlation 0.853; Inter-rater reliability ICC: 0.987. Environmental comfort: 4.97-5.00, coefficient of variation: 0.00-0.03. Physical comfort: 3.55-4.95, coefficient of variation: 0.00-0.19. Psychological and spiritual comfort: 3.56-3.98, coefficient of variation: 0.08-0.32. Social and cultural comfort: 2.92-4.95, coefficient of variation: 0.14-0.29; Lowest score: constructing support system; Highest score: respecting the patient's religious belief. Low satisfaction level. Comfort score (Chinese version Nasal Packing Patient Comfort Questionnaire): 51.73±11.04, item: 2.75±0.92, physical dimension: 2.34±0.65, environmental dimension: 2.78±0.81, psychospiritual dimension: 3.45±0.93, sociocultural dimension: 3.63±0.73.
236	Application category 4	Li (2013)	China	To analyse the comfort and psychological needs of patients in thoracic surgery within 72 hours after operation	Patients after thoracic surgery: n = 120	One unit of Cardiothoracic Surgery of a hospital	Longitudinal study	Medium and high comfort level(Chinese version GCQ) within 72 h after thoracic surgery. Severe pain and fatigue within 24 h after surgery: a high demand for companionship. Factors of comfort: postoperative time (p<0.01)-higher on the second day after surgery in overall comfort

								and each dimension than those on the first day after surgery ($p<0.05$), higher on the third day after surgery in overall comfort and each dimension than those on the first and second day after surgery ($p<0.05$); gender, marital status, medical payment method and family economic status within 72 h after surgery ($p<0.05$)-higher comfort in unmarried than married patients, in retired patients than unemployed patients, in women than men, in those paid by the public felt than those who paid by themselves.
237	Application category 4	Feng and Gu (2011)	China	To investigate the comfort of patients at 24h and 48h after hysterectomy and the factors affecting them, in order to provide a scientific basis for alleviating postoperative discomfort and improving patients' comfort	Patients after hysterectomy: $n = 105$	One unit of Obstetrics and Gynaecology of hospital	Longitudinal study	Medium-high comfort (GCQ): 81.77 ± 10.92 at 24 h and 88.54 ± 8.94 at 48 h after hysterectomy. Factors of comfort: lumbago pain, inability to take a bath after surgery, indwelling catheter; worry about work, fatigue.
238	Application category 4	Tanatwanit (2011)	Thailand	To explore and describe comfort as experienced by Thai older patients with advanced cancer in an academic medical-university hospital in Thailand	Thai old patients with advanced cancer: $n = 111$	One academic medical-university hospital	MMS	Moderate and high comfort (Hospice Comfort Questionnaire (HCQ-Patient)): 4.29 ± 0.50 ; VRSs: 6.25 ± 2.09 . Qualitative findings: Three domains: Discomfort, Comfort, and an Additional domain. Four contexts of discomfort: physical-physiological (sleep disturbance and pain), psycho-spiritual (worry and/ or fear about the illness and symptoms), socio-cultural (no reporting/ communication of existing discomfort), environmental (the setting-the patient's room and the restrooms). Four categories of comfort: Relief, Ease, Transcendence, and Inadequate comfort. Three main comfort providers: nurses, patients' relatives, and the patient him/herself through health-seeking behaviours.

								An additional domain: intervening variables, nursing comfort care, nurses (including other healthcare personnel), improvement for comfort care, and comparison between the hospital and the (participant's) house.
239	Application category 4	Schuiling (2011)	USA	To explore the existence of comfort during labour in a sample of healthy, primigravid women experiencing a normal labour and birth	Primiparous women: n = 64	Three tertiary hospitals	Longitudinal study	Comfort score (CCQ): T1: 33-67 (M: 54.48); T2: 32-69 (M: 55.68); Highest subscale scores: ease occurring in environmental (4.79/ 5.00), Lowest subscale scores: relief occurring in psychospiritual (1.58/ 5.0); Pain scores: T1 (F=12.92, df=2, 50, p<0.001), T2 (F=13.61, df=2, 40, p<0.001). Most common measures: one-to-one continuous support (T1 n = 47; T2 n = 46), freedom of movement (T1 n = 43;T2 n = 22), massage (T1 n = 25; T2 n = 23); Factors of comfort: massage vs not use massage at T2 (t=-2.29, df=51, p<0.05), one-to-one support.
240	Application category 4	Zhu et al. (2011)	China	To understand the correlation between living conditions and changes in the psychological status of family members of terminally ill elderly patients at home	Elderly dying patients: n =60, and their primary family caregivers: n = 60	One hospital at home bed	CSS	Comfort score (Chinese version Dying Patient Comfort Questionnaire): 101.83±12.93 (73-133); Anxiety scores: family members 25-70 (39.85±11.23), and 50 (83.33%) higher than the norm (29.78±0.46). Factors of comfort: ADL of elderly dying patients living at home (r=0.348, p<0.01), anxiety of the family members (r=-0.372, p<0.01), patient's self-assessment of the severity of the disease (F=5.796, p<0.05); Insignificant: ages, educational levels, economic status, marital status (p>0.05), comfort of patient and the depression of the family members.
241	Application category 4	Feng et al. (2011)	China	To understand the comfort and satisfaction of general surgical ICU patients 3 days after admission	Patients in general surgical ICU: n = 65	One General surgery ICU of a tertiary hospital	CSS	Moderate comfort level (Chinese version GCQ): 85.43±11.14, lowest item score in environmental dimension comfort: (2.67±0.48). High satisfaction level. Correlation: comfort and satisfaction (r=0.407, p<0.01), among all dimensions, except for the physiological dimension, highest in social and cultural dimension: (r=0.407, p<0.01).

242	Application category 4	Murray (2010)	USA	To describe and compare differences between special care unit nurses and oncology nurses' own definition of spirituality, comfort level in assessing and discussing spiritual needs, and the frequency of completing a spiritual assessment at patients' EoL	Nurses in intensive care and oncology: n = 33	Two oncology and special care units of a hospital	CSS	Data clearly show that nurses on the oncology and special care units are aware of their spirituality and the necessity in addressing patients' spiritual care issues. Data revealed a great inconsistency in nurses addressing these needs and a desire for education in addressing spirituality issues with their patients and family members. Factors insignificant: ages, education level, or units worked.
243	Application category 4	Heard (2010)	USA	To determine the relationship between mindfulness, comfort, work satisfaction, and burnout in nurses	Nurses: n = 186	Four South Mississippi hospitals	CSS	Comfort score (Nurse Comfort Questionnaire (NCQ)): 175.27±12.13. Moderate levels of mindfulness; Average propensity to burnout; Average levels of nurse comfort and work satisfaction. Factors of comfort: different hospitals; Relationship significant: nurse comfort and work satisfaction, nurse comfort and personal accomplishment component of burnout (p=0.018); Insignificant: nurse comfort and mindfulness, mindfulness and work satisfaction, nurse comfort and burnout.
244	Application category 4	Wu et al. (2010)	China	To investigate the comfort level of stroke patients	Stroke survivors: n = 118	One geriatric unit of hospital	CSS	Comfort score (Chinese version stroke comfort questionnaire, SCQ): lowest in the mental and psychological domain: 54.23±18.56. Factors of comfort: age, level of education (p<0.05); Insignificant: gender, time of onset, hemiplegia, disease type.
245	Application category 4	Ning (2010)	China	To investigate patients' comfort in 24h after kidney aspiration biopsy	Patients after aspiration biopsy in kidney: n = 59	One unit of Nephrology of a hospital	Longitudinal study	Comfort score (Chinese version GCQ): lowest in physical dimensions at 24 h after aspiration biopsy: 15.13±2.09. Medium and high comfort level at 24 h after aspiration biopsy: 98.34±7.88. Symptoms with high need for care: backache and tiredness. Time difference of comfort: higher comfort and each dimension at 12 hours after operation vs at 6 hours after operation (p<0.05), higher comfort and each dimension at 24 hours after operation vs at 6 hours and 12 hours after operation (p<0.05). Comfort needs:

								accompanying needs, "I hope my family will accompany me more" and "I am very unhappy when no one is with me".
246	Application category 4	Jiang et al. (2009)	China	To understand the comfort of renal transplant recipients in intensive care stage after transplantation	Renal transplant recipients: n = 92	One tertiary general hospital	CSS	Comfort score (Chinese version Renal Transplant Recipients Comfortable Scale): 66.72±10.15, mental: 2.42±0.92, physical: 2.69±0.95, social: 2.72±0.87, environment: 3.18±0.67. Factors of comfort: ages, family economic levels, various medical payment, serum creatinine levels of renal transplant recipients (p<0.05); Insignificant: sexes, occupation, education, marriage status, whether such as religion (p>0.05).
247	Application category 4	McAfee (2008)	USA	To describe the stressors and level of stress experienced by undergraduate students and faculty in a nursing program in southeast Texas	Faculty (78.95%): n = 30 and students (48%): n = 137	Department of Nursing at Lamar University	Online survey	Moderate stress level of faculty: 169.19±43.834, n = 29; Moderate stress level of students: 67.90±13.158, n = 125; Most stressful situation for faculty: teaching responsibilities in both programs during the same semester, attending meetings that take up too much time; Most stressful situation for students: lack of free time. Transcended stress levels for faculty: supportive to students; Transcended stress levels for students: successfully completed nursing courses. Factor of stress: grades. Faculty are encouraged to explore comfort strategies in themselves and students to enhance learning and performance resulting in higher grades, and success in the program.
248	Application category 4	Kim and Kwon (2007)	South Korea	To quantify the comfort level and QoL of cancer patients, to identify the variables associated with comfort level and QoL, and to identify the relationship between comfort level and QoL	Cancer patients: n = 100	Four outpatient settings including university-based cancer centres and day-care chemotherapy units, four inpatient settings including a hospice unit and oncology units, and home settings that provided home	CSS	Total comfort score: 61.50±12.02, sociocultural comfort: 71.05±16.01, physical comfort: 60.30±16.71, psychospiritual comfort: 57.65±16.81, environmental comfort: 56.32±16.86; QoL score: 46.34±20.76; Factors of comfort: comfort and all dimensions of QoL (r=-0.549-0.581), patients graduated from primary school and graduated in sociocultural context (p=0.033), sites where the participants completed the questionnaire and total comfort (p<0.001);

						care at two university hospitals		perception of a serious disease status; thoughts of that they could be cured or incurable or would be worse ($p < 0.05$), all contexts of comfort except the environmental context ($p = 0.074$); insignificant association: age subgroup ($p = 0.140$), occupation subgroup ($p = 0.106$), gender, marital status, religion, current treatment, time since initial diagnosis.
249	Application category 4	Rassin et al. (2007)	Israel	To examine the personal characteristics and levels of comfort among women suffering from urinary incontinence	Women with urinary incontinence: $n = 50$	One urology or gynaecology clinic	CSS	Medium low comfort (UIFCQ): 2.95 ± 0.04 (1-6); Low levels of comfort items: 'I feel clean and fresh', 'finding a toilet in close proximity is a worrisome issue when I exit the house', 'I fear having sex due to the urinary incontinence problem'; Urinary incontinence frequency: several times a day (50%), once a day (19%), several times a week (31%); Urinary incontinence time: 5 months-25 years (4.54 ± 9.2); Absorption control measures: pads (64.3%), diapers (14.3%), cotton (4.8%), did not report the use measures (16.7%); Treatments: performed pelvic muscle exercises (35%), medications such as Detrusitol (18.2%), Burch or TVT surgery (11.4%), no treatment (35.4%).
250	Application category 4	Xiao et al. (2007)	China	To understand patients' comfort in acute rejection reaction after kidney transplantation	Patients with acute reject reaction adverse after kidney transplantation: $n = 22$	One tertiary general hospital	CSS	Low Comfort score (Chinese version Kidney Transplant Recipient Comfort Scale): 56.91 ± 6.74 . Main discomforts in mental and psychological field: depression, anxiety, uncertainty, lack of confidence caused by the worry about the recovery of the disease; in physical discomforts: fatigue, pain, thirst, difficulty falling asleep, gastrointestinal discomfort; in social dimension: lacking of knowledge about rehabilitation, understanding and empathy from others, worries about the economy. Factors of comfort: gender and the source of hospitalization expenses, worse in women vs men, and higher in medical insurance patients vs self-pay patients.

251	Application category 4	Zhu et al. (2007)	China	To understand the comfort status and influencing factors of patients within 72 hours after thoracic surgery	Postoperative thoracic patients: n = 123	One unit of Thoracic Surgery and Cardiothoracic Surgery of a Medical College Hospital	Longitudinal study	Medium to high comfort level (Chinese version GCQ) within 72h after thoracic surgery. Severe postoperative pain and fatigue: a high demand for companionship. Factors of comfort: postoperative time (p<0.01), gender, marital status, medical payment method, family economic status within 72h after surgery (p<0.05)-higher in female than male, in unmarried patients than married patients, in retired patients than those without jobs, in patients with public expenses than those with self-payment.
252	Application category 4	Lee (2005)	China	To test the relationship between comfort, spirituality and QoL among long-term care facility residents in southern Taiwan	Residents: n = 99	Seven facilities in Kaohsiung city and Hsien	CSS	Moderate comfort (Short version GCQ): 103.94±12.04 (79-135 points); Factors of QoL: marital status, religion, family visit frequency, subjective health status; spirituality (β=0.337, p=0.56), family visit frequency (β=0.243), and subjective health status (β=0.41). Comfort had an indirect effect on quality of life, through its influence of spirituality while controlling demographic variables.
253	Application category 4	Zhu (2005)	China	To describe the comfort of postoperative thoracic patients in 24h, 48h,72h respectively, and to analyse the factors that affect the comfort of postoperative thoracic patients within 72h	Postoperative thoracic patients: n = 123	One unit of Thoracic Surgery and Cardiothoracic Surgery of a Medical College Hospital	Longitudinal study	Comfort score (Chinese version GCQ): 82.27±7.42 at 24h, 91.27±8.63 at 48h, 98.34±7.88 at 72h; Physical comfort score: 1.88±0.44 at 24h, 2.50±0.47 at 48h, 3.03±0.42 at 72h; Social comfort score: 3.00±0.18 at 24h, 3.13±0.20 at 48h, 3.25±0.17 at 72h; Environmental comfort score: 2.72±0.39 at 24h, 3.01±0.43 at 48h, 3.24±0.45 at 72h; Lowest score item: 'I hope kin to accompany me', 'i am unhappy when I am alone' within 72h. Comfort level: moderate at 24h, medium and high at 48h, high at 72h. Factors of comfort: postoperative time(p<0.01), incision pain, coughing pain, moving pain, throat pain, tiredness, insomnia, dry mouth and thirst, discomfort because of unbath after operation, worry about prognosis, worry about diagnosis, afraid to cough, worry

								about job and study, worry about economy, gender, marital status, occupation, medical care system, domestic economy; physiological comfort in 24h after surgery: gender, marital status; comfort in 48h after surgery: higher in retired patients vs unemployed patients; Insignificant difference: between employed patients and non-employed and retired patients.
254	Application category 4	Krenzischek et al. (2004)	USA	To test the content of the ASPAN Pain and Comfort Clinical Guideline, which included the domains of assessment, intervention, and outcomes	Perinaesthesia nurses: n = 215	Perinaesthesia settings (Number of settings was not specified)	CSS	ASPAN Pain and Comfort Clinical Guideline has practical utility for perinaesthesia nurses in all settings: Instrument reliability: Cronbach's alpha 0.98 (high), clarity, usability, and feasibility in all the perinaesthesia settings; Overall mean scores: 3.55 to 3.80 (high), Preoperative Phase mean: 3.55 to 3.68, PACU Phase I mean: 3.55 to 3.68, Phase II mean: 3.61 to 3.78, Phases II and III mean: 3.72 to 3.80.
255	Application category 4	Schuiling (2003)	USA	To determine if comfort exists during childbirth	Healthy primigravid women: n = 25	Three hospitals: one large university medical centre, one smaller regional medical centre, and one serving an ethnically and economically diverse population of 238,000	Longitudinal study	Comfort scores (Childbirth Comfort Questionnaire (CCQ)): 33-66, Time 1 (M=54.48 [n = 62]), Time 2 (M=55.68 [n = 53]); CCQ Cronbach's alpha: Time 1: 0.69 , Time 2: 0.73 ,Time 3: 0.53; Factors of comfort: pain scores of women who had epidural analgesia, women who did not have a second-degree perineal laceration (t=2.858, df=47, p=0.04), higher pain scores of women who used comfort measures, women who had a perineal laceration of any kind, education, income, hospital (F=3.05, df=3.56, p=0.04), no other provider of support; Insignificant: using pain medication (intramuscular, intravenous or epidural) (t=0.729, d f=60, p=0.09), using comfort measures, using an epidural. Most commonly used comfort measures: one-to-one continuous support, freedom of movement and massage.

256	Application category 4	Wilson (2002)	USA	To test the positive relationships between comfort and perceived nursing caring, social support and emotion-focused coping	Hospitalized patients: n=191	One university medical center	Theory testing, correlation study	Perceived nursing caring, social support and emotion-focused coping served as explanatory factors of comfort.
257	Application category 4	Dowd et al. (2002)	USA	To assess the psychometric properties and relationships among 8 measures of comfort, status of urinary frequency and incontinence, and QoL	Patients with urinary incontinence for more than 6 months: n = 47	One community	Longitudinal study	Comfort score: data was not reported. UIFCQ Cronbach's Alpha: Time 1: 0.74, Time 2: 0.83. Factors of comfort: UIFCQ and Bladder Function Questionnaire (BFQ) at Time 1 and 2 (r=0.51 & 0.59), UIFCQ and BFQ with Incontinence Impact Scale (IIQ) (r=0.54, 0.69, & 0.51, 0.66); UIFCQ and BFQ with urinary incontinence (UI) Amount (r=ns, -0.32, & -0.53, -0.47), with CUBS Limit (r=ns, -0.48, & -0.42, -0.47).
258	Application category 5	Gonzalez-Baz et al. (2023)	Spain	To evaluate the psychometric properties of the General Comfort Questionnaire (GCQ) in patients admitted to intensive care units (ICUs)	Patients: n=580	Two 1000-bed public hospitals	Psychometric validation study	Comfort Questionnaire (CQ)-ICU: 28 items. Seven factors: psychological context, need for information, physical context, sociocultural context, emotional support, spirituality, and environmental context. Cronbach's alpha: 0.807, with subscale values ranging from 0.788 to 0.418.
259	Application category 5	Sahin and Pakyuz (2022)	Turkey	To develop a valid and reliable measuring tool in order to evaluate comfort of patients receiving haemodialysis treatment	Chronic haemodialysis patients: n=436	Five haemodialysis centers	Scale development study	26-item six dimensions Haemodialysis Comfort Scale Version II: Cronbach alpha 0.79, physical relief 0.83, physical ease 0.71, psychospiritual ease 0.87, psychospiritual transcendence 0.85, environmental transcendence 0.82, and sociocultural ease 0.61.
260	Application category 5	Egger-Rainer et al. (2020)	Austria and Germany	To evaluate the psychometric properties of the newly developed Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ) according to the consensus-based standards for the selection of health measurements instruments (COSMIN)	Patients: n = 267	EMUs of ten centres (comprising 51 beds) with the research management wing at the Department of Neurology of a Medical University	Questionnaire psychometric test (reliability and validity): survey	EMUCQ items: n = 42. Items changes: removed two items. Internal consistency-Cronbach's α coefficient: subscales: 0.77-0.81, total scale: 0.88. Final exploratory factor analysis with the 42-item: KMO=0.799, MSA-coefficients 0.5, Bartlett-Test $p<0.001$. Kaiser-Guttman Criterion: 13 factors (eigenvalues>1), 61.44% variance. Convergent validity: Spearman correlations ≥ 0.3 ($p<0.05$). Lower comfort at the end of the stay than at the beginning, in nonseizure-free patients than seizure-free patients.

				to assess changes in comfort-levels				Interpretability: SEMs mean difference: >0.31, subscales (0.37-relief, 0.31-ease, 0.36-transcendence), total comfort scale >0.22.
261	Application category 5	Melo et al. (2020)	Brazil	To assess the psychometric properties of the Brazilian version General Comfort Questionnaire	Chronic patients undergoing kidney haemodialysis: n = 260	Three haemodialysis clinics	Questionnaire psychometric (reliability and validity): su	Brazilian version GCQ items: n = 33. Items changes: 33 items remained, excluded 15 items (3, 4, 5, 6, 7, 18, 19, 20, 22, 24, 25, 27, 33, 35, 36, 39, 41, 42, 47), excluded items from factor analysis with commonality values 0.40, Cronbach's α : total GCQ: 0.805, factor 3 (environmental) items: 0.576, factor 4 (physical): 0.327. Cronbach's α : 48 items: 0.83, 33 items: 0.80. Item-total correlations: factor 3: -0.366-0.456, factor 4: 0.132-0.196, factor 1: Cronbach's α : 0.764, factor 2 Cronbach's α : 0.707. KMO test: 0.815; P<0.001. Exploratory analysis of factors: 10 factors explained 60.14% variance. Scree plot test: four factors (psychospiritual, sociocultural, environmental, and physical) explained 38.01% variance.
262	Application category 5	Li and Wang (2020)	China	To develop and test its reliability and validity of a comfort scale for patients after nasal packing	Patients after nasal packing: n = 30 (pilot survey), n = 210 (formal survey); Experts in otolaryngology clinical and nursing education: n = 7	One otolaryngology unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	Chinese version post-nasal packing comfort scale items: n = 30, Four dimensions: physical, psychospiritual, environmental, sociocultural. Items changes: first draft scale had 4 dimensions and 33 items, deleted 4 items, added 7 items, and modified 3 items, 30 items after two rounds of experts' comments. I-CVI: 0.786-0.98. S-CVI/Ave: 0.955. Cronbach's α : scale: 0.886, Each dimension: physical: 0.929, psychospiritual: 0.929, environmental: 0.867, and sociocultural: 0.820. Test-retest reliability: 0.938, each dimension: physical: 0.949, psychospiritual dimension: 0.959; environmental dimension: 0.896, sociocultural dimension: 0.907. Split-half reliability: 0.927, each dimension: 0.775-0.937. KMO value: 0.867. Exploratory factor analysis: 4 factors, 62.004% explanatory variance. Recovery rate and effective rate: both 100%. 95.24% patients fully understood

								items of scale, 4.76% had basic understanding of the items. Completion time: completed by oneself: 3-4 minutes, with assistant: 5 minutes.
263	Application category 5	Egger-Rainer et al. (2019a)	Austria	To develop an instrument to assess comfort of adult patients during hospitalization in an EMU, namely the Epilepsy Monitoring Unit Comfort Questionnaire (EMUCQ)	Experts in the translation procedure: n = 4; Experts in Neurology: n = 9 (raters of content validity); Experts in EMU and psychology: n = 9; Hospitalised adult patients: n = 25	One unit of Neurology of a medical university	Questionnaire development, translation, experts consultation	EMUCQ items: n = 44. Items changes: added 12 items, unchanged 26 items, revised 12 items, omitted 14 items, put aside 8 items, leaving questionnaire with 38 items; unchanged 27, added six items, reworded another 11 items, leaving questionnaire with 44 items. Content validity: I-CVI: 0.33-1, average CVI: S-CVI/ ave: 0.84. Questionnaire completion time: 5 min 39 s-1 min 10 s (mean: 7 min 9 s).
264	Application category 5	Egger-Rainer et al. (2019b)	Austria	To assess the feasibility of a multicentre validation study, to recruit additional study centres, and to undertake orientating descriptive item analysis of the 44-item Epilepsy Monitoring Unit (EMU) Comfort Questionnaire (EMUCQ)	Patients: n= 44	One four-bed EMU of the Neurology unit of a medical university	Questionnaire validation feasibility study survey + a multicentre feasibility study	EMUCQ items: n = 44. 40 complete questionnaires collected, with four patients dropout in second round survey. Floor and ceiling effects were detected in 32 items. One item with the lowest median showed the low item difficulty. Another five items showed medians with the height of 6. In four items, high difficulty indices were observed.
265	Application category 5	Melo et al. (2019)	Brazil	To validate the content of the Brazilian version of the General Comfort Questionnaire	Experts: n = 22	Online by email	Questionnaire psychometric test (reliability and validity): expert consultation for content validity	Brazilian version GCQ: n = 48. Content Validity Index: 0.81. Agreement: 10 items in physical dimension: 0.5-1.0, 11 items in sociocultural dimension: 0.59-0.90, 10 items in environmental dimension: 0.68-1.0, 17 items in psychospiritual dimension: 0.45-11.0. All items obtained satisfactory evaluation and four did not reach the recommended agreement.
266	Application category 5	Yucel et al. (2019)	Turkey	To determine psychometric characteristics of the Turkish version of the	Nurses: n = 30 (pilot survey), n = 275 (formal survey); Experts: n = 10	A university affiliated hospital in Izmir	Questionnaire cross-cultural adaption and test of reliability and validity:	NCQ items: n = 39 (4-point Likert scale). Items changes: 48 items original questionnaire, removed 8 items (6, 14, 26, 32, 33, 34, 40, 41), excluded fifteenth item. I-CVI: 0.80-1, S-CVI: 0.99. Internal reliability

				Nurse Comfort Questionnaire (NCQ)			translation experts consultation + survey	coefficient: 40-item questionnaire (4-point Likert-type scale): 0.915. Cronbach's α : 0.859 for the first factor, 0.846 for second factor, 0.818 for third factor. Test-retest reliability: $r=0.93$, $P=0.000$. Correlation values: 40-item questionnaire (4-point Likert-type scale): 0.215-0.648. KMO: 0.891: 40-item questionnaire. Three-factor model: 37.875% variance, 40-item questionnaire. Confirmatory factor analysis: model fit indices: $\chi^2/df=1.756$, RMSEA=0.053, RMR=0.183, IFI=0.856, GFI=0.832, AIC=1397.812. Comfort score: not significant: results of two measurements of questionnaire ($t=1.88$, $P=0.06$), administered at a fifteen-day interval.
267	Application category 5	Zhang and Wang (2019)	China	To develop a comfort scale for the patients after enterostomy and to test its reliability and validity	Patients after enterostomy: $n=310$; Nursing experts: $n=15$	One unit of Proctology of a hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + pilot survey	Items of Chinese version comfort scale for enterostomy patients: $n=35$. Items changes: 28 items compiled and 16 items drawn from mature comfort scale, resulting in 44 items: deleted 3 items, modified expression of 2 items, 4 items were deleted which had low correlation with the total score, and the correlation coefficient with the total score is $r<0.4$, deleted factor 5 due to the number of factor orders <3 , remaining 35 items. Four dimensions: physical dimension, social dimension, environmental dimension physiological dimension. I-CVI: 0.80 to 1.00; S-CVI/UA: 0.80, S-CVI/Ave: 0.96. Cronbach's α coefficient: 0.937, each dimension: 0.802-0.923. Test-retest reliability: total: 0.846, each dimension: 0.735-0.826. Half-fold reliability: 0.926. Split-half reliability of each dimension: 0.816-0.910. Exploratory factor analysis: four factors, explained 52.584% variance. KMO: 0.921, Bartlett's sphericity: $\chi^2=5,363.838$.
268	Application category 5	Góis et al. (2018)	Brazil	To describe the first stages of the cross-cultural adaptation process of the General	ICU patients with myocardial infarction: $n=30$; Lay people	ICUs of two large institutions specialized in cardiology in the	Questionnaire cross-cultural adaption and test of reliability and	Brazilian version GCQ-AMI items: $n=63$. Item changes: 15 new items added. The author of the original scale made comments on item 2, item 6, item 12, item 15, item 30

				Comfort Questionnaire for myocardial infarction patients in ICUs	who experienced infarction and ICU admission: n = 10; Experts n = 7	municipality of Feira de Santana, Bahia	validity: translation experts consultation + pilot survey	and item 37. CVI: 44 items (69.4%): 1, 15 items (23.8%): 85.7, 4 items (6.34%): 71.1, 15 new items >0.78. CVI: 26 items (41.2%): 1, 28 items (44.4%): 85.7, 9 items (14.2%): 71.4. Questionnaire completion time: 23 min.
269	Application category 5	Egger-Rainer (2018)	Austria	To initially determine the content validity of Epilepsy Monitoring Unit Comfort Questionnaire	Professional experts in EMU: n = 9	One EMU unit of Neurology at a medical university	Questionnaire psychometric (reliability and validity): expert consultation + content validity	EMUCQ-2 items: n = 38. Items changes: 60-item EMUCQ-1, omitted 14 items, put aside 8 items for further evaluation, 26 items unchanged, reworded 12 items. S-CVI/Ave: 0.90. I-CVI scores: 0.78-1.
270	Application category 5	Carvalho et al. (2018)	Portugal	To develop and psychometrically test the Perioperative Comfort Scale (PCS)	Patients: n = 400 (300 in surgical unit, 100 in non-surgical unit) (Number of units were not specified)	Two different settings of three hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: translation experts consultation + survey	PCS items: n = 15. Items changes: 18-item version, excluded 3 items (7, 8, 11): convergent-discriminant validity or had loads <0.40. Internal consistency: Cronbach's α coefficient: 0.83, components: ease: 0.78; relief: 0.73; transcendence: 0.70. Discriminant validity: surgical and non-surgical patients. Criterion validity: correlation between PCS and Thermal Comfort Scale (TCS): $r=0.83$; $P=0.0001$. Construct validity: Bartlett's test ($P<0.0001$), KMO: 0.87. Factor analysis: explained 45.28% variance. Correlations: three components of PCS (ease/ relief $r=0.46$; ease/ transcendence $r=0.44$ relief/ transcendence $r=0.45$): moderate, positive, highly significant correlation $P=0.0001$. Strong positive correlation: PCS and TCS. Comfort level: highest in surgical group for all components and total scale, significant differences between groups.
271	Application category 5	Artanti et al. (2018)	Indonesia	To assess the validity and reliability of the Shortened General Comfort Questionnaire (SGCQ) in Indonesian version	Patients with stage 5 chronic kidney disease undergoing haemodialysis: n = 71; Nursing experts in haemodialysis	One haemodialysis unit of a central hospital in Yogyakarta	Questionnaire psychometric test (reliability and validity): expert consultation + survey	Indonesian version SGCQ items: n = 28. I-CVI: 1, S-CVI: 1. Cronbach's α : 0.769, range: 0.7-0.95.

					care: n = 3 (content validity)			
272	Application category 5	Zhang et al. (2018)	China	To develop and test a Chinese Immobilization Comfort Questionnaire (ICQ) among patients post total knee arthroplasty	Hospitalized patients post total knee arthroplasty: n = 20 (pilot), n = 126 (formal survey); Nursing experts: n = 6; Experts in English and Orthopaedic: n = 4	One unit of Orthopaedics of a hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation survey	Chinese version ICQ items: n = 20. Items changes: from 1 dimension with 20 items to 4 dimensions with 20 items. Four dimensions: physical comfort, psychological comfort, social comfort and environmental comfort. CVI: 0.889, from 0.76-1.00, item-total correlation: P<0.01. Cronbach's α coefficient: 0.894, physical comfort: 0.874, psychological comfort: 0.902, social comfort: 0.824, environmental comfort: 0.803. Test-retest correlation coefficient: 0.842, each dimension: 0.738, 0.932, 0.672 and 0.759 (P<0.01). Discrimination validity: significant differences between high and low groups (P<0.05). Criterion validity: scores of each dimension and total score of ICQ positively correlated with GCQ score (P<0.01). Exploratory factor analysis: 4 common factors, explain 71.3% variance. KMO=0.9. Completion time: 3 to 5 minutes.
273	Application category 5	Saray Kilic and Tastan (2017)	Turkey	To develop and psychometrically test the Post Hip Replacement Comfort Scale (PHRCS)	Patients undergoing hip replacement surgery: n = 180; Nursing experts: n = 20, n = 5	Orthopaedic and trauma units of three teaching and research hospitals (number of units was not specified)	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation survey	PHRCS items: n = 26. Items changes: from 87 items to 43 items, 5 of the 43 items were deleted based on experts opinions in first group, 2 of remaining items were excluded in second group, 10 items were excluded based item analysis and corrected item-total score correlation coefficient. Cronbach's α coefficient: 0.758. Test-retest reliability: positive and meaningful correlation: PHRCS: 44 patients (24.4%) ten minutes after first test: r=0.817; p<0.001. Criterion validity: positive and significant: PHRCS and GCQ (r=0.701; p<0.001). Construct validity: KMO test value: 0.681 (p<0.001). Scale: single factor. Comfort score: 3.64 \pm 0.43 (from 1-5).
274	Application category 5	Li et al. (2017)	China	To develop a comfort scale for cervical cancer patients undergoing endovascular retrofitting	Patients with cervical carcinoma after intracavitary brachytherapy: n	One cancer hospital	Questionnaire cross-cultural adaption and test of reliability and validity: experts	Items of Chinese version comfort scale for cervical cancer patients undergoing endovascular retrofitting: n = 27, 4 dimensions: physical (9), psychological (5), sociocultural (7), environmental (6). Items

					= 18 (interviews), n = 30 (retest), n = 256 (pilot survey); Doctors: n = 3		consultation + pilot	changes: 34 items, 3 items were deleted after interview. Content validity: CVI: 0.919. Cronbach's α coefficient: 0.877, each dimension >0.80, physical dimension: 0.933, psychological dimension: 0.874, sociocultural dimension: 0.880, environmental dimension: 0.876. Test-retest reliability: overall: 0.929, each dimension: 0.968-0.985. Correlation coefficient: total scores of two measurements: 0.929 (P<0.01), each dimension: physiological: 0.977, psychological comfort: 0.968, social dimension: 0.984, environmental dimension: 0.985. KMO: 0.844 (>0.70); Four factors explained 63.785% variance. Completion time: 11 minutes.
275	Application category 5	Pinto et al. (2016)	Portugal	To provide an accurate and sensitive instrument to assess the spiritual comfort of Portuguese palliative care patients	patients with an incurable, chronic and progressive illness in palliative care: n = 141	Acute medical-surgical settings in a central hospital (medicine, general surgery, vascular surgery, neurosurgery, pulmonology and day hospital for chemotherapy)	Questionnaire development and test of reliability and validity translation survey	Portuguese version end of life spiritual comfort questionnaire items: n = 20, 1-6 Likert (1: 'Strongly Disagree' to 6: 'Strongly Agree'). Items changes: removed 8 items: 2, 7, 10, 11, 12, 19, 22, 25. Internal consistency: 0.84. Factor analysis: five factors. Concurrent validity: Spearman's correlation: 0.74 (P=0.000). Factor analysis: 57.307% variance, α values: 0.43-0.84. Item-total correlation values: 0.59-0.678. Five themes: physical, psychological, spiritual, social, environmental dimensions.
276	Application category 5	Marques et al. (2016)	Portugal	To analyse the psychometric properties of the Holistic Comfort Questionnaire - Family (HCQ-F) for the Portuguese population and assess the level of comfort among caregivers of people with advanced chronic disease	Caregivers of people with advanced chronic disease: n = 314	Two hospitals	Questionnaire revalidation in different populations: survey	Portuguese version HCQ-C items: n = 18. Items changes: 31 items eliminated, 18 items remained. Cronbach's α =0.795. KMO: 0.797, Bartlett's test of sphericity: 2029.780 (p<0.0001). Factor analysis: 3 factors: relief, ease, and transcendence, explained 52.43% variance. Comfort score: 4.23 \pm 0.83. Comfort level: highest in Ease in the psychospiritual context: 'My God is helping me' (5.11 \pm 1.27), lowest in Ease in the psychospiritual context: caregivers are 'afraid of what is next' (3.01 \pm 1.90). higher in Relief (4.57 \pm 1.02), lower in Ease (3.57 \pm 1.15).

277	Application category 5	Shen et al. (2016)	China	To evaluate comfort of ventilated patients after coronary artery bypass grafting (CABG)	Patients removed ventilation after coronary artery bypass grafting: n = 30 (first round), n = 145 (second round); Experts in Cardiac Surgery: n = 8	One university affiliated hospital	Questionnaire cross-cultural adaption and test of reliability and validity: expert consultation survey	Chinese version GCQ items: n = 33, 4 dimensions: physical (9), psychospiritual (10), sociocultural (6) and environmental (8). Items changes: from original 28 items to final 33 items: deleted 3 item, modified 3 items, added 10 items, deleted item 9 and item 15. I-CVI: 0.898, SVI/Awe: 0.972. Cronbach's α coefficient: 0.879, subscales: 0.798-0.943, 4 dimensions: physical: 0.802, psychospiritual: 0.798, sociocultural: 0.943, environmental: 0.943. Four factors explained 64.42% variance. KMO: 0.862. Comfort score: 3.02 ± 0.44 ; 4 dimensions: 2.58 ± 0.45 - 3.34 ± 0.43 ; The lowest score was in physical dimension.
278	Application category 5	Ferrandiz and Martín-Baena (2015)	Spain	To translate the General Comfort Questionnaire (GCQ) in English language into Spanish (S-GCQ) and to examine the psychometric properties of the S-GCQ	Nurses: n = 600	Eight public hospitals in Valencia and Murcia	Questionnaire cross-cultural adaption and test of reliability and validity: translation survey	Spanish version GCQ items: n = 48. Cronbach's $\alpha = 0.90$. Item-total correlation: good, coefficient of determination: 0.94. KMO: 0.911. Factor analysis: 12 factors account for 54.51% variance.
279	Application category 5	Tosun et al. (2015)	Turkey	To determine the validity and reliability of the Turkish version of the Immobilization Comfort Questionnaire (ICQ)	Patients undergoing lower extremity arthroscopy: n = 121	One unit of orthopaedics and traumatology in a teaching and research hospital in Ankara	Questionnaire cross-cultural adaption and test of reliability and validity: translation + survey	ICQ items: n = 20, no items excluded. Cronbach's α : first measurements: 0.75, second measurements: 0.82. Criterion validity: moderate positive correlation: ICQ scores and VAS comfort scores. Moderate negative correlation: ICQ and VAS pain measures. KMO: 0.66, Bartlett's test of sphericity: 914.36 ($p < 0.001$). Factor analysis: 7 subfactors explained 70.6% variance. Correlation coefficient: 0.38 ($p < 0.001$), moderately significant correlation between first and second comfort scores assessments. Moderately significant correlation between the first and the second comfort scores assessments ($r = 0.38$, $p < 0.001$): Time 1: ICQ score: 75.37 ± 12.39 ; VAS comfort score: 5.40 ± 1.62 ; VAS pain score: 3.65 ± 2.22 . Time 2: ICQ score: 68.85 ± 12.57 , VAS comfort score: 4.42 ± 1.61 , VAS pain score: 5.01 ± 2.07 .

280	Application category 5	Paiva et al. (2015)	Brazil	To perform a cross-cultural adaptation and to assess the psychometric properties of the Portuguese (Brazil) version of the Holistic Comfort Questionnaire-caregiver (HCQ-caregiver) in a sample of family caregivers (FCs) of palliative care (PC) cancer patients	Family caregivers of palliative care patients with advanced cancer: n = 150; Experts: n = 3	One outpatient clinic and one inpatient ward of palliative care in the Cancer Hospital of Barretos	Questionnaire cross-cultural adaptation and of reliability validity: translation experts consultation survey	Portuguese-Brazil version HCQ-Caregiver items: n = 49. Items change: 24 required changes. Cronbach's α : 0.858, ICC: 0.961. Retest reliability: after 2-4 days (n = 24, ICC=0.995, 95%CI 0.989-0.998), after 5-7days (n = 26; ICC=0.927, 95%CI 0.838-0.967). Ceiling effect: 19 items, 4 response rates >90%. Moderate-to-strong correlation: HCQ-Caregiver and QoL. HCQ-caregiver and WHOQOL-Brief dimension and WHOQOL-SRPB global spirituality dimension: correlation coefficient: overall QoL (r=0.688, p<0.01), physical dimension (r=0.415, p<0.01), psychological dimension (r=0.570, p<0.01), social dimension (r=0.561, p<0.01), environmental dimension (r=0.619, p<0.01), global spirituality (r=0.639, p<0.01). Completion time: 7.33 \pm 1.64. HCQ-caregiver comfort score: 214.7 \pm 25.6, from 130-261. Caregiver score: very bad or bad (median=202.5; p25th-p75th=181.1-225.5), fair (median=222; p25th-p75th=206-235), and good or excellent (median=231; p25th-p75th=214-244.5). Factors of comfort: insignificant difference between inpatient and outpatient. Significant: in the median (p25th-p75th) HCQ-caregiver (P<0.001). Greater in FCs better self-perception of emotional health.
281	Application category 5	Xu et al. (2014)	China	To form the Operation Position Comfort Questionnaire (OPCQ) and evaluate its reliability and validity	Patients undergoing lithotomy surgery: n = 30 (pilot), n = 120 (formal survey); Experts: n = 6	One unit of Obstetrics and Gynaecology at a medical college hospital	Questionnaire cross-cultural adaptation and test of reliability and validity: experts consultation + survey	Chinese OPCQ items: n = 27. Items changes: original 30 items: deleted 2 items, reworded some items, deleted 1 item, leaving 27 items. I-CVI: 0.8-1.0, S-CVI/Ave: 0.96. Cronbach's α coefficient: total: scale: 0.86, each dimension: 0.76-0.88. Factor analysis: 5 factors, explained 60.40% variation. KMO: 0.83, 5 factors explained variance: 20.48%, 16.42%, 13.36%, 6.34%, 4.78%. Item understanding: 117 (97.5%) participants fully understood, 3 (2.5%) participants basically understood. Completion time: 2-4 minutes, 5 minutes with assistance.

282	Application category 5	Cheng (2013)	China	To develop a Comfort Questionnaire for patients with Head and Neck Neoplasms undergoing radiotherapy	Patients with head and neck cancer undergoing radiation therapy: n = 180 (pilot), n = 200 (formal survey); Nursing experts: n = 21	Radiotherapy unit of three hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation survey	Chinese version RCQ items: n = 29. Items changes: from original 58 items to: added 9 items, deleted 30 items, integrated 2 items into 1 item, modified 13 items, deleted 7 items. Four dimensions: physical, psychospiritual, sociocultural, environmental. CVI: 0.885. Split half: 0.914, four factors: 0.534-0.933. Cronbach's α : 0.851, four dimensions: 0.634-0.917. Criterion validity: 0.788. KMO: 0.832, cumulative contribution rate: 73.503%. Correlation coefficients: four factors and total: 0.855, 0.697, 0.534, 0.786 ($P < 0.01$). Completion time: 12 minutes. Comfort scores: 87.78 ± 12.06 , sociocultural comfort: 4.04 ± 0.48 , environmental comfort: 3.50 ± 0.59 , psychospiritual comfort: 2.82 ± 0.64 , physical comfort: 2.37 ± 0.73 . Comfort scores at stages of radiotherapy: early stage: 92.95 ± 9.241 , middle stage: 87.33 ± 12.790 , late stage: 82.37 ± 11.851 (P early-middle, < 0.01 , P early-to-late < 0.001 , P middle-late < 0.05) ($F = 12.387$, $P < 0.001$). 8 common discomfort items: dry mouth, lots of mucus in pharynx, dry throat and larynx, decreased taste, worrying about disease recurrence, pain of the throat and larynx, loss appetite. Factors of comfort: times of radiotherapy ($P < 0.001$), family accompanying, educational level, accompanied diabetes.
283	Application category 5	Wang et al. (2013)	China	To develop a Radiotherapy Comfort Questionnaire (RCQ) for patients with head and neck neoplasms and to test its reliability and validity	Patients with head and neck cancer undergoing radiation therapy: n = 180 (pilot); Experts: n = 21	One radiotherapy unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	Chinese version RCQ items: n = 29. Item changes: 58 items in first round of consultation, initially formed 36 items, deleted 7 items. CVI: 0.885. Four dimensions: physical comfort, psychospiritual comfort, sociocultural comfort, and environmental comfort. Items understanding: 93.3% patients completely understood, 6.7% basically understood. Cronbach's α coefficient: 0.851, physical comfort: 0.917, psychospiritual comfort: 0.634, sociocultural

								comfort: 0.635, and environmental comfort: 0.778. Half coefficient: 0.914, physical comfort: 0.933, spiritual comfort: 0.534, sociocultural comfort: 0.630, environmental comfort: 0.872. Good discriminant validity: significant difference in comfort level of patients at different stages of radiotherapy. Exploratory factor analysis: 4 common factors, cumulative contribution rate: 73.50%. Completion time: 12 minutes. Factors of comfort: 3 stages of radiotherapy. Comfort scores: before radiotherapy: 92.95±9.24, during radiotherapy 87.33±12.79, after radiotherapy: 82.37±11.85.
284	Application category 5	Huang et al. (2013)	China	To test the reliability and validity of the Chinese version Comfort Scale for patients receiving total knee arthroplasty	Patients at 72hours post knee arthroplasty: n = 94; Experts in English and Orthopaedic: n = 7	One Orthopaedics unit of a university affiliated hospital	Questionnaire development and adaptation and test of reliability and validity: translation, experts consultation + survey	Chinese version GCQ (not specified number of items). Item changes: changed the comprehensible items to intuitive and easy-to-understand items, and modified the items with overlapping meanings. Cronbach's α : 0.881, each dimension: 0.800-0.946. CVI: 0.730. KMO: 0.710. Cumulative variance contribution rate of four common factors: 62.56%. Comfort score: 3.26-0.50. dimension scores from high to low: environmental physical, psychological, social comfort. Factors of comfort: age, marital status, family per capita monthly income, medical payment (all P<0.01). Insignificant: gender.
285	Application category 5	Zhao and Yan (2011)	China	To develop maintenance haemodialysis patients comfort scale and evaluate its reliability and validity	Patients with end-stage renal disease receiving maintenance haemodialysis: n = 100, n = 30 (pilot survey); Nursing experts: n = 8	One unit of Blood Purification in a general hospital	Questionnaire development and test of reliability and validity: translation + experts consultation + survey	Chinese version maintenance haemodialysis comfort scale (MHCS) items: n = 28. Item change: modified items 1, 9, and 10 of the original scale, deleted items 12, 27, 20, and 21 of the original scale, added patient characteristics items. Revision principle: opinion of expert group, characteristics of maintenance haemodialysis patients, cultural background of country, results of pre-investigation. Content reliability-CVI: 0.883. Internal consistency-Cronbach's α coefficient: overall scale: 0.935, each dimension: 0.879-0.930. Retest reliability:

								overall score: 0.944, each dimension: 0.817-0.924. Four factors were extracted: psychological comfort, physical comfort, social comfort, environmental comfort (eigenvalue>1): explain 68.758% covariance. KMO value: 0.867.
286	Application category 5	Chen et al. (2010)	China	To develop a chemotherapy comfort scale suitable for evaluating the comfort of Chinese chemotherapy patients	Chemotherapy patients: n = 20, n = 30 (pilot survey); Experts: n = 5, n = 15	One hospital oncology unit	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + Delphi + pilot survey	Items of Chinese version Chemotherapy Comfort Scale: n = 40. 4 dimensions: physical (9 items), psychospiritual (10 items), sociocultural (9 items) and environmental (12 items). Items changes: from original 31 items to final 40 items: added 10 items, added 10 items, deleted 7 items, added 2 items, modified 11 items, deleted 2 items. Cronbach's α : 0.916, physical dimension: 0.812, psychospiritual dimension: 0.713, sociocultural dimension: 0.635, environmental dimension: 0.876. CVI: 0.976. Expert authority coefficient: 0.91±0.07, coordination coefficient W of expert opinions: 0.419 (P<0.01). Questionnaire response rate: 100.00%.
287	Application category 5	Alves-Apostolo et al. (2007)	Portugal	To develop and evaluate the psychometric characteristics of the Psychiatric In-patients Comfort Scale (PICS) in hospitalized psychiatric patients	Psychiatric inpatients: n = 49, n = 273 (a 2nd study); Portuguese nurse experts in psychiatric nursing: n = 5 (content validity)	Three psychiatric hospitals	Questionnaire cross-cultural adaption and test of reliability and validity: experts consultation + survey	PICS items: n = 38. Items changes: 98 item version (5-point Likert from 1 to 5): 51 item version, elimination of 4 items (5, 6, 8 and 31), 9 items excluded (4, 12, 13, 28, 36, 40, 41, 44, 49). Cronbach's α coefficient: total scale 0.89, subscales: 0.75-0.90. Concurrent validity: comfort dimensions correlated positively with well-being, with positive experiences of suffering, negatively with the remaining dimensions of suffering. Criterion validity: Total Comfort correlates negatively with Total Suffering (r=-0.55), logical well-being (r=0.47), positively with the positive experiences of suffering (r=0.59): moderate to high values. Factor analysis: 3-factor: relief, ease and transcendence, explained 38.64% variance.
288	Application category 5	Dowd et al. (2006)	USA	(1) What is the preliminary internal consistency reliability of	Healing Touch (HT) recipients: n = 56	Private healing touch practices either in their	Questionnaire psychometric test	HTCQ items: n = 35. Cronbach's α coefficient = 0.94. Comfort level: higher in more than 4 healing touch treatments than fewer than 4,

				the Healing Touch Comfort Questionnaire HTCQ? (2) What is the correlation between the number of HT sessions and comfort level?		homes or in settings where they volunteered	(reliability and validity): survey	13.7 points higher in 5 or more healing touch treatments than received 1 to 4 treatments. Comfort seems to increase slightly as the number of treatments increases until about 20 treatments. Then, comfort levels off and may decline, although data beyond 20 treatments are scarce (5 questionnaires).
289	Application category 5	Zhu et al. (2006)	China	To develop a Chinese version of Kolcaba's General Comfort Questionnaire	Patients 48 hours after thoracic surgery: n = 20 (pilot), n = 123 (second round); Nursing experts: n = 5	One unit of Thoracic Surgery at a medical college hospital	Questionnaire cross-cultural adaption and test of reliability and validity: translation experts consultation survey	Shortened Chinese version GCQ: n = 30 (30-120 points). Items changes: removed 1 item, added 1 item, added 2 items. CVI: 0.86. Cronbach's α : 0.92, subscale: 0.53-0.85. Comfort score: 91.27 \pm 8.63; the lowest score was in physical subscale: 2.50 \pm 0.47; the highest score was in psychological subscale: 3.26 \pm 0.35.
290	Application category 5	Schuiling and Kolcaba (2002)	USA	To describe the development of an instrument that enables quantification of a women's level of comfort during childbirth	Primiparous normally labouring women: n= 25 (pilot), n= 64; Women experienced labour and a vaginal birth: n= 10 (face validity for the Childbirth Comfort Questionnaire (CCQ)); Expert nurse-midwives: n= 10; Obstetrician/gyn aecologists: n= 10	Unspecified setting	Questionnaire development and test of reliability and validity: experts consultation + survey	CCQ items: n = 14. Items changes: added the item 'The pain of the contractions motivates me to be strong'. Internal consistency-Cronbach's α coefficient: 0.71 during pilot phase.
291	Application category 5	Novak et al. (2001)	USA	To test several formats of end-of-life comfort instruments for patients and closely involved caregivers	End of life patient and caregiver dyads: n = 38	Two hospice agencies	Questionnaire psychometric test (reliability and validity): survey	Phase I: six-item Likert EoL questionnaire and vertical TC line. Cronbach's α : 6 Likert EoL comfort questionnaire for patients: 0.98, for caregivers: 0.97. Test-retest reliability with 20 minutes interval: vertical TC line for patients: 0.64, and for caregivers: 0.79.

								<p>External validity: association between six-item Likert EoL questionnaire and vertical TC line for patients: 0.45 (first administration) and 0.48 (second administration) and for caregivers: 0.44 (first administration) and 0.50 (second administration). Association of the six-item Likert response set questionnaires between patients and families: 0.41. Associations for the vertical TC line between patient and families: 0.31. Comfort score: caregivers' questionnaires: 231±29, TC line: 8±2; patients' questionnaires: 253±27, TC line: 8±2. Phase II: four-item Likert response set questionnaire and horizontal TC line. Cronbach's α of four-item Likert response set questionnaire: patient questionnaire: 0.83, caregiver questionnaire: 0.89. Test-retest reliability of TC line with 20 minutes interval: 0.61 for caregivers, 0.42 for patients. External validity: association between four-item Likert response set questionnaire and horizontal TC line for patients: 0.31 (first administration) and 0.45 (second administration), for caregivers: 0.35 (first administration) and 0.52 (second administration). Associations for the four-item response set questionnaire between patient and families: 0.31. Associations for the horizontal TC line between patient and families: 0.10. Comfort scores: caregiver and patient questionnaires: 153±17 (range: 49-196, moderately high), caregivers' TC line: 7±2, patients' TC line: 7.4±1.8.</p>
292	Application category 6	Freire et al. (2021)	Brazil	To understand the meaning and dimensionality of state of comfort from chronic haemodialysis patients' perspectives	Patients: n=30	One haemodialysis clinic in a public hospital	Qualitative, descriptive and exploratory study	Five subcategories for being and feeling comfortable emerged: psychological well-being; Silent environment; Good quality of care; No health changes; Reduction in the frequency/duration of haemodialysis.
293	Application category 6	Gaibor et al. (2021)	Ecuador	To describe the comfort provided in the elderly	Older adults: n=8	The ATALAYA Senior Center	Qualitative study with a	Categories: Sharing with other adults; Be at ease when attended; Respecting my religion;

				through an in depth interview at the ATALAYA Senior Center			phenomenological approach	Feeling comfortable; Feeling at peace with me; Visit to my relatives
294	Application category 6	Washington et al. (2021)	USA	To better understand the challenges faced by cancer family caregivers who receive services from outpatient palliative care teams	Family caregivers: n = 39	One palliative care outpatient	Reflective qualitative study	Seven themes: need to understand, need for self-efficacy, need to derive meaning, need for informal support, need for formal support, need for resources, need for self-care.
295	Application category 6	Berntzen et al. (2020)	Norway	To explore in depth discomfort in intensive care as experienced by patients and attended to by critical care nurses	Adult ICU survivors: n = 18; critical care nurses: n = 13	One adult ICU at a teaching hospital	Secondary qualitative analysis	Three themes: Being deprived of a functioning body, Being deprived of a functioning mind, and Being deprived of integrity.
296	Application category 6	Melo et al. (2020)	Brazil	To analyse the benefits of auriculoacupuncture in nursing professionals working in the COVID-19 pandemic in the light of Katherine Kolcaba's Theory of Comfort	Nursing professionals: n = 33	One tertiary hospital	Descriptive qualitative study	Three thematic categories: "Auriculoacupuncture as a measure of comfort", "(Dis) Physical and psychospiritual comfort and performance in assisting COVID-19", and, "From organizational support to individual commitment to health".
297	Application category 6	Oliveira et al. (2020)	Brazil	To reveal the Comfort needs as perceived by hospitalized elders, using Kolcaba's theory	Hospitalized elders: n = 11	One teaching hospital	Descriptive qualitative study	Physical: Symptom Relief; Daily Life Activities; Hygiene and personal care; Diet; Sleep and rest. Environmental: superior in hospital services environment than in the elders' home. Sociocultural: family bonds were found to become more distant, triggering feelings of missing one's family and isolation. Psychospiritual: spirituality and religiosity stood out.
298	Application category 6	Osundina (2019)	USA	To examine nurses' lived experiences of comfort care among residents at the EoL in long-term care facilities	Nurses caring for patients during EoL: n = 13	Long-term care facilities: n = 3	Phenomenological study	Nurses' experiences: being emotionally drained, being part of a peaceful transition, feeling ambivalent regarding use of pain medication at the EoL, and being vigilant at recognizing which comfort measures to implement at the EoL.
299	Application category 6	Benedett et al. (2018)	Brazil	To identify the strategies that mothers undertake while looking for comfort during the breastfeeding period	Primiparous lactating women: n = 24	Home	Collective subject discourse	Women are exposed to various situations of (dis)comforts during the breastfeeding period. The breastfeeding practice represents physical and emotional efforts to women. The woman establishes strategies

								aiming to promote their comfort, although they do prioritize their child's welfare.
300	Application category 6	Bergström et al. (2018)	Sweden	To describe and analyse the nurse anaesthetist's comfort measures in the preoperative context on the basis of the Comfort Theory	Patients: n = 12; Nurse anaesthetists: n = 11	Preoperative environment at a teaching hospital	Qualitative study	Comfort measures to ensure the patient's needs of relief, ease and transcendence in the physical, psycho-spiritual, environmental and socio-cultural contexts.
301	Application category 6	Simes et al. (2018)	Australia	To identify factors that influence nursing educator comfort in the use of simulation	University lecturers: n = 12; Registered nurses: n = 4	One school of nursing at one university	Explorative qualitative	Four themes: Personal barriers, Human resource barriers, Structural barriers, and Suggestions to address barriers.
302	Application category 6	Figueiredo et al. (2018)	Brazil	To analyse the contribution of clinical nursing care to the mother who has recently given birth with immediate postpartum pain based on the Kolcaba's Theory of Comfort	Postpartum women: n = 30; Nurses: n = 3	One rooming-in, one natural Birth Centre, one Post-Anaesthetic Care Unit and one Obstetric Emergencies in a public maternity hospital	Qualitative	Nursing care offers administration of medications, guidelines and non-pharmacological measures for pain relief.
303	Application category 6	Mendonça et al. (2018)	Brazil	To reflect on the subjectivity of puerperal care and the transcendence of being a mother in the light of the Comfort Theory	Pregnant woman: n = 1	One maternity hospital	Reflective qualitative study	The adoption of the comfort theory for the delivery of clinical nursing care allows an individual, human and ethical approach, since it incorporates the needs pointed out by the individual, which contributes to the attention being personified and removed from the mechanistic care, that is attached to protocols or even to theoretical orientations, but that do not come to life in the contact with the patient.
304	Application category 6	Guan et al. (2018)	China	To explore the comfort of the patients with nasal packing after nasal endoscopic surgery from the perspective of patients	Patients with nasal packing after nasal endoscopic surgery: n = 16	One Head and Neck Surgical unit at a teaching hospital	Phenomenological study	Four level-1 themes and sixteen level-2 themes: physical discomfort: discomfort in nose, head, eye, mouth, face, ear, sleep, diet and movement; psychological discomfort: sense of unevenness and anxiety, sociocultural discomfort: discomfort in the role of patients and bad relationship, environmental discomfort: dry, noise and bad air in the ward.
305	Application category 6	Pinto et al. (2017)	Portugal	To analyse palliative care patients'	Patients with chronic,	Five medical-surgical settings at	Qualitative study	Themes: me and what I feel, me and how I react, me a human being in society, me and

				experiences about comfort	incurable and progressive disease: n = 15	an acute and central hospital: medicine, general surgery, neurosurgery, pneumology and vascular surgery		the meaning of my life, me and the world around me. Determinants for comfort: the context of provision of care, the presence of family, the way information is managed, the search for meaning in life, and the need to keep life under control.
306	Application category 6	Egger-Rainer et al. (2017)	Austria	To determine which perception of personal comfort patients name in the context of their hospitalization in an Austrian Epilepsy Monitoring Unit	Epilepsy patients: n = 12	Epilepsy monitoring unit at one hospital	Qualitative	Comfort decreasing factors: bed rest, boredom, and waiting for possible seizures. Comfort-increasing factors: hope for enhanced seizure control, support by family and staff, and intelligible information about the necessity of restrictive conditions.
307	Application category 6	Astuti et al. (2017)	Indonesia	To describe the perceived experience post-surgical orthopaedic clients were given murottal Al-Qur 'an on comfort	Participants: n=8	Orthopaedics	Qualitative descriptive	Three themes: the need for comfort care, nursing interventions for comfort and comfort after nursing actions (murottal Al-Qur 'an). Listen to murottal Al-Qur 'an, read tartil and correct manner, will bring tranquillity of soul.
308	Application category 6	Manning (2016)	Wales	To explore how traditional and new models of care meet patients' needs according to patient and staff experiences	Patients and staff members: n = 10	One accident and emergency unit	Case study	Themes: perception of coping alone, not wanting to be a burden to families but prepared to accept help from other services (dependency) and pain affecting their physical capabilities. Service issues: the length of time Early Response Service (ERS) can provide care, analgesic administration in the community, financial assistance and social care delays in starting care packages.
309	Application category 6	Owen (2016)	USA	To explore palliative care needs in heart transplant candidates	Heart transplant candidates: n = 22	Online	Descriptive qualitative study	Themes: The emotional burden of awaiting transplant is more significant than the physical burden, Support during the wait is essential to the well-being of the candidate, and Candidates experienced significant concern for others during the wait.
310	Application category 6	Ponte et al. (2014)	Brazil	To describe the contribution of clinical nursing care to the environmental comfort of women with Acute Myocardial Infarction,	Women with acute myocardial infarction: n = 9	Coronary care unit and emergency care unit at a heart hospital	Qualitative study	Interventions: managing equipment noises, reducing conversations in the room, and controlling excessive lightning, unpleasant odors, and the temperature.

				based on the Comfort Theory and mediated by the research-care approach				
311	Application category 6	de Azevedo Ponte and de Fátima da Silva (2014)	Brazil	To report the experience of using the Care Research Method based on Kolcaba's Theory of Comfort, reinforcing the importance of conducting research to enable the interaction between subject and researcher with positive outcomes for the researched person	Women with acute myocardial infarction: n = 9	One hospital	Qualitative	The research, which involved the Care Research Method and Kolcaba's Theory of Comfort, made the integration and proximity between researcher and cared-researched patient possible, and provided immediate results that brought comfort through the implementation of care, according to the individual needs presented.
312	Application category 6	Miller and Dowd (2008)	USA	To share Miller's story about her volunteer experience with the nursing community	Residents along the Gulf coast after Hurricane Katrina struck their shores	Health care systems	Story of experience	A memorable lived experience that brought caring, healing, and comfort to a situation of devastation.
313	Application category 7	Lin et al. (2023)	China	To map and present the available evidence on the effects of interventions underpinned by Kolcaba's Comfort theory in healthcare settings	N/A	N/A	Evidence and gap map protocol of international effectiveness studies	N/A
314	Application category 7	Zhuang and Zeng (2023)	China	To examine the issue of ICU patient dignity in China from multiple perspectives employing Taylor's Reflection Model, aiming to uncover the systemic problems that lead to these unfortunate experiences	N/A	One ICU	Critical reflection	Enhancing Chinese nurse's attention to patient dignity, improving the inpatient experience of ICU patients, and enhancing the quality of nursing practice and providing improvement recommendations.
315	Application category 7	Martins et al. (2022)	Portugal	To understand how Kolcaba's Theory of	N/A	N/A	Reflective study	Kolcaba's Comfort Theory allows stating that nursing interventions promoting comfort will

				Comfort has influenced research and clinical practice in nursing through the evolution of the concept				be considered a good practice in nursing care if this intervention is perceived as comforting by the person, family, or community targeted by this intervention. Kolcaba's studies mirror the need to clarify the concept of comfort and provide a more comprehensive view of this term to all populations and contexts, awakening in other theorists and researchers the interest in continuing the study of the concept of comfort, enabling his theory to serve as a basis of support for multiple research studies over the years, demonstrating that the phenomenon of comfort is not exhausted in its essence, but remains a contemporary and pertinent focus of study for research.
316	Application category 7	Reven (2022)	USA	To describe the building of the concept welcoming ease for its use in further knowledge development in research	One 55-year-old male with advanced cancer	The medical/surgical unit	Concept building process	The model of welcoming ease illustrates relationships between the core qualities of comfort, anguish, and fully present regard. Comfort is depicted as a large semi-porous circle encasing the smaller semi-porous circle of anguish.
317	Application category 7	Auyezkhan kzy et al. (2022)	Kazakhstan	To analyse the application of Kolcaba's Theory of Comfort for nursing research, education, practice and leadership	Inapplicable	Inapplicable	Literature review and discussion paper	Wide application: paediatric care, perinaesthesia nursing, perinatal nursing; institution-level application, comfort measures: guided imagery, quiet time interventions, warm blanket, hand massage, therapeutic touch, music therapy; comfort questionnaires.
318	Application category 7	Castro et al. (2021)	Brazil	To reflect on the possible connections between Katharine Kolcaba's Theory of Comfort and Cicely Saunders's concept of Total Pain and the implications to the care of the oncology palliative care patient	N/A	Oncology palliative care	Theoretical reflection based on a literature review	The knowledge of the concepts presented allows redirecting the focus of care towards individualized actions to strengthen the patient and his participation in the choices of comfort interventions.
319	Application category 7	Tanay (2021)	USA	To identify strategies used by palliative care	Inapplicable	Inapplicable	Systematic review	Reported in themes, findings from the literature indicate that provider training and

				professionals that enhance timely hospice referrals				healthcare staff education, nurse-led strategies, patient and family teaching, academic education and research, and specialist support are current strategies used to enhance timely referrals of patients for hospice care.
320	Application category 7	Kolcaba (2020)	USA	A book chapter without a clearly reported aim	Inapplicable	Inapplicable	Literature review and discussion of book chapter	Comfort care model: hospice care, discipline-level application, difficult health care situations, institution-level application, wide application.
321	Application category 7	Luo et al. (2020)	China	To review the comfort assessment tools, factors and nursing care measures for patients with high flow nasal cannula (HFNC)	Inapplicable	Inapplicable	Literature review	Comfort care model: intensive care, comfort questionnaires, wide application.
322	Application category 7	Liu et al. (2020)	China	To summarize the literature on the comfort theory used in hospice care	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, comfort questionnaires.
323	Application category 7	Wang et al. (2020)	China	To review the evaluation indicators for comfort care	Inapplicable	Inapplicable	Literature review	Comfort questionnaires, wide application.
324	Application category 7	Glose and Diggle-Fox (2019)	USA	To critically appraise and present research findings pertaining to sexuality in older adults and to translate these findings into useful processes and tools that can be used to support comfort in sexuality and sexual wellbeing of older adults	Inapplicable	Inapplicable	Literature review	Comfort care model: elderly care, wide application.
325	Application category 7	Su et al. (2019)	China	To review effective comfort interventions for patients after endoscopic retrograde cholangiopancreatography (ERCP) in light of holistic nursing and evidence-based nursing	Inapplicable	Inapplicable	Literature review	Comfort care model: surgical care.

326	Application category 7	Cardoso et al. (2019)	Brazil	To reflect on the promotion of well-being for the hospitalized elderly based on the Theory of Comfort and the principles of bioethics	N/A	N/A	Reflective study	It is essential for health professionals to offer holistic and humanized care that addresses patients' physical, psycho-spiritual, sociocultural and environmental needs, taking into account the comfort of the hospitalized elderly and the principles of bioethics.
327	Application category 7	Brandão and Santos (2019)	Brazil	To think about application of the concepts of Henderson and Kolcaba during care for people with cutaneous conditions, with a view to affording comfort, besides autonomy for the nurses involved	N/A	Dermatology	Reflective study	This reflection may contribute to the use of the theories cited in practical care in dermatology.
328	Application category 7	Younas and Quennell (2019)	Canada	To analyse the extent of use and usefulness of nursing theories in guiding practice	N/A	N/A	Integrative review	Nursing theories have guided practice in both eastern and Western countries, and theory-guided practice has been found useful compared to traditional nursing practice. One out of 35 studies is the application of Kolcaba's comfort theory.
329	Application category 7	Huster (2018)	USA	To analyse the complexities of a lack of communication leading to a pursuit of futile treatment to care for patients and to examines methods for nurses and the healthcare system to reconcile the inadequacies found in the care of the lung cancer patient population	Inapplicable	Inapplicable	Literature review and discussion paper	Institution-level application, comfort measures: advocating, communicating, supporting hope.
330	Application category 7	Faria et al. (2018)	Portugal	To identify comfort needs and measures of the patient admitted in ICUs	Inapplicable	Inapplicable	Integrative review	Comfort needs concern essentially physical and psychospiritual context and the comfort measures more frequently adopted are aim to relieve suffering and promote a peaceful atmosphere.

331	Application category 7	Lorente et al. (2018)	Spain	To analyse the psychometric properties and the utility of instruments used to measure	Inapplicable	Inapplicable	Psychometric review	Comfort questionnaires
332	Application category 7	Pinto et al. (2017)	Portugal	To provide a conceptually adequate definition of comfort as a foundation for knowledge development, having in mind an evaluation of comfort as an outcome	Inapplicable	Inapplicable	Concept analysis	Comfort questionnaires.
333	Application category 7	Bailey (2017)	USA	To define comfort in the context of Kolcaba's mid-range Comfort Theory, demonstrating to manage comfort in a holistic way by adapting the Comfort Theory and using the Comfort Matrix to illustrate the application of the Comfort theory	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: childbirth care
334	Application category 7	Liehr and Smith (2017)	USA	To replicate the 1999 literature search process, state the recommendations as criteria to critique ongoing development and use of middle range theory, and identify approaches for moving on	N/A	N/A	Literature review	Kolcaba has most frequently described use in practice. Comfort theory has been used to guide practice at the unit level with hospitalized populations like paediatric patients, and the hospital-wide level with description of use in the Veterans Administration setting and description of use by a hospital pursuing Magnet status. There is little documentation of middle range theory moving to the frontlines of nursing practice.
335	Application category 7	Lima et al. (2017)	Brazil	To evaluate the usefulness of the comfort theory for the clinical nursing care of new mothers	N/A	N/A	Reflexive-theoretical study	The theory provides applicable concepts that facilitated the clinical nursing care of women in the postpartum period and helped increase their comfort level. The theory can be applied in different settings of clinical care for new mothers.

336	Application category 7	Sitzman and Eichelberger (2017)	USA	To introduce Katharine Kolcaba's theory of comfort	Inapplicable	Inapplicable	Literature review and discussion book chapter	Comfort care model: cardiac care, comfort measures: quiet time interventions, institution-level application, wide application.
337	Application category 7	Dinis et al. (2017)	Portugal	To analyse a case study based on the theory of Kolcaba	Inapplicable	Inapplicable	Integrative review	Comfort measures: healing touch, massage, music therapy, positions, supporting hope.
338	Application category 7	Coelho et al. (2017)	Portugal	To examine and map the non-pharmacological interventions implemented and evaluated to provide comfort in palliative care	Inapplicable	Inapplicable	Scoping review	Comfort care model: hospice care, Comfort measures: healing touch, massage, music therapy, aromatherapy, art therapy, footsoak, and reflexology, hypnotherapy, comfort needs.
339	Application category 7	Zhang et al. (2017)	China	To introduce comfort's definition, factors, characteristics, and review comfort assessing tools	Inapplicable	Inapplicable	Literature review	Comfort questionnaires
340	Application category 7	Pinto et al. (2016a)	Portugal	To analyse the elements that characterize comfort in nursing scientific literature	Inapplicable	Inapplicable	Systematic review	Comfort measurement tools: 20 tools were reviewed.
341	Application category 7	Marshall (2016)	USA	To develop an evidence-based practice guideline for doctoral-prepared NPs working in long-term care facilities	Inapplicable	Inapplicable	Literature review	Comfort care model: long term care.
342	Application category 7	Pinto et al. (2016b)	Portugal	To discuss the "Impaired Comfort" nursing diagnosis	Inapplicable	Inapplicable	Literature review and discussion paper	When the patient has impaired comfort, the nursing intervention should be specific to the etiological factor.
343	Application category 7	Astuti (2016)	Indonesia	To identify the effectiveness of the use of Quiet Time Intervention in cardiac patient	Inapplicable	Inapplicable	Literature review	Comfort care model: cardiac care, comfort measures: quiet time interventions.
344	Application category 7	Ponte and Silva (2015)	Brazil	Identify measures of comfort as a result of nursing care in the articles published by Brazilian nurses, taking	Inapplicable	Inapplicable	Integrative review	The care shown as comfort in publications of nurses in Brazil were more present in the physical context, being the satisfaction of pain relief care more referred to between the articles. However, care also was present

				into account the foundations of the theory of comfort Katharine Kolcaba				in the sociocultural context, and environmental psychospiritual.
345	Application category 7	Ludington-Hoe (2015)	USA	To provide a scenario of pregnancy and birth to show how stressful birth can be, and to relate the empirical evidence and explanatory mechanisms showing that skin-to-skin contact can change stress to comfort by providing physical, psychospiritual, and environmental comfort care using Kolcaba's Comfort Theory	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: childbirth care, comfort measures: Skin-to-skin contact.
346	Application category 7	Dowd (2014)	USA	To introduce theory of comfort	Inapplicable	Inapplicable	Literature review and discussion book chapter	Comfort care model: perinaesthesia nursing, nursing education, wide application.
347	Application category 7	Tsai et al. (2012)	China	To synthesize relevant literature to redefine the concept of comfort using the conceptual analysis steps described by Walker and Avant	Inapplicable	Inapplicable	Concept analysis	Comfort questionnaires: GCQ, Short Form of the GCQ, and the Radiation Therapy Comfort Questionnaire (RTCQ), Urinary Incontinence and Frequency Comfort Questionnaire, Hospice Comfort Questionnaires (HCQ).
348	Application category 7	Lv et al. (2012)	China	To review Kolcaba's comfort theory including background of the theorist, process of developing the theory, content of theory, and research and practical application	Inapplicable	Inapplicable	Literature review	Comfort care model; comfort measures: massage, healing touch, guided imagery, muscle relaxation; wide application.
349	Application category 7	Yan and Zhao (2012)	China	To systematically elaborate on comfort including definition, development of comfort nursing theory, clinical	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, perinaesthesia nursing, comfort measures: massage.

				practice, research, and related problems				
350	Application category 7	Doolin et al. (2011)	USA	To provide advanced practice nurses with the best available evidence for implementation of policies and procedures to allow family presence during cardiopulmonary resuscitation (CPR) in the acute care environment	Inapplicable	Inapplicable	Literature review and discussion paper	Best practices, comfort care model: comfort of nurses.
351	Application category 7	Kolcaba (2010)	USA	To introduce the theorist, overview of the theory, and application of the theory in practice	Inapplicable	Inapplicable	Literature review and discussion book chapter	Best policies, best practices.
352	Application category 7	Shi (2010)	China	To introduce the comfort theory including founder and process of theory development, content, meta-paradigm concepts, and application of the tidal care model in nursing practice	Inapplicable	Inapplicable	Literature review	Comfort care model: hospice care, perinaesthesia nursing, comfort questionnaires, wide application.
353	Application category 7	March and McCormack (2009)	Canada	To examine how a modification in the theoretical framework of Kolcaba's theory of comfort can guide the thinking and work of other healthcare disciplines	Inapplicable	Inapplicable	Literature review and discussion paper	Institution-level application.
354	Application category 7	Ice (2007)	USA	To extend/ modify Kolcaba's Comfort Theory utilizing theory derivation method by Walker and Avant (2005)	Inapplicable	Inapplicable	Theory derivation method	Wide application.

355	Application category 7	Kolcaba (2003)	USA	To provide a blueprint for application of Comfort Theory in practice, education, research, and quality improvement	Inapplicable	Inapplicable	Literature review and discussion book chapter	Alternative and complementary therapies, best policies, comfort care model, comfort measures: art therapy, cognitive strategies, guided imagery, healing touch, music therapy, massage, comfort questionnaires, wide application.
356	Application category 7	Kolcaba and Wilson (2002)	USA	To define holistic comfort congruent with the standards, present a framework of comfort care for perinaesthesia nursing practice and research that is easy to understand and implement, and discuss how application of the framework can be satisfying for patients, nurses, and administrators	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: perinaesthesia nursing, comfort measures: structured information programs, therapeutic use of self.
357	Application category 7	Koehn (2000)	USA	To propose the use of Kolcaba's theory of holistic comfort to explain and predict how alternative therapies are especially well suited for relieving discomfort associated with the labouring process	Inapplicable	Inapplicable	Literature review and discussion paper	Alternative and complementary therapies, comfort care model: childbirth care, acupressure, acupuncture, music therapy, prayer.
358	Application category 7	Schoener and Krysa (1996)	USA	A framework for nurses to use to provide comfort in infertility is provided, as are suggestions regarding nursing interventions to assist infertile patients through the physical, social, psychospiritual, and environmental contexts.	Inapplicable	Inapplicable	Literature review and discussion paper	Comfort care model: infertility care.

359	Application category 7	Yucel (Unknown)	Turkey	A slide presentation without an informed aim	Inapplicable	Inapplicable	Literature review and discussion about a slide presentation	Comfort measures: hand massage.
Application category 1 - Interventions underpinned by Comfort Theory as the theoretical framework; Application category 2 - Interventions evaluated by instruments derived from Comfort Theory; Application category 3 - Descriptive or observational studies of services or practices underpinned by Comfort Theory; Application category 4 - Surveys using questionnaires derived from Comfort Theory; Application category 5 - Questionnaires development or adaption based on Comfort Theory; Application category 6 - Qualitative studies interpreted by Comfort Theory; Application category 7 - Literature review and discussion about Comfort Theory use.								
ACE: Acute Care for Elders; ADL: Activities of Daily Living; AECOPD: Acute Exacerbation Chronic Obstructive Pulmonary Disease; AIC: Acute Information Criterion; AMI: Acute myocardial infarction; BFQ: Bladder Function Questionnaire; CABG: Coronary Artery Bypass Grafting; CBC: Comfort Behavioural Checklist; CCQ: Childbirth Comfort Questionnaire; CCS: Case Controlled Study; CCU: Critical Care Unit; CG: Control Group; CQMVP: Comfort Questionnaire for Mechanically Ventilated Patients; CCR: Cardiopulmonary Resuscitation; CSS: Cross-sectional study; CUBS: Compromised Urinary Bladder Syndrome; EMU: Epilepsy Monitoring Unit; EMUCQ: Epilepsy Monitoring Unit Comfort Questionnaire; EoL: End of life; ERAS: Enhanced Recovery After Surgery; ERCP: Endoscopic Retrograde Cholangial Pancreatography; ERS: Early Response Service; FCs: Family caregivers; GCQ: General comfort questionnaire; GCS: General Comfort Scale; GFI: Goodness of Fit Index; HAG: Heat Application Group; HCQ: Hospice Comfort Questionnaire; HCQ-C: Home Care Comfort Questionnaire-Caregiver; HCQ-F: Holistic Comfort Questionnaire-Family; HFNC: High Flow Nasal Cannula; HSBs: Health seeking behaviours; HT: Healing Touch; HTCQ: Healing Touch Comfort Questionnaire; ICQ: Immobilization Comfort Questionnaire; ICU: Intensive care unit; ICVI: Item Content Validity Index; IFI: Incremental Fit Index; IIQ: Inpatient Experience Impact Scale; KMO: Kaiser-Meyer-Olkin; MAS: Measurement System Analysis; MCQ: Maternal Comfort Questionnaire; MG: Massage Group; MHCS: Maintenance Haemodialysis Comfort Scale; MMS: Mixed methods study; MSL: Maxillary Sinus Lift; NCQ: Nurse Comfort Questionnaire; NP: Nursing Process; NVAS: Number Visual Analog Scale; OEF: Operation Enduring Freedom; OIF: Operation Iraqi Freedom; OPCQ: Operation Position Comfort Questionnaire; OVCF: Osteoporotic Vertebral Compression Fracture; OWLS: Oxford Worries about Labour Scale; PACU: Postanaesthetic Care Unit; PC: Palliative Care; PCA: Patient-Controlled Analgesic; PCI: Percutaneous Coronary Intervention; PCQ: Perianesthesia Comfort Questionnaire; PCS: Perioperative Comfort Scale; PES: Post-Embolisation Syndrome; PGT: Preimplantation Genetic Testing; PHRCS: Post Hip Replacement Comfort Scale; PICC: Peripherally Inserted Central Catheter; PICS: Psychiatric In-patients Comfort Scale; PKP: Percutaneous Kyphoplasty; PMR: Progressive Muscle Relaxation; PPCQ: postpartum Comfort Questionnaire; PSQI: Pittsburgh Sleep Quality Index; PTSD: Posttraumatic Stress Disorder; QoL: Quality of life; RCQ: Radiotherapy Comfort Questionnaire; RCT: Randomized controlled trial; RMR: Root Mean Square Residual; RMSEA: Root Mean Square Error of Approximation; RTCQ: Radiation Therapy Comfort Questionnaire; SCQ: Stroke Comfort Questionnaire; Shortened GCQ: Shortened General Comfort Questionnaire; SCVI: Scale Content Validity Index; S-GCQ: Spanish-General Comfort Questionnaire; SICU: Surgical Intensive Care Unit; STAI-YI: State-Trait Anxiety Inventory; TACE: Trans-Arterial Chemoembolization; TC: Total Comfort; TCM: Traditional Chinese Medicine; TCS: Thermal Comfort Scale; TIVAP: Totally Implanted Venous Access Port; UIFCC: Urinary Incontinence and Frequency Comfort Questionnaire; VA: Veterans Administration; VAS: Visual Analog Scale; VEEG: Electroencephalographic; WHOQOL: The World Health Organization QoL.								

Supplemental Table S5. Full texts excluded with reasons (update search and selection) (n=208)

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
1	Embase	Fields et al. (2021) 93EMF Understanding the Relationship Between the Emergency Department Built Environment and Physician Burnout Through High Fidelity Virtual Reality Modeling	Comfort Theory was not applied
2	MEDLINE	Laufer (2013) A brief interphase interval interposed within biphasic pulses enhances the contraction force of the quadriceps femoris muscle	Comfort Theory was not applied
3	Web of Science	Kirkpatrick et al. (2017) A Concept Analysis of Palliative Care Nursing: Advancing Nursing Theory	Comfort Theory was not applied
4	CINAHL	Cossette et al. (2006) A dimensional structure of nurse-patient interactions from a caring perspective~ refinement of the Caring Nurse-Patient Interaction Scale (CNPI-Short Scale)	Comfort Theory was not applied
5	Embase	Pulakanti and Holland (2018) A fatal case of adult-onset acute necrotizing encephalitis secondary to influenza a virus	Comfort Theory was not applied
6	Embase	Villarruel et al. (2008) A parent-adolescent intervention to increase sexual risk communication~ Results of a randomized controlled trial	Comfort Theory was not applied
7	MEDLINE	Lamarche et al. (2012) A qualitative examination of body image threats using Social Self-Preservation Theory	Comfort Theory was not applied
8	MEDLINE	Liao et al. (2020) A Social Group-Based Information-Motivation-Behavior Skill Intervention to Promote Acceptability and Adoption of Wearable Activity Trackers Among Middle-Aged and Older Adults	Comfort Theory was not applied
9	CINAHL	Broome et al. (2003) A study of parent/grandparent education for managing a febrile illness using the CALM approach	Comfort Theory was not applied
10	CINAHL	Huth et al. (2003) A study of the effectiveness of a pain management education booklet for parents of children having cardiac surgery	Comfort Theory was not applied
11	MEDLINE	Kerrigan et al. (1996) A tool to assess biomechanical gait efficiency; a preliminary clinical study	Comfort Theory was not applied
12	MEDLINE	Bryan et al. (2020) Acceptable Noise Level Stability Over a One-Year Period of Time	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
13	CINAHL	Smith (2017) Advance Care Planning Communication for Young Adults: A Role for Simulated Learning	Comfort Theory was not applied
14	Web of Science	Li et al. (2020b) Advanced nursing recovery therapy in the field of nanotechnology based on tetracycline hydrochloride type drugs	Comfort Theory was not applied
15	Embase	McNaughton Collins and Wilt (2002) Allopurinol for chronic prostatitis	Comfort Theory was not applied
16	Scopus	Tomaszewski (2013) An evaluation of the complex programme of rehabilitation for the patients with late 'whiplash' syndrome following neck injuries	Comfort Theory was not applied
17	CINAHL	Farrell and Belza (2012) Are Older Patients Comfortable Discussing Sexual Health With Nurses~	Comfort Theory was not applied
18	CINAHL	Lacovara et al. (2011) Are Patients with Breast Cancer Satisfied with Their Decision Making A Pilot Study	Comfort Theory was not applied
19	CINAHL	Chan and Whitfield (2022) Article: "Too Old" and "Too Cold": Discomfort Towards Photographs of Breastfeeding Beyond Infancy and Public Breastfeeding in Nova Scotia, Canada	Comfort Theory was not applied
20	APA PsycInfo	Marmarosh et al. (2023) Attachment theory and the transition to online group therapy during COVID-19: A preliminary investigation	Comfort Theory was not applied
21	Scopus	Berkout and Sunal (2023) Attitudes Towards Digital Mental Health Among Individuals With Unmet Mental Health Needs	Comfort Theory was not applied
22	MEDLINE	Martinez et al. (2023) Auditory brainstem responses obtained with randomised stimulation level	Comfort Theory was not applied
23	APA PsycInfo	Seow et al. (1995) Beliefs and attitudes as determinants of cervical cancer screening: A community-based study in Singapore	Comfort Theory was not applied
24	Scopus	Leroy et al. (2016) Beyond the drugs: Non-pharmacological strategies to optimize procedural care in children	Comfort Theory was not applied
25	CINAHL	Halm et al. (2012) Broadening cultural sensitivity at the end of life~ an interprofessional education program incorporating critical reflection	Comfort Theory was not applied
26	CINAHL	Stilos et al. (2007) Building Comfort With Ambiguity in Nursing Practice	Comfort Theory was not applied
27	Scopus	Canning and Drew (2022) Canadian nursing students' understanding, and comfort levels related to Medical Assistance in Dying	Comfort Theory was not applied

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NO.	Source	Author(s), Year, Title)	Reasons for exclusion
28	MEDLINE	Griggs et al. (2021) Care During Pregnancy, Childbirth, Postpartum, and Human Milk Feeding for Individuals Who Identify as LGBTQ	Comfort Theory was not applied
29	CINAHL	Madeleine and Madsen (2009) Changes in the amount and structure of motor variability during a deboning process are associated with work experience and neck-shoulder discomfort	Comfort Theory was not applied
30	AMED	Cognitive and situational precipitants of loneliness among patients with cancer~ A qualitative analysis	Comfort Theory was not applied
31	CINAHL	Rodrigues Soares et al. (2020) Comfort of the child in intensive pediatric therapy: perception of nursing professionals	Comfort Theory was not applied
32	CINAHL	Czernecki and Ślusarska (2023) Comfort or discomfort for patients in palliative home care? – a pilot study	Comfort Theory was not applied
33	MEDLINE	Mitchell and Pilkington (2000) Comfort-discomfort with ambiguity: flight and freedom in nursing practice	Comfort Theory was not applied
34	CINAHL	Askin (1993) Commentary on Reconciliation and healing for mothers through skin-to-skin contact provided in an American tertiary level intensive care nursery [original article by Affonso D et al appears in NEONAT NETW 1993;12(3)~25-32]	Comfort Theory was not applied
35	Embase	da Silva et al. (2023) Construction of a Musculoskeletal Discomfort Scale for the Lower Limbs of Workers: An Analysis Using the Multigroup Item Response Theory	Comfort Theory was not applied
36	Web of Science	Zhang et al. (2011) Correlation analysis for the attack of respiratory diseases and meteorological factors	Comfort Theory was not applied
37	CINAHL	MacDonald et al. (2008) Correspondence among older drivers' perceptions, abilities, and behaviors	Comfort Theory was not applied
38	MEDLINE	Haigh et al. (2019) Cortical Hyper-Excitability in Migraine in Response to Chromatic Patterns	Comfort Theory was not applied
39	CINAHL	Blausey (2023) Creative Arts Therapists' Engagement in Sexuality Dialogues With Clients: Pilot Study	Comfort Theory was not applied
40	CINAHL	Kardong-Edgren (2007) Cultural competence of baccalaureate nursing faculty	Comfort Theory was not applied
41	MEDLINE	Edmondson et al. (2008) Death without God: religious struggle, death concerns, and depression in the terminally ill	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
42	Scopus	Drick (2004) Deep Comfort: The Essence of Nursing	Comfort Theory was not applied
43	Embase	Lysaker Paul H et al. (2011) Deficits in the ability to recognize one's own affects and those of others~ Associations with neurocognition, symptoms and sexual trauma among persons with schizophrenia spectrum disorders	Comfort Theory was not applied
44	Embase	Hartman et al. (2023) Defining the Role for Palliative Care Referral in Patients with Pancreatic Cancer Undergoing Curative-Intent Surgery~ An International Survey of Surgeons and Palliative Care Physicians	Comfort Theory was not applied
45	CINAHL	Parsons (2004) Delegation decision-making by registered nurses who provide direct care for patients with spinal cord impairment	Comfort Theory was not applied
46	CINAHL	Parsons (2004) Developing Emotional Competence of Social Workers of End-of-Life and Bereavement Care	Comfort Theory was not applied
47	MEDLINE	Aslakson et al. (2018) Developing the Storyline for an Advance Care Planning Video for Surgery Patients: Patient-Centered Outcomes Research Engagement from Stakeholder Summit to State Fair	Comfort Theory was not applied
48	MEDLINE	Liu et al. (2021) Development and validation of the Chinese surgical inpatient satisfaction and comfort questionnaire	Comfort Theory was not applied
49	Embase	Flynn et al. (2015) Development and validation of the PROMIS vulvar discomfort with sexual activity scales	Comfort Theory was not applied
50	Embase	Herranz-Pascual et al. (2023) Development of the Acoustic Comfort Assessment Scale (ACAS-12): Psychometric properties, validity evidence and back-translation between Spanish and English	Comfort Theory was not applied
51	CINAHL	Grossman (2013) Development of the Palliative Care of Dying Critically Ill Patients Algorithm	Comfort Theory was not applied
52	APA PsycInfo	Le et al. (2022) Discomfort in LGBT community and psychological well-being for LGBT Asian Americans: The moderating role of racial/ethnic identity importance	Comfort Theory was not applied
53	CINAHL	Baker (1992) Discomfort to environmental noise: heart rate responses of SICU patients	Comfort Theory was not applied
54	Embase	Schenker et al. (2013) Discussion of treatment trials in intensive care	Comfort Theory was not applied
55	APA PsycInfo	(Polivy and Herman, 1999) Distress and eating: Why do dieters overeat?	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
56	MEDLINE	Kutner et al. (2020) Does Stigma Toward Anal Sexuality Impede HIV Prevention Among Men Who Have Sex With Men in the United States: A Structural Equation Modeling Assessment	Comfort Theory was not applied
57	CINAHL	Ohashi (2014) Effects of early morning care, named 'Comfort upon Rising' care, on postoperative orthopedic ambulation and morning activity	Comfort Theory was not applied
58	CINAHL	Noji et al. (2017) Evaluating cultural competence among Japanese clinical nurses: Analyses of a translated scale	Comfort Theory was not applied
59	CINAHL	Futamura et al. (2008) Evaluation of comfort in bedridden older adults using an air-cell mattress with an automated turning function: measurement of parasympathetic activity during night sleep	Comfort Theory was not applied
60	Web of Science	Yao et al. (2023) Examining Care Planning Efficiency and Clinical Decision Support Adoption in a System Tailoring to Nurses' Graph Literacy: National, Web-Based Randomized Controlled Trial	Comfort Theory was not applied
61	Scopus	West et al. (2005) Expressions of nonabandonment during the intensive care unit family conference	Comfort Theory was not applied
62	MEDLINE	Karp and Hallett (1996) Extracorporeal 'phantom' tics in Tourette's syndrome	Comfort Theory was not applied
63	CINAHL	Hernandez-Ruiz (2020) Feasibility of Parent Coaching of Music Interventions for Children With Autism Spectrum Disorder	Comfort Theory was not applied
64	CINAHL	Mason et al. (2014) Focused and Motivated: A Psychoeducational Group for Parents Living With HIV	Comfort Theory was not applied
65	Scopus	Goodspeed Grant (2009) Food for the Soul: Social and Emotional Origins of Comfort Eating in the Morbidly Obese	Comfort Theory was not applied
66	Embase	Crayon (2017) Functionality: A concept analysis	Comfort Theory was not applied
67	CINAHL	Bernosky de Flores (2010) Human Capital, Resources, and Healthy Childbearing for Mexican Women in a New Destination Immigrant Community	Comfort Theory was not applied
68	CINAHL	Lassche et al. (2013) Identifying Changes in Comfort and Worry Among Pediatric Nursing Students Following Clinical Rotations	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
69	MEDLINE	Leahy (2010) Impact of a limited trial of walking training using body weight support and a treadmill on the gait characteristics of an individual with chronic, incomplete spinal cord injury	Comfort Theory was not applied
70	MEDLINE	Hui et al. (2016) Impact of Oncologists' Attitudes Toward End-of-Life Care on Patients' Access to Palliative Care	Comfort Theory was not applied
71	CINAHL	Stacy et al. (2019) Improving Knowledge, Comfort, and Confidence of Nurses Providing End-of-Life Care in the Hospital Setting Through Use of the CARES Tools	Comfort Theory was not applied
72	Scopus	Zhang et al. (2016) Incidence of allergic rhinitis and meteorological variables: Non-linear correlation and non-linear regression analysis based on Yunqi theory of Chinese medicine	Comfort Theory was not applied
73	CINAHL	Malachi et al. (2016) Institutional factors influencing women's perception of quality of intrapartum care in Naivasha County Hospital labour ward, Kenya	Comfort Theory was not applied
74	CINAHL	Glueckauf et al. (2009) Integrative cognitive-behavioral and spiritual counseling for rural dementia caregivers with depression	Comfort Theory was not applied
75	CINAHL	Chen and Han (2010) Knowledge, attitudes, perceived vulnerability of Chinese nurses and their preferences for caring for HIV-positive individuals~ a cross-sectional survey	Comfort Theory was not applied
76	CINAHL	Noone et al. (2015) Latino Teen Theater: A Theater Intervention to Promote Latino Parent-Adolescent Sexual Communication	Comfort Theory was not applied
77	APA PsycInfo	Le et al. (2023) Latinx sexual minority men, psychological well-being, racial sociopolitical involvement, and discomfort in LGBT community	Comfort Theory was not applied
78	CINAHL	Hansen et al. (2012) Life-sustaining treatment decisions in the ICU for patients with ESLD: A prospective investigation	Comfort Theory was not applied
79	CINAHL	Li et al. (2001) Long-term care services needs for spinal-cord injury patients in Taiwan	Comfort Theory was not applied
80	MEDLINE	Bosch-Alcaraz et al. (2020) Meaning and comfort factors in the paediatric intensive care unit from an adult perspective: a descriptive phenomenological study	Comfort Theory was not applied
81	APA PsycInfo	Harkness and Nofziger (1998) Medical family therapy casebook training in a collaborative context: What we did not know then...we know now	Comfort Theory was not applied
82	Scopus	Reese et al. (2021) Mobile technology-based (mLearning) intervention to enhance breast cancer clinicians' communication about sexual health: A pilot trial	Comfort Theory was not applied

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NO.	Source	Author(s), Year, Title)	Reasons for exclusion
83	Embase	Xu et al. (2014) Modeling intention to participate in face-to-face and online lung cancer support groups	Comfort Theory was not applied
84	Scopus	Välitalo et al. (2017) Morphine Pharmacodynamics in Mechanically Ventilated Preterm Neonates Undergoing Endotracheal Suctioning	Comfort Theory was not applied
85	CINAHL	Stinson and McKeever (1995) Mothers' information needs related to caring for infant at home following cardiac surgery	Comfort Theory was not applied
86	MEDLINE	Bell et al. (2009) Neurocognition, social cognition, perceived social discomfort, and vocational outcomes in schizophrenia	Comfort Theory was not applied
87	MEDLINE	Tappen and Sopcheck (2023) Nursing Home Resident, Family, and Staff Perspectives on Achieving Comfort at End of Life: A Qualitative Study	Comfort Theory was not applied
88	CINAHL	Kelley et al. (2010) Opiniones: end-of-life care preferences and planning of older Latinos	Comfort Theory was not applied
89	APA PsycInfo	Opioid use disorder treatment in rural settings~ The primary care perspective	Comfort Theory was not applied
90	CINAHL	Butts (1998) Outcomes of comfort touch in institutionalized elderly female residents	Comfort Theory was not applied
91	Web of Science	Välitalo et al. (2016) Pain and distress caused by endotracheal suctioning in neonates is better quantified by behavioural than physiological items: a comparison based on item response theory modelling	Comfort Theory was not applied
92	MEDLINE	Khu et al. (2022) Patient-reported intraoperative experiences during awake craniotomy for brain tumors: a scoping review	Comfort Theory was not applied
93	Embase	Rubin et al. (2018) Pharmacists' perspectives on counseling adolescents and young adults on sexually transmitted infection prevention and treatment	Comfort Theory was not applied
94	Embase	Salam et al. (2012) Physical, mental, emotional and social health status of adolescent and youths in Benghazi, Libya	Comfort Theory was not applied
95	Web of Science	Catlin (2018) Pregnancy Loss, Bereavement, and Conscientious Objection in Perioperative Services	Comfort Theory was not applied
96	Embase	Linsky et al. (2016) Prescribers' perceptions of medication discontinuation~ Survey instrument development and validation	Comfort Theory was not applied
97	Embase	Cabaton (2019) Pro-con debate - Regional anaesthesia or wide awake local anaesthesia no tourniquet technique (walant) for hand and wrist surgery	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
98	CINAHL	Lasker and Bedrosian (2001) Promoting acceptance of augmentative and alternative communication by adults with acquired communication disorders	Comfort Theory was not applied
99	CINAHL	Buijs et al. (2003) Promoting participation~ evaluation of a health promotion program for low income seniors	Comfort Theory was not applied
100	CINAHL	Yeo et al. (2023) Public sentiments and the influence of information-seeking preferences on knowledge, attitudes, death conversation, and receptiveness toward palliative care: results from a nationwide survey in Singapore	Comfort Theory was not applied
101	MEDLINE	Maurici et al. (2014) Quality measurement and benchmarking of HPV vaccination services~ a new approach	Comfort Theory was not applied
102	MEDLINE	Loe et al. (2021) Racism as an Adverse Childhood Experience~ An Interactive Workshop to Train Pediatricians to Address Racism in Clinical Care	Comfort Theory was not applied
103	MEDLINE	Taylor et al. (2011) Religious involvement and suicidal behavior among African Americans and Black Caribbeans	Comfort Theory was not applied
104	Embase	Ólafsson et al. (2014) Replacing intrusive thoughts~ Investigating thought control in relation to OCD symptoms	Comfort Theory was not applied
105	MEDLINE	Ritz et al. (2013) Respiratory muscle tension as symptom generator in individuals with high anxiety sensitivity	Comfort Theory was not applied
106	Embase	Corghan et al. (2022) RETAINER II - DEVELOPMENT AND VALIDATION OF A PATIENT REPORTED OUTCOME MEASURE (PROM) FOR INGUINAL HERNIA REPAIR	Comfort Theory was not applied
107	MEDLINE	Lemay and Landreville (2010) Review: verbal agitation in dementia: the role of discomfort	Comfort Theory was not applied
108	APA PsycInfo	Primack et al. (2007) Social marketing meets health literacy: Innovative improvement of health care providers' comfort with patient interaction	Comfort Theory was not applied
109	Embase	Guo et al. (2009) Some Evidence for Multidimensional Biculturalism: Confirmatory Factor Analysis and Measurement Invariance Analysis on the Bicultural Involvement Questionnaire-Short Version	Comfort Theory was not applied
110	CINAHL	Fabrizio and Cardin (2012) Special considerations for endoscopists on PEG indications in older patients	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
111	CINAHL	Rafferty et al. (2015) Spirituality, Religion, and Health: The Role of Communication, Appraisals, and Coping for Individuals Living with Chronic Illness	Comfort Theory was not applied
112	Scopus	Giguere et al. (2018) Tailoring and evaluating an intervention to improve shared decision-making among seniors with dementia, their caregivers, and healthcare providers: Study protocol for a randomized controlled trial	Comfort Theory was not applied
113	Web of Science	Cucciare et al. (2012) Teaching Motivational Interviewing to Primary Care Staff in the Veterans Health Administration	Comfort Theory was not applied
114	MEDLINE	Perez et al. (2022) Technology Acceptance of a Mobile Application to Support Family Caregivers in a Long-Term Care Facility	Comfort Theory was not applied
115	MEDLINE	Schwenk et al. (2019) The Adapted Lifestyle-Integrated Functional Exercise Program for Preventing Functional Decline in Young Seniors: Development and Initial Evaluation	Comfort Theory was not applied
116	Embase	Fang et al. (2012) The association between physical disability and eye care utilization among elderly population in Taiwan: A nationwide cohort study	Comfort Theory was not applied
117	CINAHL	Yavaş et al. (2021) The effect on pain level and comfort of foot massages given by mothers to newborns before heel lancing: Double-blind randomized controlled study	Comfort Theory was not applied
118	CINAHL	Crangle et al. (2017) The effects of attachment and outness on illness adjustment among gay men with prostate cancer	Comfort Theory was not applied
119	CINAHL	Fox-Hill (1999) The experiences of persons with AIDS living-dying in a nursing home	Comfort Theory was not applied
120	AMED	The impact of dreams of the deceased on bereavement: A survey of hospice caregivers	Comfort Theory was not applied
121	Scopus	Tan et al. (2022) The Motivation of Media Users and China's National Media Digitization Construction in the Post-COVID-19 Era	Comfort Theory was not applied
122	AMED	The therapeutic use of doll therapy in dementia	Comfort Theory was not applied
123	Scopus	López-Pérez et al. (2022) Theory of Mind and children's comforting behaviour	Comfort Theory was not applied
124	MEDLINE	Charney et al. (2019) Training community providers in evidence-based treatment for PTSD Outcomes of a novel consultation program	Comfort Theory was not applied
125	CINAHL	Wright (2011) Trauma Resuscitations and Patient Perceptions of Care and Comfort	Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
126	APA PsycInfo	Riggs (2014) Traumatized relationships: Symptoms of posttraumatic stress disorder, fear of intimacy, and marital adjustment in dual trauma couples	omfort Theory was not applied
127	CINAHL	Kaplow (2000) Use of nursing resources and comfort of cancer patients with and without do not resuscitate orders in the intensive care unit	omfort Theory was not applied
128	MEDLINE	Lu (1995) Variables associated with breast self-examination among Chinese women	omfort Theory was not applied
129	CINAHL	Williams et al. (2011) Visual Cues for Person-centered Communication	omfort Theory was not applied
130	Embase	Sarkar et al. (2018) Vitiligo and psychiatric morbidity~ A profile from a vitiligo clinic of a rural-based tertiary care center of eastern India	omfort Theory was not applied
131	MEDLINE	Beckert et al. (2020) What can we learn from patients to improve their non-invasive ventilation experience: 'It was unpleasant; if I was offered it again, I would do what I was told'	omfort Theory was not applied
132	CINAHL	Lessard (2008) Women with spinal cord injuries underwent a process of discomfort, moving towards comfort, and comfort in dealing with their changed bodies	omfort Theory was not applied
133	CINAHL	Chonody et al. (2014) Working with Older Adults: Predictors of Attitudes Towards Ageing in Psychology and Social Work Students, Faculty, and Practitioners	omfort Theory was not applied
134	CINAHL	Kagan (1994) Integrating cancer into a life mostly lived (elderly)	omfort Theory was not applied
135	Embase	Oswald et al. (2022) (143) A QI Project: Transforming Management of Agitation in the Medically Hospitalized Patient Through Resident Education	abstract without information on use of Comfort Theory
136	Embase	Su and Chen (2017) “delayed presence of diaphragmatic electrical activity” as a potential physiologic sign for insufficient assist in neurally adjusted ventilatory assist	abstract without information on use of Comfort Theory
137	Embase	Ashkenazy and Dekeyser Ganz (2018) A concept analysis of discomfort: Differentiating pain and discomfort	abstract without information on use of Comfort Theory
138	Embase	Krott et al. (2021) A novel one-day virtual-live hybrid training course is feasible and has a positive impact on colonoscopy key performance indicators of experienced endoscopy trainees	abstract without information on use of Comfort Theory
139	Embase	Perera et al. (2014) Acute respiratory distress: A rare complication of achlasia	abstract without information on use of Comfort Theory
140	Embase	Elswick et al. (2021) AIR EMBOLISM FROM ENEMA RESULTING IN STROKE	abstract without information on use of Comfort Theory

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
141	Embase	Hefel and Bauer (2022) Allergy and Immunology Advanced Practice Provider Continuing Education Curriculum	Abstract without information on use of Comfort Theory
142	Embase	Frueh et al. (2023) An Interactive Approach to Teaching Neurology Residents about Intellectual and Developmental Disabilities(IDD): Effects of In-Person Versus Virtual Noon Conferences	Abstract without information on use of Comfort Theory
143	Embase	Lewin et al. (2022) AN INTERPROFESSIONAL LONGITUDINAL WELLNESS CURRICULUM TO BUILD RESILIENCY AND FIND JOY IN WORK DURING AND BEYOND THE COVID-19 PANDEMIC	Abstract without information on use of Comfort Theory
144	Embase	Fernet et al. (2017) Between the sheets: Attachment, communication and sexuality during adolescence	Abstract without information on use of Comfort Theory
145	Embase	Harmon and DeFelice (2018) Caregiver perceptions of epinephrine autoinjector training	Abstract without information on use of Comfort Theory
146	Embase	Li et al. (2020a) Clinical efficacy of thalidomide combined with avermectin a in the treatment of generalized pustular psoriasis	Abstract without information on use of Comfort Theory
147	Embase	Malik et al. (2022) COMBINING IMPLEMENTATION SCIENCE AND HUMANCENTERED DESIGN TO EXAMINE USABILITY OF A DEPRESSION SCREENING SHARED DECISION-MAKING TOOL AMONG CORONARY HEART DISEASE PATIENTS	Abstract without information on use of Comfort Theory
148	Embase	Coelho et al. (2018) Construction of a guided imagery program for patients in palliative care units	Abstract without information on use of Comfort Theory
149	Embase	Lipkus et al. (2018) Do resident as teacher programs increase emergency medicine residents comfort level with teaching junior learners~	Abstract without information on use of Comfort Theory
150	Embase	Abumusa et al. (2023) FEMALE SEXUAL DYSFUNCTION~ A KNOWLEDGE AND COMMUNICATION SKILLS CURRICULUM FOR HEALTH CARE PROFESSIONALS	Abstract without information on use of Comfort Theory
151	Embase	Kafka-Peterson and Branom (2018) Interdepartmental collaboration in developing educational program for caring for the high-dose-rate (HDR) brachytherapy patient in the inpatient setting	Abstract without information on use of Comfort Theory
152	Embase	Patel and Breeze (2022) Mixed-methods exploration of trainee wellbeing in relation to out-of-hours staffing: a pilot study	Abstract without information on use of Comfort Theory

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
153	Embase	Nguyen et al. (2021) Piloting a training for medical students to debrief peers after an adverse patient outcome	Abstract without information on use of Comfort Theory
154	Embase	Baker (2019) Stroke care and mental health: Improving patient care with national institutes of health stroke scale certification of registered nurses	Abstract without information on use of Comfort Theory
155	Embase	Lee and Lin (2017) The effect of counselor training program on sexual comfort in Taiwan	Abstract without information on use of Comfort Theory
156	Embase	Lee et al. (2022) The Limitations of Surgical Hierarchy: A Needs Assessment in Peer Feedback Practices Within a Surgical Residency Program	Abstract without information on use of Comfort Theory
157	Embase	Shumeiko et al. (2023) TRAINING AND PRACTICE COLORECTAL CANCER SCREENING AND THE WARTIME UKRAINE	Abstract without information on use of Comfort Theory
158	Embase	Hill et al. (2017) Validation of a behaviorally anchored evaluation form for resident lectures	Abstract without information on use of Comfort Theory
159	Embase	Cooke and Stewart (2013) Wounded healer: A journey of sharing the spiritual burden of suffering (TH314)	Abstract without information on use of Comfort Theory
160	Web of Science	O'Reilly et al. (2023) "Is Everybody Comfortable?" Thinking Through Co-design Approaches to Better Support Girls' Physical Activity in Schools	Not healthcare field
161	AMED	A Novel Theory for Nursing Education~ Holistic Comfort	Not healthcare field
162	CINAHL	Gallagher and Long (2011) Advanced dementia care: demystifying behaviors, addressing pain, and maximizing comfort	Not healthcare field
163	Scopus	Carrington et al. (2007) Auditing stories about discomfort: Becoming comfortable with comfort theory	Not healthcare field
164	APA PsycInfo	Townsend et al. (2021) Difference-education improves first-generation students' grades throughout college and increases comfort with social group difference	Not healthcare field
165	CINAHL	Mazerolle et al. (2011) Evidence-Based Medicine and the Recognition and Treatment of Exertional Heat Stroke, Part II: A Perspective From the Clinical Athletic Trainer	Not healthcare field
166	Scopus	Malins and Whitty (2022) Families' comfort with LGBTQ2s+ picturebooks: Embracing children's critical knowledges	Not healthcare field
167	CINAHL	Goldsworthy et al. (2005) Goal orientation and its relationship to academic success in a laptop-based BScN program	Not healthcare field

NO.	Source	Author(s), Year, Title	Reasons for exclusion
168	Scopus	March and McCormack (2009) Nursing theory-directed healthcare: Modifying kolcaba's comfort theory as an institution-wide approach	Not healthcare field
169	Embase	Güvenbaş and Polay (2021) Post-occupancy evaluation: A diagnostic tool to establish and sustain inclusive access in Kyrenia Town Centre	Not healthcare field
170	MEDLINE	Qi and Guan (2019) Quantitatively mining and distinguishing situational discomfort grading patterns of drivers from car-following data	Not healthcare field
171	MEDLINE	Stamps (2008) Some findings on prospect and refuge I	Not healthcare field
172	Scopus	Ortuno et al. (2017) Understanding by looking through prisms	Not healthcare field
173	Scopus	Lu et al. (2019) A new butterfly femoral artery compression device vs manual compression for hemostasis of femoral artery puncture point after peripheral endovascular interventions	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
174	Web of Science	Liu and Peng (2022) Analysis of Risk Factors for Postoperative Lower Extremity Deep Venous Thrombosis and its Treatment and Nursing	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
175	Web of Science	Melo et al. (2017) Cultural adaptation and reliability of the General Comfort Questionnaire for chronic renal patients in Brazil	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
176	Scopus	Effect of whole course seamless nursing mode on patients with chronic infectious wounds	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
177	Web of Science	Zhao et al. (2021) Factors That Influence Compliance to Long-Term Remote Ischemic Conditioning Treatment in Patients With Ischemic Stroke	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
178	Scopus	Xie et al. (2022) Pain Management of Hallux Valgus Surgery Is Achieved by Cocktail Therapy	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
179	Web of Science	Westbrook et al. (1992) Position change Effects on electrocardiograms in COPD patients	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
180	Scopus	Yu et al. (2017) The impact of the predictive nursing education process on degree of comfort and quality of life for patients in the oncology department	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
181	Scopus	Deng et al. (2023) Ultrasound-Guided Thoracic Paravertebral Block Using Paraventricular Oblique Sagittal (POS) Approach for the Treatment of Acute Herpes Zoster: A Two-Blind Randomized Controlled Trial	Comfort questionnaire without a reference indicating from Kolcaba's Comfort Theory
182	CINAHL	Allen et al. (2008) Analysis of the pediatric outcomes data collection instrument in ambulatory children with cerebral palsy using confirmatory factor analysis and item response theory methods	Non-adult participants
183	Scopus	Kolcaba and DiMarco (2005) Comfort Theory and its application to pediatric nursing	Non-adult participants
184	Scopus	Zhang et al. (2023) Design and application of a perioperative therapeutic play program for school-aged children with fractures based on comfort theory	Non-adult participants
185	Scopus	Abo-S-Haghi et al. (2023) Effect of a care programme based on the comfort theory on physiological indicators in paediatric candidates for endoscopy: A randomised clinical trial	Non-adult participants
186	Web of Science	Pazarcikci and Efe (2023) Effects of Comfort-Oriented Nursing Care Based on the Comfort Theory on Perioperative Anxiety and Fear in Children Undergoing Surgical Circumcision: RCT	Non-adult participants
187	Scopus	Zendrato (2023) Impact of Dance Therapy on Comfort Based on Kolcaba's Nursing Theory in Children with Cerebral Palsy	Non-adult participants
188	APA PsycInfo	Heinze and Horn (2009) Intergroup contact and beliefs about homosexuality in adolescence	Non-adult participants
189	Scopus	Khaleghi et al. (2023) The effect of the comfort care model on distress, pain, and hemodynamic parameters in infants after congenital heart defect surgery	Non-adult participants
190	MEDLINE	Solnik et al. (2013) End-state comfort and joint configuration variance during reaching	Kolcaba's Comfort Theory was not applied
191	Web of Science	Mansfield et al. (2020) Integrating and applying models of comfort	Kolcaba's Comfort Theory was not applied

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
192	MEDLINE	Vera-Catalán et al. (2019) A new tool to assess patients' comfort during hospitalization: The Hospital Discomfort Risk questionnaire	Kolcaba's Comfort Theory was not applied
193	MEDLINE	Meneguín et al. (2021) Psychometric analysis of the comfort scale for family members of people in critical health condition	Kolcaba's Comfort Theory was not applied
194	Scopus	Verklan (2020) To Comfort Always - One Role of the Nurse and Midwife	Kolcaba's Comfort Theory was not applied
195	MEDLINE	Freitas et al. (2015) Validation of the Comfort scale for relatives of people in critical states of health	Kolcaba's Comfort Theory was not applied
196	Embase	Gu et al. (2022) Effect of New Nursing on Patients with Acute Cerebral Infarction	retracted paper
197	Scopus	Pazarcikci (2022) Retracted: Effect of care programme based on Comfort Theory on reducing parental anxiety in the paediatric day surgery: Randomised controlled trial (Journal of Clinical Nursing, (2022), 31, 7-8, (922-934), 10.1111: jocn.15945)	retracted paper
198	Web of Science	Pazarcikci and Efe (2022a) RETRACTED: Effect of care programme based on Comfort Theory on reducing parental anxiety in the paediatric day surgery: Randomised controlled trial (Retracted article. See vol. 31, pg. 1721, 2022)	retracted paper
199	Web of Science	Pazarcikci and Efe (2022b) RETRACTION: Effect of care programme based on Comfort Theory on reducing parental anxiety in the paediatric day surgery: Randomised controlled trial (Retraction of Vol 31, Pg 922, 2022)	retracted paper
200	Web of Science	Wu et al. (2022) Review on Comfort Nursing Interventions for Patients Undergoing Neurosurgery and General Surgery	retracted paper
201	Scopus	Kolcaba (1991) A Taxonomic Structure for the Concept Comfort	the Comfort Theory itself without application evidence
202	MEDLINE	Kolcaba (1995b) Comfort as process and product, merged in holistic nursing art	the Comfort Theory itself without application evidence
203	Web of Science	Kolcaba (1992) Holistic comfort: operationalizing the construct as a nurse-sensitive outcome	the Comfort Theory itself without application evidence

NO.	Source	Author(s), Year, Title)	Reasons for exclusion
204	Scopus	Kolcaba (1995a) The Art of Comfort Care	The Comfort Theory itself without application evidence
205	Scopus	Kolcaba (2011) Comfort	The old edition of a book of which the latest edition was included
206	Scopus	Kolcaba (2015) Comfort	The old edition of a book of which the latest edition was included
207	Scopus	Ojong et al. (2022) Midwives' utilization of nonpharmacological pain relief measures for labor pain management: A descriptive cross-sectional study	Comfort theory without a recognisable reference
208	Web of Science	Melo et al. (2019) Content validation of the Brazilian version of the General Comfort Questionnaire	Not published in English

Reasons for exclusion:

- Comfort Theory was not applied: n=134;
- Abstract without information on use of Comfort Theory: n=25;
- Not healthcare field: n=13;
- Comfort questionnaire without a reference indicating from Kolcaba' Comfort Theory: n=9;
- Non-adult participants: n=8;
- Kolcaba's Comfort Theory was not applied: n=6;
- Retracted paper: n=5;
- The Comfort Theory itself without application evidence: n=4;
- The old edition of a book of which the latest edition was included: n=2;
- Comfort theory without a recognisable reference: n=1;
- Not published in English: n =1.

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Supplemental Table S6. Seven categories of Comfort Theory application in healthcare (n = 359)

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Interventions underpinned by Comfort Theory as the theoretical framework	56	2018 - 2023: n = 25, 1992 - 2017: n = 31.	USA: n = 24, China: n = 20, Turkey: n = 6, Portugal: n = 3, Indonesia: n = 2, Canada: n = 1.	Hospital: n= 45, Others: n = 11	Genitourinary system diseases: n = 9, Neoplasms: n = 8, Digestive system diseases: n = 5, Palliative care: n = 6, Pregnancy, childbirth or the puerperium: n = 1, Nervous system diseases: n = 1, Critical care patients: n = 3, Hearing people: n = 3, Circulatory system diseases: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 2, Patients with pain: n = 2, Respiratory system diseases: n = 1, Chemotherapy patients: n = 1.	Quasi-experimental study: n = 29, RCT: n = 18, MMS: n = 9.
Interventions evaluated by instruments derived from Comfort Theory	96	2018 - 2022: n = 61, 1992 - 2017: n = 35.	China: n = 72, Turkey: n = 16, Iran: n = 4, USA: n = 1, Australia: n = 1, Thailand: n = 1, Malaysia: n = 1.	Hospital: n = 93, Nursing home: n = 2, School: n = 1.	Neoplasms: n = 21, Circulatory system diseases: n = 16, Pregnancy, childbirth or the puerperium: n = 10, Digestive system diseases: n = 8, Genitourinary system diseases: n = 7, Musculoskeletal system or connective tissue diseases: n = 6, Surgical or post-surgical status: n = 6, Respiratory system diseases: n = 4, Injury, poisoning or certain other consequences of external causes: n = 4, Bedridden patients: n = 3,	RCT: n = 65, Quasi-experimental study: n = 29, MMS: n = 1, CSS: n = 1.

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Descriptive or observational studies of services or practices underpinned by Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19	USA: n = 19, China: n = 10, Pakistan: n = 2, Brazil: n = 1, Chile: n = 1, Singapore: n = 1.	Hospital: n = 23, Others: n = 2.	Nervous system diseases: n = 2, Elders: n = 2, Endocrine, nutritional or metabolic diseases: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 1, Central infectious or parasitic diseases: n = 1, Ear or mastoid process diseases: n = 1, Faecal incontinence: n = 1, Unspecified inpatient: n = 2. Neoplasms: n = 8, Healthy people: n = 6, Circulatory system disease: n = 3, Palliative care: n = 3, Respiratory system diseases: n = 2, Elders: n = 2, Pregnancy, childbirth or the puerperium: n = 2, Surgical or post-surgical status: n = 1, Genitourinary system diseases: n = 1, Neurocognitive disorders: n = 1, Injury, poisoning or certain other consequences of external causes: n = 1, Critical care: n = 1, Post traumatic loss of limb patients: n = 1, Patients with pain: n = 1.	Case study: n = 13, Service description: n = 10, CCS: n = 6, Quasi-experimental study: n = 2, MMS: n = 2, Cohort study: n = 1.
Surveys using questionnaires derived from Comfort Theory	71	2018 - 2023: n = 29, 1992 - 2017: n = 42.	China: n = 29, USA: n = 15, Turkey: n = 12, Brazil: n = 7,	Hospital: n = 56, Others: n = 15.	Neoplasms: n = 12, Genitourinary system diseases: n = 8, Pregnancy, childbirth or the puerperium: n = 7, Healthy people: n = 7, Surgical or	CSS: n = 51 (in which online survey: n = 5), Longitudinal study: n = 16, MMS: n = 3,

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
			Korea: n = 2, Austria + Germany: n = 1, Colombia: n = 1, Jordan: n = 1, Iran: n = 1, Israel: n = 1, Thailand: n = 1.		post-surgical status patients, Digestive system diseases: n = 1, Palliative care: n = 5, Circulatory system diseases: n = 4, Nervous system diseases: n = 3, Critical care: n = 3, Elder patients and nursing: n = 3, Urinary incontinence patients: n = 2, Respiratory system diseases: n = 2, Injury, poisoning or trauma in other consequences of external causes: n = 1, Certain infectious or parasitic diseases: n = 1, Multiple system: n = 1, Unspecified: n = 1.	Cohort study: n = 1.
Questionnaires development or adaption based on Comfort Theory	34	2018 - 2023: n = 15, 1992 - 2017: n = 19.	China: n = 12, Austria + Germany: n = 4, Brazil: n = 4, Portugal: n = 4, Turkey: n = 4, USA: n = 3, Spain: n = 2, Indonesia: n = 1.	Hospital: n = 28, Others: n = 6.	Neoplasms: n = 5, Genitourinary system diseases: n = 5, Healthy people: n = 5, Diseases of the musculoskeletal system or connective tissue: n = 4, Surgical or post-surgical status patients: n = 4, Nervous system disease: n = 3, Circulatory system diseases: n = 2, Palliative care: n = 2, Mental, behavioural or neurodevelopmental disorders: n = 1, Pregnancy, childbirth or the puerperium: n = 1, Unspecified participants: n = 2.	Questionnaire development: n = 15, Questionnaire cross-cultural adaption: n = 8, Questionnaire psychometric test (reliability and validity): n = 7, Questionnaire revalidation in populations: n = 2, Questionnaire validation feasibility study: n = 2.

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
Qualitative studies interpreted by Comfort Theory	21	2018 - 2023: n = 13, 1992 - 2017: n = 8.	Brazil: n = 8, USA: n = 4, Australia: n = 1, Austria: n = 1, China: n = 1, Norway: n = 1, Portugal: n = 1, Sweden: n = 1, Wales: n = 1, Indonesia: n = 1, Ecuador: n = 1.	Hospital: n = 14, Others: n = 7.	Patients and staff members: n = 4, Circulatory system cases: n = 3, Palliative care: n = 2, Healthy people: n = 2, Pregnancy, childbirth or the puerperium: n = 2, Traumas: n = 1, Nervous system diseases: n = 1, Elder patients: n = 1, Surgical or post-surgical status: n = 1.	Qualitative study: n = 6, Descriptive qualitative study: n = 5, Phenomenological study: n = 3, Reflective qualitative study: n = 2, Case study: n = 2, Explorative qualitative study: n = 1, Collective subject discourse: n = 1. Secondary qualitative analysis: n = 1.
Literature reviews and discussion about Comfort Theory use	47	2018 - 2023: n = 19, 1992 - 2017: n = 27.	USA: n = 18, China: n = 11, Portugal: n = 7, Brazil: n = 5, Canada: n = 2, Indonesia: n = 1, Kazakhstan: n = 1, Spain: n = 1, Turkey: n = 1.	N/A	N/A	Literature review: n = 23 (which included: integrative review: n = 4, concept analysis: n = 3, systematic review: n = 2, theory derivation method: n = 1, scoping review: n = 1, psychometric review: n = 1.), Literature review and discussion paper: n = 11, Literature review

Theory application category	N	Year of publication	Country of origin	Settings	Participants	Design/ methods
						and discussion as a book chapter: n = 6, Reflection: n = 6, Literature review and discussion as a slide presentation: n = 1.

CCS: case-controlled study; CSS: cross-sectional study; MMS: mixed methods study; N/A: Not applicable; RCT: randomized controlled trial; USA: United states of America.
The sum for column of year was 358 as one document had not this information.

Supplemental Table S7

Supplemental Table S7-1 Comfort measures reported in papers

NO.	Comfort measures	Category			Total
		I	II	III	
1	music therapy	13	11	7	31
2	position intervention	7	7	6	20
3	massage	8	5	6	19
4	health education	8	11	0	19
5	TCM	3	13	0	16
6	therapeutic touch	6	2	2	10
7	cold and hot therapy	6	3	0	9
8	aromatherapy	5	1	3	9
9	guided imagery	6	2	0	8
10	PMR	2	2	0	4
11	exercise	0	4	0	4
12	coaching	3	0	0	3
13	cognitive strategies	2	0	0	2
14	positive connotation	2	0	0	2
15	foot reflexology	0	2	0	2
16	pet visit	1	0	0	1
17	silent therapy	1	0	0	1
18	mindfulness	1	0	0	1
19	still point induction	1	0	0	1
20	Robusta coffee	1	0	0	1
21	shower	0	1	0	1
22	doll intervention	0	1	0	1
23	labour dance	0	1	0	1
24	paradoxical intention therapy	0	1	0	1
25	art therapy	0	1	0	1
26	yoga	0	1	0	1

TCM: traditional Chinese medicine; PMR: progressive muscle relaxation

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Supplemental Table S7-2 Comfort and related variables measured in papers

NO.	Variables	Category			Total
		I	II	III	
1	comfort	40	92	9	141
2	pain	10	31	3	44
3	satisfaction	9	19	3	31
4	anxiety	8	20	2	30
5	depression	4	6	1	11
6	LoHS	0	11	0	11
7	sleep quality	3	4	1	8
8	QoL	1	5	1	7
9	constipation	0	7	0	7
10	nausea and vomiting	0	4	1	5
11	loss of appetite	0	4	0	4
12	stress	3	0	0	3
13	swelling	0	3	0	3
14	difficulty urinating	0	3	0	3
15	costs	0	3	0	3
16	urine leakage	2	0	0	2
17	well-being	1	0	0	1
18	delirium	0	0	1	1

LoHS: length of hospital stay; QoL: quality of life

Seven categories of theory application:

Category I: interventions underpinned by Comfort Theory as the theoretical framework

Category II: interventions evaluated by instruments derived from Comfort Theory

Category III: descriptive or observational studies of services or practices underpinned by Comfort Theory

Category IV: surveys using questionnaires derived from Comfort Theory

Category V: questionnaires development or adaption based on Comfort Theory

Category VI: qualitative studies interpreted by Comfort Theory

Category VII: literature reviews and discussion about Comfort Theory use

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Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Line 1-2, Page 1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Line 22-50, Page 1-2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Line 73-103, Page 2-3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Line 104-112, Page 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	L144-145 Page 4 Not registered
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Line 166-179, Page 4
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Line 124-145, Page 3-4; Supplemental table S1.
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Line 142-145, Page 3-4. Supplemental table S2.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Line 153-165, Page 4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Line 180-197, Page 4
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Line 180-197, Page 4-5
Critical appraisal of	12	If done, provide a rationale for conducting a critical	Not appraised



SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
individual sources of evidence§		appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Line 198-213, Page 5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Line 216-222, Figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Line 219-221, Supplemental table S4
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not appraised
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Supplemental table S4.
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Line 223-365, Page 5-11, Figure 2-4, Table 1, Table S6.
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	Line 367-440, Page 11-12
Limitations	20	Discuss the limitations of the scoping review process.	Line 442-449, Page 13
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Line 451-460, Page 13
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Line 466-467, Page 13

JB1 = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018;169:467-473. doi: 10.7326/M18-0850.



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