BMJ Open

Nurse retention in peri- and post-COVID-19 work environments: a scoping review of factors, strategies and interventions

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To cite: Buckley L, McGillis Hall L, Price S, *et al*. Nurse retention in peri- and post-COVID-19 work environments: a scoping review of factors, strategies and interventions. *BMJ Open* 2025;**15**:e096333. doi:10.1136/bmjopen-2024-096333

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2024-096333).

Received 08 November 2024
Accepted 18 February 2025

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ABSTRACT

Objectives The COVID-19 pandemic highlighted the deterioration of nurses' working conditions and a growing global nursing shortage. Little is known about the factors, strategies and interventions that could improve nurse retention in the peri- and post-COVID-19 period. An improved understanding of strategies that support and retain nurses will provide a foundation for developing informed approaches to sustaining the nursing workforce. The aim of this scoping review is to investigate and describe the (1) factors associated with nurse retention, (2) strategies to support nurse retention and (3) interventions that have been tested to support nurse retention, during and after the COVID-19 pandemic.

Design Scoping review.

Data sources This scoping review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews. MEDLINE, Embase, CINAHL and Scopus databases were searched on 17 April 2024. The search was limited to a publication date of '2019 to present'.

Eligibility criteria Qualitative, quantitative, mixed-methods and grey literature studies of nurses (Registered Nurse (RN), Licenced Practical Nurse (LPN), Registered Practical Nurse (RPN), Publlic Health Nurse (PHN), including factors, strategies and/or interventions to support nurse retention in the peri- and post-COVID-19 period in English (or translated into English), were included. Systematic reviews, scoping reviews and meta-syntheses were excluded, but their reference lists were hand-screened for suitable studies.

Data extraction and synthesis The following data items were extracted: title, journal, authors, year of publication, country of publication, setting, population (n=), factors that mitigate intent to leave (or other retention measure), strategies to address nurse retention, interventions that address nurse retention, tools that measure retention/turnover intention, retention rates and/or scores. Data were evaluated for quality and synthesised qualitatively to map the current available evidence.

Results Our search identified 130 studies for inclusion in the analysis. The majority measured some aspect of nurse retention. A number of factors were identified as impacting nurse retention including nurse demographics, safe staffing and work environments, psychological well-being and COVID-19-specific impacts. Nurse retention strategies included ensuring safe flexible staffing and quality work environments, enhancing organisational mental health and wellness supports, improved leadership and communication, more professional development and mentorship opportunities, and better compensation and incentives. Only nine interventions that address nurse retention were identified.

Conclusions Given the importance of nurse retention for a variety of key outcomes, it is imperative that nursing leadership, healthcare organisations and governments work to develop and test interventions that address nurse retention.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This scoping review comprehensively explores key aspects of nurse retention, including factors influencing retention, proposed strategies to improve retention, and interventions that have been tested, providing an in-depth understanding of the topic.
⇒ The review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews guidelines, ensuring a systematic, transparent and replicable approach, thus strengthening the study's credibility and reproducibility.
⇒ The search was comprised of studies in, or translated to, English which limits the inclusion of relevant studies published in other languages.
⇒ The number of published interventional studies may be moderated given the limited time between the start of the pandemic and the time of this search.
⇒ Due to the heterogeneity of retention measurement definitions and tools, accurate comparisons across studies were not possible.

INTRODUCTION

The COVID-19 pandemic affected health systems globally, created new issues and uncovered and exacerbated existing challenges for the nursing workforce. As integral members in the provision of safe, quality patient care, nurses have faced work circumstances and job demands that have diminished their

job satisfaction and their desire and capacity to remain nurses.[1] These circumstances and conditions have escalated the already concerning global nursing shortage, with nurses increasingly citing burnout, compassion fatigue and poor work environments as drivers for their intent to leave.[2 3]

The nurse retention crisis has both financial and human implications for healthcare delivery. A recent study reported a direct relationship between how well hospitals were staffed with nurses and their number of patient deaths from COVID-19.[4] As well, turnover is estimated to cost a hospital between US$11 000 and US$90 000 per bedside nurse,[5] and the adverse consequences of the nursing shortage continue to grow.

This worsening crisis has pushed governments, policymakers and health systems administrators to understand the complexities of nurse retention and develop strategies and solutions to renew the nursing workforce.[6 7] However, it is yet to be seen if previously identified factors, strategies and interventions for nurse retention are effective in the peri- and post-COVID-19 work environment. Due to the altered landscape of the healthcare system emerging from the pandemic, an improved understanding of strategies implemented to support and retain nurses is needed to strengthen and sustain the nursing workforce.

Although nurse retention is globally recognised as a crucial work outcome, the concept remains ambiguous in the literature.[8] Actual nurse retention, the number of nurses that stay in their position, is difficult to directly measure. Therefore, other related measures that have strong but imperfect correlations to retention, such as turnover or intentions to leave/stay, are often used interchangeably.[9] Additionally, these measures are applied to heterogeneous contexts (job, organisation or profession) which further contributes to the ambiguity of the concept and limits generalisation across studies. Scoping reviews are conducted to map the breadth and depth of relevant literature on a research topic, identify knowledge gaps and collate key evidence.[10] The purpose of this scoping review is to explore what is known about nurse retention in peri- and post-COVID-19 work environments and gather relevant information to inform healthcare leaders, organisations and policymakers. More specifically, the research questions for this scoping review aim to investigate and describe the (1) factors associated with, (2) strategies suggested to support and (3) interventions already tested to support nurse retention, during and after the COVID-19 pandemic. This scoping review will serve as an organised collation of relevant factors, strategies and interventions to reduce nurse turnover.

METHODS

The methodology outlined by Arksey and O'Malley and advanced by Levec *et al* was used as a framework for this scoping review.[10 11] This framework consists of six stages: (1) identifying the research question, (2) the scoping search process, (3) selecting studies, (4) extracting data, (5) summarising and reporting results, and (6) consultation with stakeholders for knowledge translation. Step 6 will be completed after the publication of this review.

Protocol and registration

This scoping review was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews.[12] The protocol was registered on Open Science Framework on 4 April 2024 and can be accessed at https://doi.org/10.17605/OSF.IO/XWH45. Additionally, the protocol was published in September 2024.[13] No deviations to the methods from the published protocol have been made.

Information sources and scoping search strategy

In consultation with an experienced academic librarian, the following electronic databases were searched on 17 April 2024, limited to a publication date of '2019 to present' to ensure the studies occurred during or after the COVID-19 pandemic: MEDLINE, Embase, CINAHL and Scopus. Main search concepts included "nurses", "retention" and "COVID-19 pandemic". As this article aims to fully explore the concept of retention, we have also included search terms intrinsically related to "turnover" to capture different perspectives of the same underlying phenomena. Similarly, we also included the terms "intent to stay", "intent to leave" and "quitting" to mitigate the risk of excluding relevant studies indexed under related terms. All electronic database search strategies are provided in online supplemental appendix A. We excluded studies focused on advanced practice nurses, nurse educators and nurse managers as these nursing populations had different responsibilities from bedside nurses, particularly during the COVID-19 pandemic.

Eligibility criteria

All qualitative, quantitative, mixed-methods studies, professional commentaries and governmental/organisational reports in English (or translated into English) that examined the factors, strategies or interventions associated with retention of nurses in the peri- and post-COVID-19 period were included in the study selection process. As this is a scoping review, it includes data-based and non-data-based papers. Dissertations were excluded but their corresponding publications were screened for inclusion. Meta-analyses and other reviews were excluded, but studies in their reference lists were hand-screened for inclusion criteria.

Selection of sources of evidence

All citations retrieved from the four databases were uploaded into *Covidence th* (Covidence systematic review software, Veritas Health Innovation, Melbourne, Australia) and duplicates removed. Titles and abstracts were independently reviewed by the research team (LB, LMH, SP, SV, CM) against the criteria for inclusion in a blinded process where agreement was required by two independent reviewers. Any disputes were resolved by a

third research team member. The remaining citations were reviewed as full-text articles.

Data charting process

The following data items were extracted from the included articles and entered into a Microsoft Excel spreadsheet: title, journal, authors, year of publication, country of publication, setting, population (n=), factors that mitigate intent to leave (or other retention measure), strategies to address nurse retention, interventions used to address nurse retention, tool used to measure retention/turnover intention, retention prevalence and/or scores. Strategies were defined as recommendations or proposals in the literature that were not explicitly tested through interventional study designs. These included expert opinions, organisational guidelines or theoretical frameworks aimed at addressing nurse retention. Interventions were defined as actions or programmes explicitly tested using interventional methodology, such as quasi-experimental designs, or other structured approaches (QI projects, case reports, etc) where outcomes were measured to assess their impact on nurse retention. Extraction was performed by one research team member (LB) and reviewed and confirmed by additional team members (LMH, SP, SV, CM).

Synthesis of results

A quantitative synthesis specific to intent to leave was completed based on the articles that included intent to leave measurements. For all other study aims, data were synthesised qualitatively to map the current evidence. Factors and strategies associated with nurse retention were synthesised using content analysis. Interventions to address nurse retention were grouped together by similar types, descriptively summarising the specific interventions and results.

Quality appraisal

Applicable qualitative, quantitative and mixed-methods studies were evaluated using the Mixed Methods Appraisal Tool (MMAT) V.2018.[14] The MMAT was selected for its ability to evaluate different types of research designs within the same framework. Each study was appraised independently by two different reviewers (LB, LMH), and any discrepancies were resolved by a third team member. The quality criteria were converted to a percentage (0–100%) where a higher percentage indicates a higher methodological quality.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

RESULTS

Search results and included studies

The initial database search generated 2541 papers. After deduplication, 1659 titles and abstracts were screened, and 264 papers were assessed for eligibility at the full-text level. After applying the inclusion and exclusion criteria, 130 studies were retained for analysis (figure 1). The characteristics of the included studies (eg, sample description, study design, retention measurement scale and result, and MMAT score) are provided in online supplemental table 1. The number of nurses who participated in observational or experimental-based studies ranged from 16 to 15 738.

The majority (37%) of the selected studies were published in 2023 (n=48), followed by 2022 (n=40), 2021 (n=25) and 2024 (n=17). The most common study design was cross-sectional (n=94), with 12 studies being some form of a report, six qualitative, six editorials, five mixed methods, three quality improvement or programme evaluations and one each of a sequential survey design, interventional, case-control and multifactorial analysis (online supplemental table 2). The studies came from 32 different countries, with the majority coming from the USA (n=38), followed by China (n=12), Canada (n=11), Iran (n=8), the Philippines (n=6), the UK (n=5), Korea (n=5), Japan (n=5), Australia (n=4), Turkey (n=4), Egypt (n=3), Lebanon (n=2), Saudi Arabia (n=2), Taiwan (n=2), Finland (n=2), Greece (n=2), India (n=2), Romania (n=2), Belgium (n=2), plus 13 other countries where only one study was conducted. Of note, 38% (49/130) of all studies came from North America and 78% (7/9) of interventional studies came out of the USA.

Quality appraisal

Of the included studies, 110 (85%) could be appraised for methodological quality using the MMAT as outlined in the quality appraisal results displayed in online supplemental table 1.[14] Within the selected 110 studies, 97 were quantitative (descriptive), 2 were quantitative (non-randomised), 6 were qualitative and 5 were mixed methods. There were no randomised quantitative studies. In the descriptive quantitative studies (97/110), the scores ranged from 2 to 5 (out of 5), with a mean of 4.83. The main weaknesses of these studies were lack of clarity around their sampling strategies and risk of non-response bias. In the qualitative studies (6/110), the quality scores were all 5 out of 5. For the mixed-methods studies (5/110), the quality scores ranged from 11 to 14 (out of 15), with a mean of 12.8. The main weaknesses of the mixed-methods studies were limited attention to addressing the divergences between quantitative and qualitative results and lack of rationale for using mixed methods. When collated by group, the papers looking at 'factors' ranged from 40% to 100%. Four out of the nine papers looking at interventions could be scored and ranged from 80% to 100%. Most (15/20) of the strategy papers could not be scored with the MMAT due to their study designs not meeting criteria, and out of the five that could be scored, scores ranged from 93% to 100%. As this is a scoping review, both data-based and non-data-based articles were included to capture the valuable insights

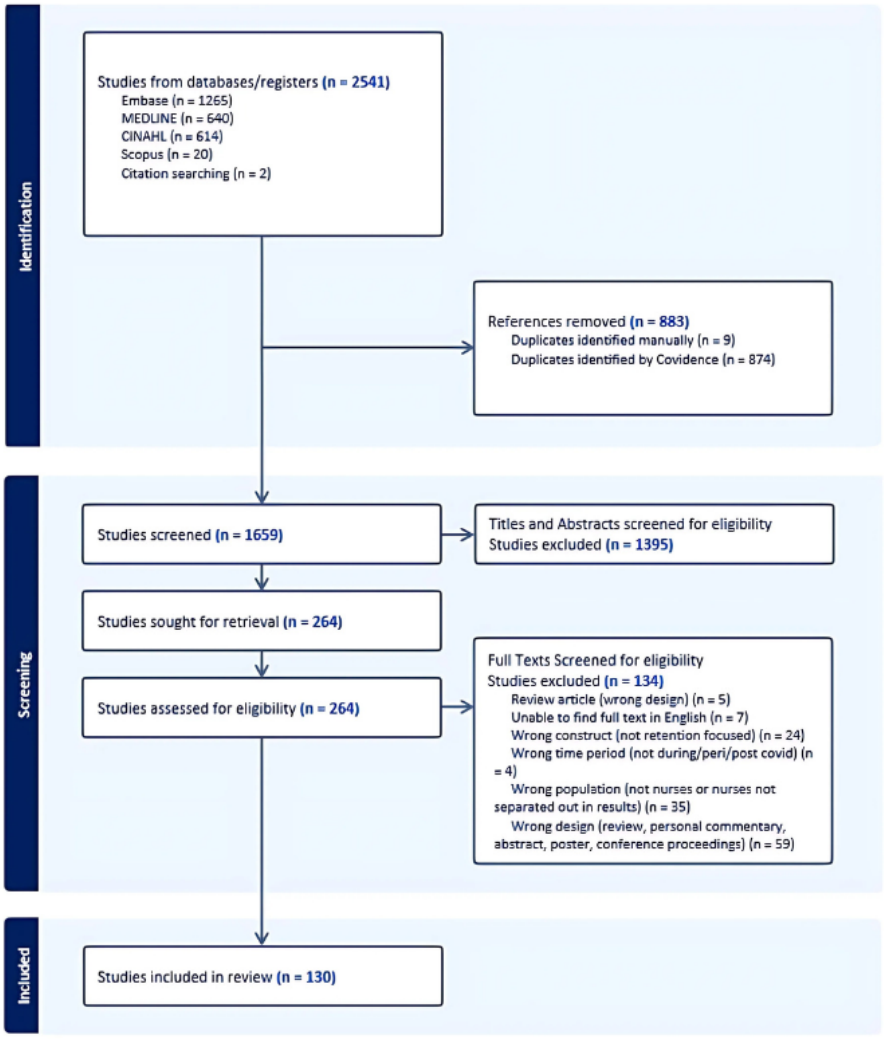

Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses diagram.

contributing to understanding the landscape of strategies being proposed for improving nurse retention.

Retention and turnover rates

The majority of studies (n=107, 82%) included some measurement of nurse turnover (online supplemental table 1). Different constructs were used to assess retention. 86 studies measured some form of intent to leave/quit/turnover, 12 studies measured some form of intent to stay, 7 studies directly measured turnover and only 2 studies directly measured retention. Most literature (n=101; 90%) focused on intent to leave from some aspect of a job position in an organisation (ie, intent to leave the unit, a specific job, a work specialty, the organisation itself), while fewer specifically reported on intent to leave the profession (n=11; 10%) (online supplemental table 1). Tools used to measure retention ranged from standardised questionnaires like the Turnover Intention Scale (TIS-6) to self-developed questionnaires and binary single-item questions. Out of the 13 studies that used the 6-item TIS-6, 6 reported means (m=2.5–17.34), 5 reported percentages (32–72.8%) and 2 studies did not directly report results (online supplemental table 1). Due to the diversity of retention constructs and measurement tools, a numerical meta-analysis of all results is not possible.

Factors associated with nurse retention

Of the included studies, the majority 104 (80%) focused on factors associated with nurse retention (online supplemental table 2). These were categorised into four areas: (1) personal and demographic factors (n=31); (2) safe staffing and quality work environments (n=55); (3) psychological well-being (n=67) and 4) COVID-19-specific impacts (n=20).

Personal and demographic factors

31 studies identified personal and/or demographic factors, including nurses' age, level of work experience, gender, marital status, level of education, being a parent and physical health. Six studies found turnover intention was higher for younger nurses,[15–20] while one reported a higher correlation in turnover intention with older nurses.[21] Medvec *et al* found intent to leave was the highest in nurses in the youngest age categories, followed by those at or above age 65.[16] The results examining years of experience and turnover intent were mixed almost equally.

Seven studies found that increased years of experience was correlated with intent to leave.[2 21–26] However, Shayestehazar *et al* found work experience had a significant positive relationship with job retention,[27] and five studies found that fewer years of experience was associated with intention to quit.[23 28–31] Five studies found turnover intention was higher in women than men.[17 22 23 32 33] Marital status differences were noted, with four studies reporting turnover intentions were stronger for single nurses,[17 34–36] while one reported that unmarried nurses were more likely to intend to stay in nursing.[37] Two described married nurses reporting higher turnover intention,[38 39] and one found divorced nurses had higher intention to stay over married and unmarried nurses.[40] Education attained was also notable, with two studies finding turnover intention to be higher in bachelor's and master's prepared nurses compared with diploma nurses.[41 42] However, Han *et al* found turnover intention was higher in nurses with associate and bachelor's degrees than in those with master's degrees.[17] Finally, one study found that nurses who had no children were more likely to exhibit intent to stay[37] and one that nurses who reported better physical health were less likely to report intent to leave the profession.[43]

Safe staffing and quality work environments

55 studies identified safe staffing and work environment factors associated with nurse retention. 10 of these studies identified safe staffing, scheduling and compensation as factors associated with turnover intention: inadequate staffing,[16 22 44] high patient/nurse ratios and scheduling of mandatory overtime[16] were all correlated with nurses' intention to quit. Similarly, changes in work schedules, including working long shifts with quick turnarounds,[45] working more hours per week (both scheduled and overtime hours)[23 34] and working more night shifts[23 46] contributed to turnover intention. Pay satisfaction was negatively related to turnover intention[47 48] while financial incentives were a motivational factor for continuing to work.[31]

Many other aspects of the work environment were also identified as influencing nurse retention, including the physical environment, general workload and job stress, work engagement, incivility and violence, leadership communication and support, quality of work-life and job satisfaction (online supplemental table 2).

A positive work environment was consistently found to reduce nurses' intent to leave.[16 49–54] Conversely, factors such as changing workplaces or working in multiple places,[30 55] as well as working in inpatient settings providing direct patient care, particularly in the intensive care unit or emergency department,[2 23 56–58] were associated with increased turnover intention. Nurses who felt unable to provide patient care that aligned with their values were more likely to leave their jobs than those who felt they could.[59] One study found that nurses who worked on units that employed nurse practitioners had lower rates of turnover than those without them.[60]

In terms of workload, eight studies demonstrated that a high level of workload was correlated with intent to leave,[44 56 57 61–65] and five studies found a link between job stress and turnover intention.[33 66–69] On a more positive note, seven studies identified that higher employee engagement was consistently associated with lower turnover intention.[42 70–75]

Nine studies addressed workplace safety. Four of these found workplace violence (psychological, verbal and physical) perpetrated by patients/families was associated with increased turnover intention,[16 62 76 77] and two studies found horizontal violence between nurses was associated with increased turnover intention.[76 78] Workplace incivility from both colleagues and patients/families[39] and decreased safety related to COVID-19 practices[79] were associated with increased turnover intention. Furthermore, two studies found better quality of work-life to be negatively correlated with turnover intention.[24 80]

Effective communication with nursing managers and organisational leaders was found to be a significant predictor of nurses' retention intention in five studies.[37 59 81–83] Additionally, six studies highlighted that feeling supported by leadership and the organisation was inversely correlated with intent to leave[47 61 84–87]

Finally, eight studies identified that job satisfaction was negatively associated with turnover intention.[24 47 64 74 88–91] These studies found that higher levels of job satisfaction were systematically correlated with lower intentions among nurses to leave their positions.

Psychological well-being

67 studies identified several facets of psychological well-being as factors that influence nurse retention. These include resilience, burnout, compassion fatigue, depression, post-traumatic stress disorder (PTSD), negative coping, moral distress, fatigue, work-life balance, organisational commitment, psychological capital, psychological empowerment, emotional intelligence and professional identity.

Burnout was consistently positively related to intent to leave,[2 16 25 44 48 82 88 89 92–94] as was compassion fatigue.[2 65] Additionally, depression,[25 55] PTSD,[33 95] negative coping[74] and moral distress[26 96] were all associated with greater turnover intention. Fatigue, not having time to relax and lack of work-life balance were associated with intent to leave as well.[21 88 92] Conversely, increased resilience,[15 97–102] organisational commitment,[27] psychological capital (hope, efficacy, resilience, optimism),[103–105] psychological empowerment,[106] and emotional intelligence[107] reduced the risk of turnover.

Finally, nurses' self-perception was found to influence retention. A nurse's professional identity,[40 108] sense of calling,[91] and desire to serve their country[109] were all negatively associated with intention to quit. In line with this, one study found that lower pride in being an Emergency Department nurse was associated with intention to leave.[58]

COVID-19-specific impacts

20 studies identified COVID-19-specific impacts on nurse retention. The COVID-19 pandemic generally influenced nurses' intent to leave,[25 35 51 61 110 111] particularly among nurses who cared for COVID-positive patients.[19 58 112] Pandemic-specific concerns that influenced nurse turnover included fear of the virus,[23 28 31 36 113–115] fear of future waves or pandemics,[68] being infected or knowing a teammate was infected,[116] feeling overwhelmed and not being prepared to care for patients with COVID-19,[67 116] lack of resources/Personal Protective Equipment (PPE),[20 38] how they perceived the safety climate of their unit,[105 117] experiencing COVID-19-related discrimination[101] and not feeling heard by managers and organisations when voicing concerns related to the pandemic.[59]

Strategies suggested to support nurse retention

19 of the 130 studies in this review (15%) identified strategies to address nurse retention (online supplemental table 3). These strategies can be categorised as (1) ensuring safe flexible staffing and quality work environments, (2) enhancing organisational mental health and wellness supports, (3) improved leadership and communication, (4) increasing professional development and mentorship opportunities, and (5) better compensation and incentives. Most studies presented strategies from multiple categories.

Ensuring safe flexible staffing and quality work environments

13 studies identified strategies focused on safe staffing and flexible ways of working. Implementing flexible scheduling allows for adjustments in work hours and shift patterns to accommodate nurses' diverse needs and preferences.[6 118–123] Ensuring safe patient-to-nurse ratios, adequate staffing and skill mix allows nurses to safely meet patient needs.[6 118 120 123–126] Innovative roles and task rotation provide nurses with the opportunity to diversify their skills and responsibilities.[6 121 122 127 128] One study suggested banning mandatory overtime, where nurses are forced to work hours above their full-time equivalent,[125] in order to improve nurse retention. Finally, two papers suggested optimising nurses' ability to work to their full nursing capabilities by reducing the burden of administrative tasks.[6 124]

Strategies to improve the work environment include reducing workplace discrimination and violence[6 118 127 129] and creating a positive environment by improving team culture.[118 120 126] Efforts aimed at optimising the work setting and working conditions, such as through improvements in hospital design and technological integration, were also reported.[120]

Enhancing organisational mental health and wellness supports

Seven studies identified strategies involving enhancing organisational mental health and wellness supports. Several strategies related to improving psychosocial supports available to nurses were suggested.[6 96 120 123 127 129] These included improved access to mental health resources,[6 123 127 129] embedded wellness and debriefing activities and programmes,[6 96 120 123] and programmes to enhance and support interprofessional communication and relationships.[120] 'Stay' interviews, which leaders conduct with individual staff members to learn specific ways to strengthen their engagement and likelihood of remaining with the organisation, are another strategy.[121 130]

Improved leadership and communication

Three studies identified strategies for improved leader and organisational support and communication. These included improved accountability for well-being at an organisational level,[6] for example, through the establishment of a Mental Wellbeing Commission,[129] the provision of positive and constructive feedback,[123] and recognition and acknowledgement of exceptional skills, commitment and dedication of staff.[123]

12 studies identified retention strategies related to increasing professional development and mentorship opportunities. Career development support can be an important incentive for retention.[6 86 118–124 127 128 131] Strategies included transition-to-practice programmes for new graduate nurses[86 118 121 122 127 128 131]; transition programmes for moving to a new unit[6 120]; support and availability of continuing professional education[6 120 123 124]; career reinvention supports,[127] cross-training opportunities[6 119]; and support and opportunities for experienced nurses (rather than new graduate and intermediate nurses), such as elevating their responsibilities within the care team.[6 118 123 128] Buerhaus *et al* suggest matching retention resources with the highest-risk groups such as new graduate nurses, and trending data about attrition, re-entry, and their patterns and causes.[127]

Better compensation and incentives

Nine studies identified retention strategies related to better compensation and incentives. Financial incentives to promote nurse retention included ensuring staff had a competitive base compensation, pension, adequate time off,[121 129] as well as 'incentive' pay based on unit needs, such as shift premiums based on the functional vacancy rate of the unit.[119 126 132] Retention bonuses,[119 133] supplementary responsibility pay for preceptors and mentors,[6 127] and support from internal travel programmes where nurses are provided competitive compensation to stay at their organisation but move to a high needs unit for a defined period of time[119 126 132 133] are other financial incentives. Indirect financial incentives to promote retention include loan repayment programmes, incentives for hospitals from the government to provide childcare and on-site graduate school programme offerings to retain experienced nurses.[125]

Interventions to support nurse retention

9 of the 130 studies (7%) included interventions to address nurse retention (online supplemental table 4). These interventions included (1) new graduate nurse

residency/transition to practice programmes[134–136]; (2) mentorship programmes[137 138]; (3) psychological coaching programmes[139 140]; (4) clinical process support systems[141] and (5) the creation of a nurse retentionist role.[141]

New graduate nurse residency programmes

Three studies highlighted new graduate nurse residency programmes that used a structured, long-term approach to transition to practice, all of which reported positive impacts on nurse retention.[134–136] One programme focused on all new graduate nurses across one hospital,[134] another focused on all new graduate nurses of all disciplines across several hospitals[135] and one programme focused specifically on emergency room new graduate nurses across a system of hospitals.[136] The programmes were reported as two case reports and a quality improvement programme, respectively; the total sample size was not reported in any of the reports. All three programmes included structured orientation education as well as an element of preceptorship or mentorship. Two of the programmes included formalised debriefing and reflection,[134 135] and one programme included a progressive integration plan into leadership roles such as preceptor and charge nurse.[136] All three programmes were located in the Northeastern USA.

Mentorship programmes

Nurse mentorship programmes with mixed results were reported in two studies.[137 138] Presented as a quality improvement project, Krofft and Stuart describe a mentorship programme for 18 new registered nurses hired into medical-surgical units in a small community-based hospital during the unfolding of the COVID-19 pandemic that did not result in improved intent to stay.[138] A programme evaluation of a mentorship programme that offered individualised mentorship through culturally congruent, customised pairing for the participating 96 mentees (divided into four cohorts) had a more positive outcome. Mentees in all four cohorts reported that the mentorship programme positively influenced their decision to stay in nursing.[137]

Psychological coaching programmes

Two psychological coaching programmes, RISE (resilience, insight, self-compassion and empowerment) and Reboot, showed positive results. The RISE programme was presented as a matched case-control study of 54 nurses who participated and 54 who did not; power and statistical significance were not reported. RISE is a voluntary psychoeducational group intervention based on an integrative theoretical framework of acceptance and commitment therapy, cognitive-behavioural therapy and mindfulness. It was provided to 108 direct care nurses to reduce burnout and improve well-being. It involved 8-weekly 90 min in-person group sessions developed and delivered by a licensed mental health counsellor.[139] A higher percentage of direct care nurses who participated in RISE remained employed compared with the matched control subjects who did not participate.[139] The Reboot programme was presented as a single-arm, pre-/post-mixed-methods evaluation; the study was adequately powered and reported results were statistically significant. Reboot was a tailored psychological coaching programme aimed at increasing resilience for 84 critical care nurses.[140] The intervention consisted of two 2-hour online group workshops hosted via Zoom (each pair of workshops was termed a 'cycle'), and two 1-hour individual coaching calls delivered by a cognitive-behavioural therapist. There was a significant difference in nurses' reports of intention to leave pre-intervention (mean=11.50, SD=2.64) and post-intervention (mean=13.56, SD=1.63),[140] showing a significantly lower intention to leave nursing after completing the programme than before.

Implementation of clinical process support systems

Using a pre-/post-interventional design, two Japanese hospitals implemented clinical process support computer systems for nurses and compared retention results with a third, control hospital that did not implement these systems. Sample size, power and statistical significance of the results were not reported. The clinical process support system based on structured clinical knowledge (Team Compass with the Patient Condition Adaptive Path System) and the COVID-19 clinical management system (COVID-19-CMS) were developed and implemented at the two intervention site hospitals.[141] These systems were designed to increase efficiency in clinical documentation as 50% of Japanese nurses' overtime is related to record-keeping.[142] The hospitals that implemented either process support system saw a reduction in nurse turnover, while the hospital that had not implemented such systems saw an increase in turnover.[141]

Creation of the nurse retentionist role

The implementation of a nurse retentionist role at a large academic medical health system in the USA was reported using a programme report. Sample size, power and statistical significance of the results were not reported. The nurse retentionist role is a new nursing leadership position that uses evidence-based strategies, with measurable outcomes, to personalise retention of a multigenerational workforce according to personal and professional development preferences. This role was developed and implemented at a large health system in the USA. It provides a centralised point of contact to implement and evaluate retention strategies. The nurse retentionist in the large health system used five key strategies to support nurse retention: (1) meeting individually with nurses contemplating leaving their positions or seeking career guidance; (2) building intentional relationships with key stakeholders at the organisations, such as chief nursing officers, human resources and the nurse residency programme director; (3) refining clinical ladder programme and expanding the peer mentor programme; (4) developing a system-wide retention

committee; and (5) creating focused recognition efforts to celebrate nurses' professional achievements.[143] Two years after the implementation of the nurse retentionist role, nurse turnover was reduced to 11.8% from 13%.[143] Beyond nurse turnover, there were additional outcomes that also support nurse retention. There was a 27% increase in clinical ladder participation, a 43% increase in clinical ladder advancement, a 187% increase in ambulatory nurse recognition, a 31% increase in internal promotions; participation in nursing career development programmes increased 294% and participation in the extern programme increased 420%.[143]

DISCUSSION

While there has already been substantial research on nurse retention, this is the first scoping review to focus on summarising what is known about nurse retention in the peri- and post-COVID-19 period. While many studies in this review reported measuring some form of retention, how retention was defined varied, as did the instruments used to measure it, making numeric retention score comparisons a challenge. This finding is consistent with previous research.[144–146]

The majority of included studies used cross-sectional study designs that identified correlational relationships, limiting our ability to make causal inferences. There were few interventional studies. This may be due to the short time period between the COVID-19 pandemic and the writing of this review as interventional studies require a substantial amount of time for identification, design, implementation, evaluation and publication. Future research should focus on testing the strategies identified in this review and studying the identified successful interventions in more nursing settings.

Factors associated with nurse retention

The main themes identified for nurse retention included personal and demographic factors; safe staffing and quality work environments; psychological well-being and specific COVID-19 factors. Over half of the studies identified psychological well-being factors (64%) and factors relating to safe staffing and the work environment (53%), 30% addressed personal/demographic factors and 19% addressed COVID-19-specific factors. Most studies identified factors from more than one category.

Our review found studies reporting relationships between retention and personal factors such as gender, marital status and being a parent, all of which highlight the important role of personal work-life balance in nurse retention decisions. In addition, demographic factors such as age, phase of career and level of education attained can be useful for addressing modifiable factors of the work environment and healthcare system to target retention strategies to more vulnerable career phases and populations.[147]

The majority of factors identified in this scoping review related to the work environment, safe staffing, scheduling and compensation, and psychological well-being. These results align theoretically with the effort-reward imbalance (ERI) model which aims to identify psychologically stressful work environments and their negative effects on stress-related health risks. The ERI postulates that the imbalance between the demands (effort) and rewards an employee experiences can increase negative outcomes, including job dissatisfaction and intent to leave.[148 149] Work demands such as workload, physical and psychological safety, poor staffing and overtime outweigh rewards such as compensation, leadership support and quality of work-life, resulting in a higher intention to leave. These have been repeatedly reported in the literature on nurse retention[150–152] and continue to be important considerations for future interventional evaluations. Addressing these critical factors falls within the purview of the healthcare system, organisational leadership and nursing professional organisations, which must advocate for and implement these measures with urgency and resolute commitment.

The COVID-19 pandemic had an unprecedented impact on the lives and work of nurses globally. Some of the retention factors specific to the pandemic included fear, feeling overwhelmed/unprepared and a lack of support and resources. These issues have been echoed in the literature[153] as nurses were redeployed to unfamiliar work areas and faced unknown risks that were exacerbated by the pandemic. Nurses felt unsupported by the healthcare system, which itself was not adequately prepared for a pandemic, and thus could not prepare its staff adequately, given the absence of safe environments and necessary resources. The consequences of these shortcomings persist and have the potential to continue in healthcare workplaces, leading to not only the loss of nurses from the profession, but the loss of people considering nursing as a profession.

Despite the insights provided by the studies included in this review, several gaps in the literature regarding factors impacting nurse retention remain. There is limited retention research in diverse settings in which nurses work, for example, ambulatory and community environments which employ a large proportion of the nursing workforce. While this scoping review provides important insights into some factors contributing to nurse retention, further research is needed to determine if these factors are applicable to non-hospital settings. In addition, although research from numerous countries is evident, there is overrepresentation of North American data, particularly in the interventional studies. The influence of contextual factors such as country-specific healthcare structures and general cultural differences between countries and groups is insufficiently addressed in existing literature. These gaps in current literature make it difficult to determine links between specific factors and nurse retention, either individually or collectively. Finally, the severe negative effect that COVID-19 has had on the global economy and on healthcare provision globally requires further study. Resource availability and constrained funding

may have impacted nurses' job intentions and decisions. Investigating these gaps in future research will strengthen the relevance of study findings, while developing a more fulsome understanding of nurse retention across settings and in a global context.

Strategies to support nurse retention

The main strategies our review identified that would support nurse retention included ensuring safe flexible staffing and quality work environments; enhancing organisational mental health and wellness supports; improved leadership and communication; increasing professional development and mentorship opportunities; and improving compensation and incentives.

These strategies are not novel to the peri- and post-COVID-19 period. Previous literature has emphasised that the nursing practice environment directly impacts nurse retention, as well as the quality of patient care.[154] Positive work environments require engaged leadership, cross-disciplinary collaboration and strong organisational culture.[155] It is important to note that strategies to address factors in the work environment can be hard to link directly to nurse retention as they do not exist alone: other unit, organisational and systemic factors are important considerations as well. A positive work environment can only be achieved when strategies such as safe staffing, adequate wellness supports and strong leadership are also present.

Safe staffing has been a prominent issue in recent nurse retention discourse. It was identified as a main priority by the Canadian government in the 2024 release of the Health Canada Nursing Retention Toolkit aimed at supporting and retaining the nursing workforce.[6] Several countries have developed safe staffing frameworks and initiatives, some of which include legislative approaches.[156] In 2019, California was the only US state with mandated nurse to patient ratios across all specialties. Since then, more US states and other countries have begun to pursue legislative or mandated nurse staffing approaches[156] and transparency with nurse staffing ratios.[157] Of note, the Magnet recognition programme was only highlighted in two studies identified in this review[26 44] despite it being a long-standing, highly acknowledged organisational strategy to improve nurse retention. This may reflect Magnet organisation's ability to retain staff and thus experience less nurse turnover.

Although the issues and strategies identified in this review pre-existed the COVID-19 pandemic, our review found that the peri- and post-COVID-19 pandemic landscape substantially amplified the issues and emphasised the need to implement strategies urgently. It is also essential that we determine if strategies are or are not working across different settings. The risk to our global nursing workforce has never been greater, making it crucial to shift focus from merely identifying factors influencing retention and proposing strategies to reduce it, to actions and interventions that will have an immediate and direct effect on nurse retention.

Interventions to support nurse retention

Interventions identified to support nurse retention included new graduate nurse residency/transition to practice programmes; mentorship programmes; psychological coaching programmes; clinical process support systems and the creation of a nurse retentionist role. Of note, seven out of the nine interventional studies took place in the USA, and the remaining two took place in the UK and Japan.

We identified few interventional studies, which may reflect the time it takes to plan, implement, evaluate and publish such studies. The most visible gaps were the lack of interventions focused on developing safe staffing, flexible scheduling, compensation and improving work environments, even though these were consistently identified as priorities within the literature. This may be due in part to the fact that altering staffing ratios, scheduling guidelines and compensation requires approval by multiple jurisdictions (ie, province/state, unions, institution), making them difficult to implement. Unsurprisingly, transition to practice, mentorship and psychological coaching programmes were interventions that had positive impacts on nurse retention, as previously identified in the literature.[158–161]

The two novel interventions our review identified were the implementation of clinical process support systems (ie, a computerised system based on clinical knowledge and a COVID-19-specific clinical management system) and a nurse retentionist role. Clinical process support systems can help anticipate and identify a patient's clinical pathway, where structured nursing knowledge can streamline nursing work and reduce administrative burden.[142] This type of intervention may have high potential for implementation given the increasing integration of artificial intelligence into healthcare.[162] The nurse retentionist role brings a prioritised, nursing-centred focus to addressing nurse retention. Having a 'point person' to assess an organisation's nursing workforce needs and provide curated solutions for that workforce allows for addressing specific staffing populations and career phases.[143]

Our review highlighted that psychological well-being is essential for a healthy nursing workforce and interventions to enhance nurses' psychological well-being are important nurse retention strategies. Just as important was improving the work environment and reducing workloads. Other aspects of work-life such as improved leadership and communication, safe staffing, flexible scheduling, and incentives and fair compensation were highlighted in the literature, but interventions that address these have not yet been developed or studied. Further research is needed to determine if these strategies translate into effective solutions when implemented and evaluated in practice.

Implications for research, practice and policy

This article provides a comprehensive map of the evidence, highlighting areas that require further study,

intervention and testing to effectively retain nurses. There are a number of areas for further study and practice intervention. First, additional research is needed to further analyse the differences between factors related to nurses' intention to leave their current job/area/organisation along with factors associated with intent to leave the profession of nursing. It is not clear from the current literature if these factors, and subsequent strategies and interventions, would be the same or different. Both aspects of retention are important to capture as they each have their own impacts on the health system. Further studies on factors related to retention that investigate non-hospital settings, contextual factors such as country-specific healthcare structures and general cultural differences between countries and groups, and COVID-19-related impacts on the global economy, healthcare provision and resource availability are needed. Finally, further interventional research is required to further elucidate what suggested factors and strategies are actually effective in practice and across different practice settings.

There are several implications for policy going forward. It is imperative to establish a uniform measure of or a system-wide approach to capture/measure nurse turnover. Current methods are highly heterogeneous, not only in their metrics but also in the specific types of turnover they address, with most focusing exclusively on organisational turnover. Future policies must also prioritise the measurement and mitigation of professional turnover as the strategies to address these two types of turnover may differ significantly. Moreover, professional turnover has profound implications for global human health resources, underscoring the need for targeted and effective interventions. Finally, policies can enforce known strategies such as mandating nurse-to-patient ratios.

This study emphasises the urgent need for healthcare leadership, organisations and policymakers to develop and implement evidence-based interventions to address nurse retention. Future research could focus on testing and refining these interventions, while policy changes may prioritise creating supportive work environments, enhancing mental health support and offering competitive compensation. This focus on retention is critical for sustaining the nursing workforce, which is essential for healthcare system stability and quality patient care.

Study limitations

The search strategy was limited to publications in English or those translated into English, potentially excluding relevant studies in other languages. The quality of the included studies varied. However, a scoping review aims to provide an overview of emerging evidence; therefore, the variable quality is acceptable as it is outweighed by the goal to identify and map available evidence.[10 163] The extreme heterogeneity of retention measurement definitions and tools prohibited accurate comparisons across studies and analysis within subgroups of job/unit/hospital/profession turnover, location (ie, in-patient vs outpatient settings, stand-alone facilities vs health systems) or context (ie, geographical, economic, financial, political).

CONCLUSION

This scoping review provides an overview of relevant factors, strategies and interventions to reduce nurse turnover during the peri- and post-COVID-19 period. Studies were primarily correlational, and there were few studies of interventions. Factors associated with nurse retention were similar to those reported pre-pandemic, and in fact may have worsened, and new factors directly related to the pandemic have emerged. Further research is needed on contextual factors including application to non-hospital settings, country-specific healthcare structures and general cultural differences between countries and groups, and the severe negative impact of COVID-19 on the global economy and healthcare provision overall. Inconsistent measurement and interpretation of nurse retention scores were noted. Interventional studies were limited, but several effective options were identified. A greater emphasis on interventional research is needed to develop and test effective mechanisms for nurse retention in the post-COVID-19 work environment. Rigorously addressing nurse retention has the potential to strengthen the nursing workforce, improve nurse well-being, enhance quality patient outcomes and improve the longevity and sustainment of our global health systems.

Contributors LB was involved in the study design, data collection, data analysis, data interpretation and drafting and finalising the manuscript. LMH, SP, SV and CM were involved in study design, data screening, data interpretation and substantively revised the manuscript for important intellectual content. All authors read and approved the final manuscript and agree both to be personally accountable for their own contributions and to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated, resolved and the resolution documented in the literature. LB is the guarantor.

Funding Canadian Institutes of Health Research Operating Grant Program (WI2 179956).

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement No data are available. No datasets were generated and/or analysed for this study - it is a scoping review.

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