BMJ Open

Nutritional interventions to prevent and reduce overweight and obesity during postacute stroke rehabilitation: a scoping review protocol

Mette Nørtoft [1,2] Dorthe Sørensen [3] Lena Aadal [1,4]

To cite: Nørtoft M, Sørensen D, Aadal L. Nutritional interventions to prevent and reduce overweight and obesity during postacute stroke rehabilitation: a scoping review protocol. *BMJ Open* 2025;**15**:e092156. doi:10.1136/bmjopen-2024-092156

► 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-2024-092156).

Received 07 August 2024
Accepted 17 December 2024

[1]Department of Research, Hammel Neurorehabilitation and Research Centre, Hammel, Denmark
[2]Department of Clinical Medicine, Health, Aarhus University, Aarhus, Denmark
[3]Research Center for Care and Rehabilitation, VIA University College, Aarhus N, Denmark
[4]Department of Clinical Medicine, Aarhus Universitet, Aarhus, Denmark

Correspondence to
Mrs Mette Nørtoft;
menjes@rm.dk

ABSTRACT

Introduction Individuals with stroke are at risk of long-term overweight and obesity due to biopsychosocial factors. Being overweight and obese is associated with an increased risk of numerous chronic conditions, including recurrent stroke. Unfortunately, recommendations for nutritional interventions vary. The objective of this scoping review is to identify and map the body of literature on professional nutritional interventions aimed at preventing or reducing overweight and obesity during postacute stroke rehabilitation.

Methods and analysis The review follows the Joanna Briggs Institute methodology for scoping reviews. A three-step librarian-assisted search strategy will be conducted using the bibliographic databases MEDLINE (PubMed), Embase, CINAHL and Web of Science. Indexed and grey literature in English and Scandinavian languages, from January 2010 to the present, will be considered for inclusion. The scoping review will include materials such as research articles, methodological papers and clinical guidelines that report on nutritional interventions aimed at preventing or reducing overweight and obesity among individuals with stroke (aged ≥18 years) from admission to rehabilitation hospitals. We will map and identify any kind of nutritional intervention in rehabilitation hospitals, nursing homes or their own environments in high-income countries. Two independent reviewers will conduct an iterative process for screening the identified literature, paper selection and data extraction. Disagreements will be resolved through discussion or with an additional reviewer. A data extraction form will be used to guide the data extraction.

Ethics and dissemination This review will involve the collection and analysis of secondary sources that have been published and/or are publicly available. Therefore, ethical approval is not required. The results will be published in an international peer-reviewed journal, presented at scientific conferences and disseminated through digital science communication platforms.

Trial registration number The protocol is registered in the Open Science Framework: https://osf.io/ga63n/view_only=ee07beace7bb48d6b9c82cbf79cf2e95.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The use of the Joanna Briggs Institute methodology for the conduct of a scoping review ensures a systematic approach involving at least two independent researchers to identify, retrieve, review and map the evidence of relevance.
⇒ A limitation of the scoping review is that patients' specific interests have not been examined, and no patients or members of the public have been involved in the protocol design.
⇒ A limitation of the scoping review is the restriction to English and Scandinavian languages and publications after 2010, potentially resulting in some relevant evidence not being identified.

INTRODUCTION

Stroke is a serious public health issue because of its high incidence, cost burden and increased morbidity and mortality risk.[1] In 2019, there were 12.2 million incident cases of stroke, and 5 million were left permanently disabled.[2 3]

Overweight and obesity are two of the main predictors of stroke morbidity and mortality.[4] To raise further concern, there is a high prevalence of weight gain and obesity in postacute rehabilitation of stroke survivors,[5] related to biopsychosocial factors such as reduced mobility, fatigue and isolation. These factors have been shown to negatively impact an individual's ability to engage in behaviours that support weight loss after stroke.[6 7] In addition, overweight and obesity diminish rehabilitation outcomes on several parameters, including functioning, quality of life, fatigue, isolation, depression and cost burden after stroke.[8] This may potentially lead to decreased physical activity, resulting in the risk of further weight gain.[9] Furthermore, there is a higher long-term mortality risk in overweight and obese individuals after stroke compared with the general population due to the increased risk of recurrent stroke or secondary medical complications.[10]

Weight reduction in overweight patients is recommended for secondary stroke prevention, and a modest weight loss of 5% is associated with improvements in cardiovascular

risk.[11] Healthy physical activity and eating behaviours are the cornerstones of an evidence-based intervention targeting overweight and obesity.

Nutritional care, a preventive measure in relation to overweight and obesity, is pivotal in neurorehabilitation after stroke.[12–15] It includes several components involving relatives and different professions, identifying eating-related problems and drawing up, monitoring and coordinating care plans.[16 17] However, it is claimed that professionals in both primary and secondary healthcare sectors have neither sufficient knowledge nor routines or attitudes to identify and support the patients' nutritional needs.[18 19] There are several nutritional clinical guidelines,[20–22] but the majority focus is on acute care, while the contribution and responsibilities during the rehabilitation trajectory remain unclear,[20] especially when it comes to secondary prevention related to overweight and obesity.[18]

Furthermore, evidence-based healthy lifestyle interventions after stroke are lacking,[11] despite the higher prevalence of obesity and greater burden of obesity-related chronic conditions (eg, heart disease, cancer and hypertension) after stroke.[12]

Clear recommendations for nutritional intervention to support the nutrition care of individuals with stroke during the rehabilitation trajectory are required to prevent overweight, complications and reduced rehabilitation outcomes. Thus, the aim of this scoping review is to identify and map the body of literature on professional nutritional interventions and efforts aimed at preventing or reducing overweight and obesity during postacute stroke rehabilitation. Postacute stroke rehabilitation refers to the stage of recovery that occurs after the acute and subacute phases of the stroke, typically starting from a few weeks to several months after the stroke event. It usually takes place in various settings, including inpatient rehabilitation units, skilled nursing facilities, outpatient clinics and home-based rehabilitation programmes.

A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews and the Joanna Briggs Institute (JBI) Evidence Synthesis reveals no current or underway systematic reviews or scoping reviews on the topic.

METHODS AND ANALYSIS

Study design and protocol registration

The scoping review will be conducted in accordance with the JBI Manual for Evidence Synthesis for scoping reviews[23–25] and reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for scoping reviews (checklist).[26] The protocol is registered in the Open Science Framework: https://osf.io/ga63n/view_only=ee07beace7bb48d6b9c82cbf79cf2e95.

A team of nursing researchers within the field of neurorehabilitation will systematically identify, retrieve, review and map international evidence of relevance.

Review questions

The objective of this review is to identify and map a body of literature in accordance with the research questions outlined below. The research questions are based on the Population, Concept and Context framework for scoping reviews as defined by JBI.[23]

1. What nutritional interventions are available aimed at preventing and reducing overweight in individuals with stroke (aged ≥18 years) during postacute rehabilitation?
2. What are the characteristics, that is, the intervention type, content, intensity, duration, monitoring, context of use and healthcare professional responsibilities, of the nutritional interventions mapped?

Inclusion and exclusion criteria

The scoping review will consider research articles, methodological papers and clinical guidelines that report on professional nutritional interventions in order to prevent or reduce overweight and obesity. These interventions will encompass all interprofessional measures, including type, content, intensity, duration, monitoring, context of use and healthcare professional responsibilities. The review will systematically search, select and synthesise knowledge from any research methodology or grey literature. The search strategy will aim to locate both published and unpublished studies in English and Scandinavian languages (for feasibility reasons and to ensure accurate analysis) from January 2010 to the present date. A search in Medical Subject Headings (MeSH) terms will be carried out along with a free-text search to ensure the inclusion of recently published articles, which had not yet been registered in the MeSH database.

The review will focus on materials involving individuals aged over 18 years who are recovering from stroke. The group with stroke is heterogeneous, with varying sensorimotor, perceptual and cognitive dysfunctions or impaired consciousness. To capture this diversity, the stroke will be defined according to individuals undergoing postacute rehabilitation.

The scoping review will include materials from postacute cross-sectoral rehabilitation (eg, inpatient rehabilitation units, skilled nursing facilities, outpatient clinics and home-based rehabilitation programmes) in high-income countries.

Search strategy

A three-step search strategy will be used as recommended by JBI.[23] The search strategy and the initial and secondary searches will be conducted in close collaboration between the first author and an experienced university hospital librarian. The first step will consist of an initial limited search of MEDLINE (PubMed) to identify articles on the topic. The free text words and MeSH words contained in the titles and abstracts inform the development of a search strategy, including the identification of search terms and index terms. In the second step, the search strategy, including all identified keywords and index

terms, will be adjusted for each of the additional databases, Embase (Ovid), CINAHL (EBSCO) and Web of Science. In relation to unpublished and grey literature, a search will be conducted in Google, Google Scholar and various guidelines and recommendation websites. In the third step, the reference lists of all included reports and articles will be screened for additional evidence. Reviews that meet the inclusion criteria will be included for the purpose of examining the reference lists for relevant sources. The complete search strategy is provided in online supplemental appendix I.

Source of evidence selection

Following the search, all identified citations will be collated and uploaded into EndNote V.21 (Clarivate Analytics, Pennsylvania, USA), and duplicates removed. Assessments will be performed by two authors independently in two steps using Covidence (Veritas Health Innovation, Melbourne, Australia).[27] Following a pilot test, titles and abstracts will be screened against the inclusion criteria for the review. Then, the full text of included sources will be assessed. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion until consensus. In case of significant disagreements, an additional reviewer will be involved. Reasons for exclusion of sources of evidence will be recorded and reported in the scoping review. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a PRISMA flow diagram.[26]

Data extraction

The Covidence extraction template V.2.0 software will be used for data extraction, and a data extraction form will be developed a priori by the reviewers, as per the JBI methodology.[23 24 28] The draft data extraction form is provided online supplemental appendix II. Key information will include specific details relevant to the review questions, including title, authors, year of publication, country of origin, aim, population and sample size, rehabilitation setting/context, methodology/design, findings related to professional interventions (eg, intervention type, content, intensity, duration, monitoring and context of use), healthcare professional responsibilities and outcomes. The extraction form will be modified as necessary during a pilot process. Two authors will independently extract data from a sample of the included evidence sources, and a cross-check will be conducted to ensure the analogy of the extracted data. Finally, the developed data extraction form will be used to extract data from all included sources. Any disagreements between the reviewers will be resolved through a discussion or consensus with an additional reviewer.

Data analysis and presentation

Data from the extraction process will be mapped and presented in a tabular form divided into appropriate conceptual categories fitting the review questions (eg, intervention type, content, intensity and duration of intervention), including a basic numerical account of the amount, type and distribution of the evidence included in the review. Data analysis will be conducted by two independent researchers, followed by discussions involving all authors. A narrative summary will accompany the tabulated results to describe how the findings relate to the research questions.

Ethics and dissemination

This review will involve the collection and analysis of secondary sources that have been published and/or are publicly available. Therefore, ethical approval is not required. The results will be published in an international peer-reviewed journal, presented at scientific conferences and disseminated through digital science communication platforms. The protocol is registered in Open Science Framework (https://osf.io/ga63n/?view_only=ee07beace7bb48d6b9c82cbf79cf2e95).

X Dorthe Sørensen @Dorthe_Srensen

Acknowledgements We gratefully acknowledge the generous guidance and support we receive from research librarian Henrik Sehested Laursen, Medical Library, Regional Hospital Central Jutland, Viborg, Denmark.

Contributors MN designed the project and formulated the review questions. In collaboration with a research librarian, MN conducted the search and wrote and submitted the study protocol. DS contributed to writing the protocol. LA designed the project, formulated the review question and wrote the protocol. MN is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

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

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer-reviewed.

ORCID iDs
Mette Nørtoft http://orcid.org/0009-0004-4956-3936
Dorthe Sørensen http://orcid.org/0000-0001-6362-3385
Lena Aadal http://orcid.org/0000-0001-7365-3916

REFERENCES

1 Campbell BCV, Khatri P. Stroke. *Lancet* 2020;396:129–42.
2 Feigin VL, *et al*. Global, regional, and national burden of stroke and its risk factors, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet Neurol* 2021;20:795–820.

3 Feigin VL, Brainin M, Norrving B, *et al*. World Stroke Organization (WSO): Global Stroke Fact Sheet 2022. *Int J Stroke* 2022;17:18–29.
4 Guzik A, Bushnell C. Stroke Epidemiology and Risk Factor Management. *Continuum (Mount Lawley)* 2017;23:15–39.
5 Vahlberg B, Zetterberg L, Lindmark B, *et al*. Functional performance, nutritional status, and body composition in ambulant community-dwelling individuals 1-3 years after suffering from a cerebral infarction or intracerebral bleeding. *BMC Geriatr* 2016;16:48.
6 Driver S, Douglas M, Reynolds M, *et al*. A narrative review of biopsychosocial factors which impact overweight and obesity for individuals with acquired brain injury. *Brain Inj* 2021;35:1075–85.
7 Rimmer JH, Wang E, Smith D. Barriers associated with exercise and community access for individuals with stroke. *J Rehabil Res Dev* 2008;45:315–22.
8 MacDonald SL, Journeay WS, Uleryk E. A systematic review of the impact of obesity on stroke inpatient rehabilitation functional outcomes. *NeuroRehabilitation* 2020;46:403–15.
9 Kalichman L, Alperovitch-Najenson D, Treger I. The impact of patient's weight on post-stroke rehabilitation. *Disabil Rehabil* 2016;38:1684–90.
10 Oesch L, Tatlisumak T, Arnold M, *et al*. Obesity paradox in stroke - Myth or reality? A systematic review. *PLoS One* 2017;12:e0171334.
11 Kleindorfer DO, Towfighi A, Chaturvedi S, *et al*. 2021 Guideline for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack: A Guideline From the American Heart Association/ American Stroke Association. *Stroke* 2021;52:e364–467.
12 Feo R, Kitson A, Conroy T. How fundamental aspects of nursing care are defined in the literature: A scoping review. *J Clin Nurs* 2018;27:2189–229.
13 Feo R, Conroy T, Jangland E, *et al*. Towards a standardised definition for fundamental care: A modified Delphi study. *J Clin Nurs* 2018;27:2285–99.
14 Jefferies D, Johnson M, Ravens J. Nurturing and nourishing: the nurses' role in nutritional care. *J Clin Nurs* 2011;20:317–30.
15 Kitson A, Conroy T, Wengstrom Y, *et al*. Defining the fundamentals of care. *Int J Nurs Pract* 2010;16:423–34.
16 Holst M, Beermann T, Mortensen MN, *et al*. Optimizing protein and energy intake in hospitals by improving individualized meal serving, hosting and the eating environment. *Nutrition* 2017;34:14–20.
17 Perry L, Hamilton S, Williams J, *et al*. Nursing Interventions for Improving Nutritional Status and Outcomes of Stroke Patients: Descriptive Reviews of Processes and Outcomes. *Worldviews Ev Based Nurs* 2013;10:17–40.
18 Sj H, M B, A B, *et al*. The Routines, Knowledge and Attitudes towards Nutrition and Documentation of Nursing Staff in Primary Healthcare: A Cross-Sectional Study. *J Comm Pub Health Nurs* 2018;04:03.
19 Håkonsen SJ, Pedersen PU, Bygholm A, *et al*. Lack of focus on nutrition and documentation in nursing homes, home care- and home nursing: the self-perceived views of the primary care workforce. *BMC Health Serv Res* 2019;19:642.
20 Burgos R, Bretón I, Cereda E, *et al*. ESPEN guideline clinical nutrition in neurology. *Clin Nutr* 2018;37:354–96.
21 Sundhedsstyrelsen, Forebyggelsespakke Overvægt. 2018;1–44.
22 Sundhedsstyrelsen, Livsstilsintervention ved svær overvægt - anbefalinger for tilbud til børn og voksne. Sundhedsstyrelsen; 2021.
23 Peters MDJ, Godfrey C, McInerney P, *et al*. In: Aromataris E LC, Porritt K, Pilla B, et al, eds. *Scoping reviews in jbi manual for evidence synthesis*. JBI, 2024.
24 Pollock D, Peters MDJ, Khalil H, *et al*. Recommendations for the extraction, analysis, and presentation of results in scoping reviews. *JBI Evid Synth* 2023;21:520–32.
25 Peters MDJ, Marnie C, Tricco AC, *et al*. Updated methodological guidance for the conduct of scoping reviews. *JBI Evid Synth* 2020;18:2119–26.
26 Tricco AC, Lillie E, Zarin W, *et al*. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018;169:467–73.
27 Covidence systematic review software. 2024. Available: https://www.covidence.org
28 Peters MDJ, Godfrey C, McInerney P, *et al*. Best practice guidance and reporting items for the development of scoping review protocols. *JBI Evid Synth* 2022;20:953–68.