







BMJ Open Application of pressure injury preventive measures and bundles in home and community environments: a scoping review protocol

Fabiana Tomé Ramos ¹, Rhavenna Thais Silva Oliveira ¹,
Marla Andreia Garcia Avila ¹, Juliane Andrade ¹,
Aglecia Vitoriano Moda Moda Vitoriano Budri ^{1,2}, Rúbia Aguiar Alencar ¹

To cite: Ramos FT, Oliveira RTS, Avila MAG, *et al.* Application of pressure injury preventive measures and bundles in home and community environments: a scoping review protocol. *BMJ Open* 2025;**15**:e096224. doi:10.1136/bmjopen-2024-096224

► 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-2024-096224>).

Received 06 November 2024
Accepted 03 February 2025



© Author(s) (or their employer(s)) 2025. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ Group.

¹Sao Paulo State University (UNESP), Botucatu, Sao Paulo, Brazil

²Royal College of Surgeons in Ireland (RSCI), Dublin, Ireland

Correspondence to

Dr Fabiana Tomé Ramos;
fabiana.ramos@unesp.br

ABSTRACT

Introduction Several studies have addressed the use of pressure injury preventive measures and bundles for hospitalised patients. However, there is a gap in research regarding the use of pressure injury preventive measures and bundles in the home environment. This scoping review aims to identify, explore and map the international literature on pressure injury preventive measures and bundles in the home and community environments.

Methods and analysis The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews will be used to guide the reporting of this scoping review. The Joanna Briggs Institute guide will inform the methods. A modified version of the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols will be used to guide the reporting of this scoping review protocol. An initial search was carried out in July 2024. The search will be conducted in electronic databases such as LILACS, SciELO, Scopus, PubMed, Embase, CINAHL, Cochrane Library and Web of Science. The search will be restricted to studies in English, Portuguese and Spanish, with no time restriction. Additional literature will be retrieved by reviewing the reference lists of the selected studies based on their titles. Two independent reviewers will carry out the data extraction process. Essential details, including the author, references and findings pertinent to the review questions, will be collected. The findings will be displayed through graphs, tables and figures, supplemented by a narrative summary.

Ethics and dissemination As this review will be conducted using secondary data, ethical approval is not required. Results will be shared with the international scientific community through conference presentations and publication in a high-impact journal.

Study registration This scoping review was registered with the Open Science Framework registry (osf.io/m5gvn) on 8 August 2024.

INTRODUCTION

Pressure injuries (PIs) are a significant health problem for bedridden patients, both in hospital and home settings, worldwide.^{1 2} PIs are wounds that develop in the skin and

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study will follow rigorous and well-established methodological frameworks.
- ⇒ Studies in English, Portuguese and Spanish will be included to enhance comprehensiveness.
- ⇒ The search strategy was carefully tailored to all languages and developed in collaboration with research librarians and an international research team.
- ⇒ A comprehensive summary of available preventive measures for the home environment will be provided.

underlying tissues due to prolonged pressure or shear forces on specific areas of the body, primarily over bony prominences such as the sacrum, heels, ears and elbows.³

A study found that 70.6% of patients with pre-existing PIs were living at home before hospital admission and only 21.4% had received home care services before admission.⁴ In Brazil, between January 2014 and July 2017, approximately 23 722 (17.6%) healthcare-related PI incidents were reported by the Brazilian Health Regulatory Agency (ANVISA).⁵ Despite the limited number of papers on the prevalence of PIs in community or home care services, one study has indicated a PI prevalence ranging from 0.04% to 4.0% in community care settings in Ireland.⁶ In the UK, the prevalence is reported to be between 4.4% and 6.8% in community care settings and between 4.6% and 7.5% in nursing homes.⁷

Historically, hospital settings have adopted various preventive measures to reduce the incidence of PIs.^{8–10} However, there is limited focus on PIs acquired or managed in home settings, where many PIs develop before hospital admission or after discharge.^{11 12}

It is important to emphasise the empowerment of patients and families in the care process, which is a prerogative of the WHO within its Patient Safety programme, one of the main objectives of which is to reduce the risk of PI development.¹³ Educational interventions aimed at improving patients' and carers' knowledge are important so they can participate more effectively and efficiently in promoting their health.¹⁴ Educating patients and caregivers before hospital discharge can improve patient outcomes and may reduce the risk of developing PIs in at-risk patients living at home.^{15 16}

Interventions for preventing PIs based on evidence have influenced the incidence, severity and prevalence of PIs per patient. Support surfaces are deemed effective in lowering the incidence of PIs when compared with standard hospital surfaces, and it is advised to reposition patients regularly to reduce the risk of developing PIs.¹⁷

Another effective strategy for improving patient outcomes is the 'bundle' approach, which is a set of evidence-based preventive interventions.¹⁸ These interventions, when applied systematically, may yield improved outcomes for patients. A well-known PI bundle in hospital settings is the SKIN bundle. Developed through a partnership between the Institute for Healthcare Improvement and Assension Health, the SKIN bundle is a strategy for identifying the best ways to prevent PIs,¹⁹ where S stands for Surface, K for Keep moving, I for Incontinence (increased moisture due to urine or feces) and N for Nutrition and hydration.¹⁹ Building on this initial work, Healthcare Improvement Scotland, after discussions with experts, adapted the suggested model by adding another 'S', for Skin, to the protocol, thereby defining 'SSKIN' as the aspects on which healthcare professionals should focus their interventions to prevent PIs.¹⁸ Each letter in the SSKIN acronym represents the following interventions: Surface – assess whether the mattresses and/or cushions used are in accordance with the patient's needs and review the integrity of the material used to reduce the risk of pressure; Skin – evaluate at-risk areas on the skin and monitor for changes; Keep moving – assess the patient's ability to move and change positions, thereby preventing the worsening of existing injuries or the development of new ones; Incontinence – evaluate for the presence of urinary and/or faecal incontinence and manage skin moisture; Nutrition and hydration – ensure that the diet, fluids and supplements are provided in appropriate quantities and manners.²⁰

The application of bundles has been shown effective in preventing PIs; however, most studies on the efficacy of these care bundles in reducing the incidence of PIs have been conducted in hospital settings following educational interventions with healthcare professionals.^{21–24} A gap in evidence can be observed regarding the implementation of bundles in the context of home care, especially when carried out by informal caregivers. Therefore, this scoping review aims to identify, explore and map the international literature on PI preventive measures and bundles in the home and community environments.

Review question

1. Which PI preventive measures or bundles are used in the home environment?
2. Who are care bundles intended for in domestic environments (eg, lay caregivers, healthcare professionals)?
3. What are the facilitators and barriers when applying preventive measures or bundles in the home environment?

METHODS AND ANALYSIS

The Joanna Briggs Institute (JBI) 2022 scoping review protocol methodology guided the development of this protocol.²⁵ We will adhere to the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)²⁶ and the JBI guidance for scoping reviews²⁷ to systematically conduct and report the review of published peer-reviewed articles. A modified version of the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) was used to structure the reporting of this scoping review protocol.²⁸ The review process will include the following stages: (1) development of the research question, (2) formulation of the search strategy, (3) establishment of eligibility criteria, (4) data extraction, (5) data analysis and presentation of results and (6) dissemination of findings. The study will be conducted between 2024 and 2025. A modified PRISMA-P was used to guide the reporting of this scoping review protocol. As this review will be conducted using secondary data, ethical approval is not required. The protocol was registered with the Open Science Framework (OSF) (<https://osf.io/m5gvn>).

A preliminary search was conducted in OSF, PROSPERO, MEDLINE, Cochrane Database of Systematic Reviews and JBI Evidence Synthesis, and no ongoing or completed literature reviews of any type were identified on this topic.

Eligibility criteria

The eligibility criteria for this study are structured according to the participants, concept and context framework,²⁵ as outlined in [table 1](#).

Types of sources

This review will include studies with quantitative, qualitative or mixed-method designs. Additional literature will be retrieved by reviewing the reference lists of the selected studies based on their titles.

Search strategy

The search strategy is being developed by the research team in collaboration with a librarian using Health Sciences Descriptors, Medical Subject Headings and Emtree associated with the uncontrolled descriptor related to the SSKIN bundle. Despite this descriptor not being evident in the previously mentioned systems, it

Table 1 Eligibility criteria

PCC	Inclusion criteria	Exclusion criteria
Population	Studies with adults and elderly bedridden/chairfast people or those with reduced mobility in the home environment receiving intervention to prevent PIs.	Studies including existing PIs.
Concept	Original studies exploring the use of PI preventive measures or preventive bundles in the home environment.	Studies with preventive measures for medical device-related PIs only, case reports, event summaries and manuscripts unavailable in full.
Context	This review will include studies conducted in the home environment, with no time limit.	Studies that were not published in English, Portuguese and Spanish will be excluded.
PCC, population, concept, context; PI, pressure injuries.		

is relevant to the research question. Boolean operators AND and OR will be used to combine the descriptors.

A preliminary search was carried out on 7 July 2024 on BVS (Biblioteca Virtual em Saúde), SciELO (Scientific Electronic Library Online) via Web of Science, Scopus, PubMed, Embase, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Cochrane Library (Cochrane Central Register of Controlled Trials) and Web of Science. The search strategy will be customised to each selected database and/or information source, incorporating all identified keywords and index terms (online supplemental file 1). Additionally, a hand search of citations and reference lists from the included documents will be conducted. Authors of studies that are not available in full will be contacted via email.

Articles included will be restricted to the English, Portuguese and Spanish languages. Articles published from the inception of each database up to August 2024 will be included.

Study/source of evidence selection

After completing the search, all identified citations will be gathered and uploaded into EndNote Web (Thomson Reuters, USA), where duplicate entries will be removed. Following the search, all identified articles will be collated and uploaded into Covidence,²⁹ and the titles and abstracts will be assessed by two independent reviewers. In case of disagreements, a third researcher will arbitrate. The reasons for excluding full-text sources that do not meet the inclusion criteria will be documented and reported in the scoping review. Once the eligibility criteria are applied, the reviewers will conduct a full reading of the studies, and any articles that fail to meet the inclusion criteria will be excluded. The search results and study selection process will be fully detailed in the final scoping review and visually represented using a PRISMA-ScR flow diagram.²⁶

Data extraction

Two independent reviewers will extract data from the studies included in this review using a data extraction tool specifically designed for this research in Microsoft Excel. This tool was developed by the reviewers based on the model provided in the JBI manual. The following data

will be collected: information on the studied population, concept, context, study methods and the key findings relevant to the review question, such as the interventions used to prevent PI.

We have created a preliminary extraction form (online supplemental file 2), which will be reviewed and modified if necessary. Any modifications made will be detailed in the scoping review. Any disagreements between reviewers at any stage of the process will be resolved through discussion. If consensus cannot be reached, a third researcher will be consulted for resolution.

Data analysis

The PRISMA-ScR guidelines will be followed to guide the final report of this study. The findings will be displayed through graphs, figures and tables, complemented by a narrative summary. For research question 3, a thematic analysis with visual representations highlighting key data extraction categories will be performed.

Patient and public involvement

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

ETHICS AND DISSEMINATION

As this review will be conducted using secondary data, ethical approval is not required. The dissemination strategy includes publication in a high-impact journal. Additionally, the review's findings will be shared through oral and poster presentations at scientific conferences.

X Marla Andreia Garcia Avila @enfmarla

Contributors FTR, AVMMVB and RAA conceptualised and designed this study. AVMMVB, FTR, RTSO and JA developed the research questions and the methods. AVMMVB and MAGA contributed to methods design. FTR and RTSO drafted and edited the manuscript, and JA, MAGA, AVMMVB and RAA provided critical revisions. The final version was read and approved by all authors. FTR is responsible for the overall content (as 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, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Fabiana Tomé Ramos <http://orcid.org/0000-0002-2770-2630>

Rhavenna Thais Silva Oliveira <http://orcid.org/0000-0001-8380-6867>

Maria Andreia Garcia Avila <http://orcid.org/0000-0002-6652-4427>

Juliane Andrade <http://orcid.org/0000-0002-4321-0118>

Aglecia Vitoriano Moda Moda Vitoriano Budri <http://orcid.org/0000-0002-0741-9926>

Rúbia Aguiar Alencar <http://orcid.org/0000-0002-6524-5194>

REFERENCES

- Moda Vitoriano Budri A, Moore Z, Patton D, *et al.* Impaired mobility and pressure ulcer development in older adults: Excess movement and too little movement—Two sides of the one coin? *J Clin Nurs* 2020;29:2927–44.
- Martins de Oliveira AL, O'Connor T, Patton D, *et al.* Sub-epidermal moisture versus traditional and visual skin assessments to assess pressure ulcer risk in surgery patients. *J Wound Care* 2022;31:254–64.
- European Pressure Ulcer Advisory Panel NPIAP and PPIAlliance. *Prevention and treatment of pressure ulcers/injuries: clinical practice guideline. the international guideline.* 2019.
- Sari SP, Everink IH, Sari EA, *et al.* The prevalence of pressure ulcers in community-dwelling older adults: A study in an Indonesian city. *Int Wound J* 2019;16:534–41.
- Boletim Segurança do Paciente e Qualidade em Serviços de Saúde no 15: Incidentes Relacionados à Assistência à Saúde - 2016. Agência Nacional de Vigilância Sanitária. Anvisa.2017:1–20.
- McDermott-Scales L, Cowman S, Gethin G. Prevalence of wounds in a community care setting in Ireland. *J Wound Care* 2009;18:405–17.
- Kaltenthaler E, Whitfield MD, Walters SJ, *et al.* UK, USA and Canada: how do their pressure ulcer prevalence and incidence data compare? *J Wound Care* 2001;10:530–5.
- Sebastián-Viana T, Losa-Iglesias M, González-Ruiz JM, *et al.* Reduction in the incidence of pressure ulcers upon implementation of a reminder system for health-care providers. *Appl Nurs Res* 2016;29:107–12.
- Tschannen D, Anderson C. The pressure injury predictive model: A framework for hospital-acquired pressure injuries. *J Clin Nurs* 2020;29:1398–421.
- Forni C, D'Alessandro F, Gallerani P, *et al.* Effectiveness of using a new polyurethane foam multi-layer dressing in the sacral area to prevent the onset of pressure ulcer in the elderly with hip fractures: A pragmatic randomised controlled trial. *Int Wound J* 2018;15:383–90.
- Khor HM, Tan J, Saedon NI, *et al.* Determinants of mortality among older adults with pressure ulcers. *Arch Gerontol Geriatr* 2014;59:536–41.
- Corbett LQ, Funk M, Fortunato G, *et al.* Pressure Injury in a Community Population. *J Wound, Ostomy Continence Nurs* 2017;44:221–7.
- World Health Organization. *Global patient safety action plan 2021–2030: towards eliminating avoidable harm in health care.* Geneva: World Health Organization, 2021.
- Shanley E, Moore Z, Patton D, *et al.* Development and psychometric evaluation of the patient knowledge of, and attitudes and behaviours towards pressure ulcer prevention instrument (KPUP). *Int Wound J* 2020;17:339–50.
- Kaur S, Singh A, Tewari MK, *et al.* Comparison of Two Intervention Strategies on Prevention of Bedsores among the Bedridden Patients: A Quasi Experimental Community-based Trial. *Indian J Palliat Care* 2018;24:28–34.
- Askari H, Yaghoobinia F, Keykhah A, *et al.* Investigating the Effect of Home-Based Training for Family Caregivers on the Incidence of Bedsores in Patients with Stroke in Ali Ebne Abitaleb Hospital, Zahedan, Iran: A Clinical Trial Study. *Med Surg Nurs J* 2018;In Press.
- Haavisto E, Stolt M, Puukka P, *et al.* Consistent practices in pressure ulcer prevention based on international care guidelines: A cross-sectional study. *Int Wound J* 2022;19:1141–57.
- Resar R, Griffin F, Haraden C, *et al.* *Using care bundles to improve health care quality. IHI innovation series white paper.* Cambridge: Massachusetts: Institute for Healthcare Improvement, 2012. Available: www.IHI.org
- Whitlock J. SSKIN bundle: preventing pressure damage across the health-care community. *Br J Community Nurs* 2013;S32.
- NHS Scotland. *Healthcare improvement Scotland. Prevention and management of pressure ulcers.* 2020.
- Ramadan SS, Mohamed SNH. Effect of Pressure Ulcer Care Bundle on Nurses' Performance at the Intensive Care Unit. *IOSR-JNHS* 2020;9:38–47.
- Bakar N, Shohor NA, Ab Latif R, *et al.* The Effects of SSKIN Care Bundle on Nurses' Practice in Prevention of Pressure Ulcer. *IJARBS* 2022;12.
- James J, Abraham RP. Education intervention on knowledge and practice on sskin care bundle pressure ulcer prevention. *Int J Nurs Care* 2020;4–9.
- Zhang X, Wu Z, Zhao B, *et al.* Implementing a Pressure Injury Care Bundle in Chinese Intensive Care Units. *Risk Manag Healthc Policy* 2021;14:2435–42.
- Peters MDJ, Godfrey C, McInerney P, *et al.* Best practice guidance and reporting items for the development of scoping review protocols. *JBIM Evidence Synthesis* 2022;20:953–68.
- 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.
- Pollock D, Peters MDJ, Khalil H, *et al.* Recommendations for the extraction, analysis, and presentation of results in scoping reviews. *JBIM Evid Synth* 2023;21:520–32.
- Shamseer L, Moher D, Clarke M, *et al.* Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ* 2015;350:g7647.
- Covidence. Systematic Review Tool, Available: <https://www.covidence.org/>