Barriers and facilitators to implementing pressure injury prevention and management guidelines in acute care: A mixed-methods systematic review

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ABSTRACT

Background: Evidence-based pressure injury prevention and management is a global health service priority. Low uptake of pressure injury guidelines leads to compromised patient outcomes. Understanding clinicians’ and patients’ views on the barriers and facilitators to implementing guidelines and mapping the identified barriers and facilitators to the Theoretical Domains Framework and behaviour change techniques will inform an end-user and theoretically informed intervention to improve guideline uptake in the acute care setting.

Objectives: To synthesise quantitative and qualitative evidence on i) hospital clinicians’ and inpatients’ perceptions and experiences of evidence-based pressure injury practices and ii) barriers and facilitators to implementing guidelines.

Design: A convergent integrated mixed-methods systematic review was conducted using the JBI approach.

Data source: English language peer-reviewed studies published from 2009 to August 2022 were identified from MEDLINE, EMBASE, CINAHL, PsycINFO and Cochrane Central Library.

Review methods: Included studies reported: i) acute care hospital clinicians’ and patients’ perceptions and experiences of evidence-based pressure injury practices and ii) barriers and facilitators to implementing guidelines. The Mixed Methods Appraisal Tool was used for critical appraisal. Quantitative data was transformed into qualitative data, then thematically synthesised with qualitative data, comparing clinicians’ and patients’ views. Barriers and facilitators associated with each main theme were mapped to the Theoretical Domains Framework and allocated to relevant behaviour change techniques.

Results: Fifty-five out of 14,488 studies of variable quality (29 quantitative, 22 qualitative, 4 mixed-methods) met the inclusion criteria. Four main themes represent factors thought to influence the implementation of evidence-based guidelines: 1) nurse-led multidisciplinary care, 2) patient participation in care, 3) practicability of implementation and 4) attitudes towards pressure injury prevention and management. Most barriers identified by clinicians were related to the third theme, whilst for patients, there were multiple barriers under theme 2. Barriers were mainly mapped to the Knowledge domain and Environmental Context and Resources domain and were matched to the behaviour change techniques of “instruction on how to perform a behaviour” and “restructuring the physical environment”. Most facilitators mentioned by clinicians and patients were related to themes 1 and 2, respectively, and mapped to the Environmental Context and Resources domain. All patient-related attitudes in theme 4 were facilitators.

Conclusions: These review findings highlight the most influential factors related to implementing evidence-based pressure injury care from clinicians’ and patients’ views and mapping these factors to the Theoretical Domains Framework and behaviour change techniques has contributed to developing a stakeholder-tailored implementation intervention in acute care settings.

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What is already known

- Low uptake of pressure injury guidelines is common and can lead to compromised patient outcomes.
- The first step in developing an end-user informed intervention to improve guideline uptake is to identify published patients’ and clinicians’ views on barriers and facilitators to guideline uptake.
- No systematic review has yet synthesised qualitative and quantitative evidence from clinicians’ and patients’ views of how to improve pressure injury guideline uptake and mapped the findings to the Theoretical Domains Framework and behaviour change techniques.

What this paper adds

- Clinicians and patients support a nurse-led multidisciplinary patient-centred intervention to promote patient participation that addresses organisational and individual barriers to evidence-based pressure injury care.
- Mapping barriers to the Theoretical Domains Framework and associated behaviour change techniques showed the need for an implementation strategy bundle to promote multidisciplinary care and patient participation and address practical and attitudinal barriers to guideline uptake.
- Different implementation strategies targeted to clinicians and patients are required in developing an end-user informed intervention.

1. Introduction

Pressure injury, defined as localised skin and/or underlying tissue damage resulting from pressure with/without shear (Pan Pacific Pressure Injury Alliance, 2019), is potentially preventable, yet is a leading hospital adverse event (Nghiem et al., 2022). It affects 12.8% of adult patients admitted to hospitals worldwide and is costly for the health system (Li et al., 2020; Pan Pacific Pressure Injury Alliance, 2019). Reported pressure injury cost varies, from hospital costs of $26.8 billion in the United States in 2016 (Padula and Delarmente, 2019) to health ported pressure injury cost varies, from hospital costs of £531 million in the United Kingdom in 2013 (Guest et al., 2014) to further skin breakdown, significantly improves patient outcomes and reduces hospital costs (Al Aboud and Manna, 2018; Padula and Delarmente, 2019). Accordingly, the need for implementing evidence-based pressure injury prevention and management guidelines is a priority for governments and health providers (Australian Commission on Safety and Quality in Health Care, 2019; Canadian Patient Safety Institute, 2021; National Institute for Health and Care Excellence, 2015).

Although national and international pressure injury clinical guidelines have long existed (Munoz et al., 2020; National Institute for Health and Care Excellence, 2014; National Pressure Injury Advisory Panel, 2019; Pan Pacific Pressure Injury Alliance, 2019), low uptake of guidelines is an ongoing health service problem (McInnes et al., 2020; Samuriwo and Dowding, 2014). Clinicians’ support for guidelines and improving clinicians’ knowledge of pressure injury prevention and management do not always lead to practice change (Suva et al., 2018). The complex, resource-limited and priority-driven acute care hospital setting (Figueroa et al., 2019) poses challenges in implementing guidelines even when a programme has been established (Jankowski and Nadzam, 2011). Challenges include timely access to appropriate equipment to perform pressure injury care, maintaining turning schedules, identifying pressure injury risks accurately, and involving a multidisciplinary team in shared decision-making (Bergquist-Beringer et al., 2013; Duvall et al., 2019; Jankowski and Nadzam, 2011; Phillips et al., 2018). Current reviews suggest multifaceted approaches are needed to address stakeholders’ individual-, social- and organisational-level barriers and to promote enablers to increase guideline implementation and accelerate clinical practice change (Burton et al., 2021; Mitchell et al., 2021; van Dulmen et al., 2020).

Several randomised controlled trials (Jafari et al., 2018; Tayyib et al., 2015) and several controlled before–after studies (Avşar and Karadag, 2018; Coyer et al., 2015; Uzun et al., 2009) have shown that multifaceted implementation programmes based on clinical guidelines decrease pressure injury incidence and time to pressure injury development in acute and intensive care settings. However, there is a lack of high-quality and theory-driven trials that have investigated the key components of an effective pressure injury guideline implementation intervention (Lin et al., 2020; Lovegrove et al., 2021). Identifying key elements of an implementation intervention requires using a bottom-up approach which involves understanding clinician and patient end-users’ perspectives of the barriers and facilitators to guideline uptake and experiences of care (Craig et al., 2016; Klaic et al., 2022).

A theory-driven approach to intervention development has been shown to be more effective and sustainable than interventions developed without reference to a framework or theory (Celis-Murales et al., 2015; Tegart et al., 2022). A common approach is to map barriers and facilitators that are identified as having the potential to influence guideline uptake from review findings to the Theoretical Domains Framework and appropriate behavioural change technique (Cane et al., 2012; Michie et al., 2008) to inform the development of an evidence- and end-user informed guideline implementation strategy (Bérubé et al., 2015; Lavallée et al., 2018). The Theoretical Domains Framework has been used to inform a study addressing stakeholders’ perceived barriers and enablers to implementing guideline recommendations in community care settings (Lavallée et al., 2018; Taylor et al., 2021). In acute care settings, as hospital clinicians are the main agents of clinical practice change, understanding their views on implementing guidelines may provide insights into barriers that impede practice change and inform strategies to facilitate guideline uptake (Baker et al., 2015). Similarly, understanding patients’ perceptions and experiences of pressure injury care will also assist with informing strategies to improve patient-centred care (Ledger et al., 2020).

To our knowledge, no systematic reviews have identified and compared clinicians’ and patients’ views on barriers and facilitators to evidence-based pressure injury care in acute inpatient hospital settings and then mapped the findings to the Theoretical Domains Framework. As barriers and facilitators can be presented in a qualitative or quantitative format, the aim of this mixed-methods systematic review was to synthesise qualitative and quantitative evidence on i) hospital clinicians’ and patients’ views of barriers and facilitators to implementing pressure injury prevention and management guidelines and ii) map barriers and facilitators to the Theoretical Domains Framework and behavioural change techniques (Cane et al., 2015; Michie et al., 2013). This will inform the development of an end-user and theoretically informed patient-centred intervention to improve guideline uptake in the acute care setting.

2. Methods

2.1. Design

This mixed-methods systematic review was part of a broader systematic review aiming to identify, appraise and synthesise peer-reviewed evidence related to clinicians’ and patients’ views on pressure injury, surgical site infection and intravascular device wound infections. The review protocol was registered on the International Prospective Register of Systematic Reviews (PROSPERO 2021 CRD42021250885). The review was conducted using the convergent integrated approach with data transformation detailed in the JBI Manual for Evidence
Synthesis Handbook (Lizarondo et al., 2020). As the Cochrane Handbook guidelines on qualitative evidence synthesis provided more detailed descriptions of eligibility criteria, literature search, data extraction and analysis procedures, these steps were informed by the Cochrane Handbook (Noyes et al., 2022). This review is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis Statement 2020 (Page et al., 2021) and American Psychological Association reporting standards for mixed-methods reviews (Levitt et al., 2018).

2.2. Eligibility criteria

Original peer-reviewed published qualitative, quantitative and mixed methods studies were included if they i) reported on hospital clinicians’ and patients’ perceptions and experiences of evidence-based pressure injury practices or barriers and facilitators to implementing guidelines or policies, ii) were conducted in acute care hospital wards, and iii) were published in English in peer-reviewed journals since 2009. Hospital clinicians are defined as health professionals who are directly involved in hospital patient care.

As this review is part of a programme of research to develop an intervention to improve the uptake of guidelines in acute care hospital wards, studies conducted in out-patient clinics, intensive care units, emergency units and operating theatres were excluded. Studies with student clinicians were excluded unless the results were presented separately for hospital clinicians of interest. Non-peer-reviewed journal articles and grey literature were excluded from this review.

2.3. Search strategy

Two reviewers with expertise in conducting systematic reviews (CSW and EM) and an experienced university librarian developed a search strategy. The PICo (population, phenomenon of interest and the context) framework guided the eligibility criteria and search strategy development (Lockwood et al., 2015). The PICo-structured eligibility criteria are presented in Table 1. Search term concepts related to: i) perceptions or experiences of preventing or managing ii) pressure injury criteria are presented in Table 1. Search term concepts related to: i) perceptions or experiences of preventing or managing ii) pressure injury iii) in acute hospitals were used in the search strategy. Medical subject headings and keywords were used for each search term concept depending on the database. Search term concepts were combined using Boolean “AND”. Alternative spelling and synonyms were combined using Boolean “OR”. A comprehensive literature search was developed for MEDLINE and adapted for four other databases: EMBASE, CINAHL, PsycINFO and Cochrane Central Library. The search strategies for all the databases are available in Supplementary Table 1.

The literature search was performed on 3rd May 2021, with a literature search update performed on 8th Aug 2022. As this review focused on barriers and facilitators to implementing guidelines and the pressure injury comprehensive international guideline was first published in 2009, retrieved publications were limited to 2009 onwards. References were imported to the Covidence systematic review software (Veritas Health Innovation, 2021) for screening, critical appraisal and data extraction.

Given the nature of qualitative research, it is not possible to merely rely on a database search to identify all relevant published qualitative studies (Thomas and Harden, 2008). Identification of relevant peer-reviewed publications from conference and dissertation abstracts (Thomas and Harden, 2008) is necessary. Conference and dissertation abstracts found in the literature search, ProQuest Dissertations & Theses Global, Networked Digital Library of Theses and Dissertations, Australasian Digital Theses through Trove and OpenGrey databases were used to identify additional relevant peer-reviewed publications. Similarly, the bibliographies of relevant systematic reviews and included studies were reviewed to identify additional relevant references.

2.4. Data extraction

Relevant data from all included studies were extracted using a modified version of the JBI data extraction form tailored to this systematic review. Data extraction included the first author’s name, year of publication, study characteristics, participant characteristics, and reported qualitative and quantitative findings. Themes, findings on perceptions, experiences, barriers and facilitators, and participant quotations were extracted from qualitative studies. Barriers and facilitators referred to pressure injury prevention and management strategies, such as pressure injury risk assessment, repositioning, and support surfaces, were specified in the data extraction process to enable comparisons of patterns of mapped Theoretical Domains Framework domains between prevention and management strategies. Data from open-answer survey responses were extracted as qualitative data. Outcome measurement descriptions, result tables and narrative finding summaries were extracted separately for quantitative studies. Qualitative and quantitative data were extracted separately for mixed-methods studies.

Two reviewers conducted literature screening, data extraction and critical appraisal processes independently (CSW, HC or MM). Any disagreements were discussed, and further discrepancies were resolved by a third reviewer with domain knowledge and methodological expertise (EM).

2.5. Critical appraisal

As recommended by Lizarondo et al. (2020), the Mixed Methods Appraisal Tool was used to appraise the methodological quality of the included studies that consisted of the following designs: qualitative, randomised controlled trials, non-randomised studies, quantitative descriptive studies and mixed-methods studies (Hong et al., 2018).

2.6. Data transformation

Following methodological guidance for mixed-methods systematic reviews (Stern et al., 2020), a convergent integrated approach involving data transformation of quantitative findings was used. Qualitisation of quantitative data is deemed appropriate for transforming data into a mutually compatible format before data analysis to allow integration with qualitative data (Stern et al., 2020). For studies that used surveys

Table 1

<table>
<thead>
<tr>
<th>Population</th>
<th>Phenomena of interest</th>
<th>Context</th>
<th>Study type</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion criteria</td>
<td>Hospital clinicians</td>
<td>Clinicians’ views on preventing and managing PI. Barriers and facilitators to evidence-based practice for preventing and managing PI.</td>
<td>Medical, surgical, general, subacute, and rehabilitation wards.</td>
<td>Qualitative studies Mixed-methods studies English language Published since 2009</td>
</tr>
<tr>
<td>Patients aged ≥18</td>
<td>Wounds or infections other than PI. Studies only investigating the effectiveness of wound care products or devices.</td>
<td>Intensive care units, cardiac intensive care units, outpatient, palliative care, primary and community care.</td>
<td>Grey literature Conference abstracts Unpublished studies and dissertations</td>
<td>Not English Published prior to 2009</td>
</tr>
</tbody>
</table>

PI: pressure injury.
with pre-specified barriers and/or facilitators, to ensure the review presented representative and important findings, only pre-specified barriers and/or facilitators that more than 50% of participants in the included study selected were considered as barriers and/or facilitators following a process used by other reviewers (Craig et al., 2016). One reviewer (CSW) was responsible for qualitative data. Original authors' narrative summaries of quantitative findings were used to cross-check with the qualitative data to ensure data transformation accuracy.

2.7. Data analysis

2.7.1. Thematic synthesis of findings

In the convergent integrated approach, the extracted qualitative and quantified quantitative data carry equal weight (Harden and Thomas, 2010). Qualitised data were assembled and analysed with the qualitative data from original studies. A thematic synthesis approach (Thomas and Harden, 2008) recommended by the Cochrane Handbook (Noyes et al., 2022) was used to analyse and synthesise all findings. Findings were firstly line-by-line coded and then grouped by related codes to define 'descriptive' themes (Thomas and Harden, 2008). These 'descriptive' themes were presented as barriers and facilitators to implementing guidelines and were further aggregated and synthesised to generate overarching 'analytical' themes based on 'third order interpretation' (Thomas and Harden, 2008). These 'analytical' themes are the main themes, with barriers and facilitators presented under each main theme in the Results section. NVivo 12 (QSR International Pty Ltd, 2018) was used to aid data management throughout the thematic synthesis process.

Thematic synthesis was first conducted separately for the clinician and patient data by one reviewer (CSW) for all included studies, and a second reviewer (HC or ML) independently analysed a subset (10) of randomly selected studies. Any differences identified were discussed to reach an agreement, with disagreements resolved by a third senior reviewer (EM). Comparative data analysis (Gibbs, 2018) was then undertaken by comparing and contrasting barriers and facilitators analysed and derived from clinicians’ and patients’ views under each main theme. CSW led the comparative analysis, with close conferral with the research team’s input to provide investigator triangulation and achieve consensus on findings.

2.7.2. Mapping barriers and facilitators to the Theoretical Domains Framework

The barriers and facilitators identified in each main theme retained the findings closest to the original findings from included studies (Thomas and Harden, 2008) and were classified into the relevant Theoretical Domains Framework domains (Cane et al., 2012). The Theoretical Domains Framework constructs (Cane et al., 2012) were used to allocate barriers and facilitators to the most appropriate domain. This process was conducted by one reviewer (CSW), followed by discussion and cross-checking with a senior reviewer with implementation science expertise (EM).

2.7.3. Behaviour change technique allocation

To identify the active components of effective interventions, the last phase was to map Theoretical Domains Framework-mapped barriers and facilitators to the most relevant behaviour change techniques using the matrix presented in Cane et al. (2015) that assigned relevant behaviour change techniques to each of the Theoretical Domains Framework domains and considering the six APEASE criteria (Affordability, Practicability, Effectiveness and cost-effectiveness, Acceptability, Side-effects and safety, Equity) described in the Behaviour Change Wheel (Michie et al., 2014) to enable the selection of the most appropriate intervention options, content and implementation options (Jenkins et al., 2018; Michie et al., 2014). Using a standardised behaviour change technique taxonomy label reporting system enhances the transparency and transferability of the findings (Michie et al., 2013). One reviewer conducted this allocation (CSW), and then discussed and cross-checked it with a senior reviewer with implementation science expertise (EM).

3. Results

The initial database search yielded 14,480 studies. Following duplicate removal and title and abstract screening, full-text screening was undertaken on 548 studies and 42 studies were identified for inclusion (Fig. 1). An additional eight relevant studies were identified through hand searching from bibliographic data of included studies. The literature search update identified another five relevant studies. A total of fifty-five studies were included.

3.1. Study characteristics

Tables 2 and 3 show the study and participant characteristics of included studies (29 quantitative, 22 qualitative, 4 mixed-methods) involving hospital clinicians and patients, respectively. Studies reported on clinicians’ or patients’ perspectives exclusively, except for two studies that included both clinicians’ and patients’ views on pressure injury prevention (Horup et al., 2020; Latimer et al., 2021). Four clinician-related studies used sequential mixed-methods methodology to address several aims, of which the qualitative component relevant to this review was included (Martin et al., 2017; O’Brien and Cowman, 2011; Sving et al., 2020; Sving et al., 2012). Similarly, validative qualitative data on patients’ interviews from a pilot randomised controlled trial was included in this review (Roberts et al., 2016a, 2016b). Studies were conducted in a range of countries, including Australia (n = 12), United States (n = 8) and Sweden (n = 6), The sample sizes ranged from 23 to 1806 participants in quantitative studies and 5 to 131 participants in qualitative studies.

Of the 45 studies of clinicians’ views, 26 quantitative studies used validated pressure injury knowledge and/or attitude questionnaires or self-developed surveys to investigate the knowledge, attitude and/or barriers to pressure injury prevention. Of those, only two studies also investigated pressure injury management (Fullbrook et al., 2019; Gunningberg et al., 2010). Of 15 clinician-related qualitative studies, 14 studies used semi-structured interviews or focus groups and one study used conversational interviews (Chaboyer and Gillespie, 2014) to explore views on pressure injury prevention. Three qualitative studies also explored pressure injury management (Barakat-Johnson et al., 2019; O’Brien and Cowman, 2011; Teo et al., 2019). The four clinician-related mixed-methods studies used surveys, focus groups and semi-structured interviews to investigate pressure injury prevention and management practices and views on pressure injury prevention and management (Balzer et al., 2014; Horup et al., 2020; Moir et al., 2022; Walker et al., 2019). Three studies specifically aimed at investigating clinicians’ views on pressure injury risk assessment (Balzer et al., 2014; Gaspar et al., 2021) and support surfaces (Horup et al., 2020).

Of the 12 studies involving hospital patients’ perspectives, nine were qualitative studies that used individual and semi-structured interviews or open-ended surveys that explored their views on pressure injury prevention received whilst in the hospital. Of the qualitative studies, all except one sought views on pressure injury management (Gourlan et al., 2020). Two of the three patient-related quantitative studies used validated questionnaires and/or self-developed surveys to investigate patient reported outcomes, participation in pressure injury prevention, and factors influencing pressure injury prevention involvement (Deakin et al., 2020; McNees et al., 2014). Another investigated factors contributing to pressure injury management participation (Guan and Bombardier, 2012). Two qualitative studies specifically investigated patients’ views on support surfaces (Horup et al., 2020) and nutrition (Roberts et al., 2014).
3.2. Participant characteristics

Data from 7699 clinicians and 520 patients were reported. Of the 45 studies that recruited clinicians, 36 recruited only nurses; seven recruited various clinicians, including nurses and physicians and/or allied health; and two recruited only physicians. Twenty-six studies reported years of clinical practice, ranging from less than one year (Gunningberg et al., 2010) to 38 years (Chaboyer and Gillespie, 2014). It was not possible to compare views between health professions, as some participants’ health disciplines were either not clearly reported in the participant demographics (Hommel et al., 2017; Horup et al., 2020; Jankowski and Nadzam, 2011; Martin et al., 2017; Walker et al., 2019) or description of the quantitative findings (Levine et al., 2012; Mishra and Mahmood, 2019). Of the 12 patient-related studies, they were all hospitalised patients and ten reported participants’ ages ranging from 24 (Roberts et al., 2014) to 99 years old (Horup et al., 2020). Six studies reported recruiting patients with different levels of pressure injury risk, and four studies reported recruiting patients with existing or previous pressure injuries. All studies, except three (Gourlan et al., 2020; Latimer et al., 2014; McInnes et al., 2014), provided information on pressure injury prevention and management strategies received by patients.

3.3. Methodological quality of included studies

Quality assessment results are presented in detail in Supplementary Table 2. Overall, of the 22 included qualitative studies, most of them showed coherence between the study aim, data collection, analysis and interpretation and provided details on data analysis and interpretation. Among those, ten studies provided no or unclear descriptions of data collection methods to justify how research questions were addressed.

Of the 29 included quantitative studies, most studies demonstrated use of appropriate measurement tools and statistical analysis to answer the research question. Thirteen studies had a low risk of nonresponse bias; and six demonstrated that the study sample was representative of the target population (Ebi et al., 2019, Getanda, 2016, Guihan and Bombardier, 2012, Li et al., 2022b, Mengist et al., 2022, Soban et al., 2017).
Table 2
Study and participant characteristics of studies that involved hospital clinicians, stratified by study design.

<table>
<thead>
<tr>
<th>Author(s), year</th>
<th>Country</th>
<th>Setting</th>
<th>Recruitment date</th>
<th>Methodology</th>
<th>Participants</th>
<th>Study focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barakat-Johnson et al., 2019</td>
<td>Australia</td>
<td>Acute and rehabilitation wards in 4 hospitals</td>
<td>May 2016 to Sep 2016</td>
<td>Semi-structured interviews and focus groups</td>
<td>18 18 nurses</td>
<td>PI prevention and management Barriers and facilitators of implementing a patient-centred PI prevention care bundle</td>
</tr>
<tr>
<td>Chaboyer and Gillespie, 2014</td>
<td>Australia</td>
<td>1 orthopaedic and 1 general medical ward in a hospital</td>
<td>Not reported</td>
<td>Conversational interviews</td>
<td>20 20 nurses</td>
<td>PI risk assessment use and risk monitoring PI prevention programmes</td>
</tr>
<tr>
<td>Gaspar et al., 2021</td>
<td>Portugal</td>
<td>1 hospital</td>
<td>Feb 2020 to May 2020</td>
<td>Focus group</td>
<td>11 11 nurses</td>
<td>Perceptions of PI prevention and intervention implementation</td>
</tr>
<tr>
<td>Hommel et al., 2017</td>
<td>Sweden</td>
<td>6 hospitals</td>
<td>Nov 2014 to Dec 2014</td>
<td>Semi-structured interviews and focus groups</td>
<td>39 Not specified (nurses, physicians, and managers)</td>
<td>PI risk assessment use and risk monitoring PI prevention programmes</td>
</tr>
<tr>
<td>Jankowski and Nadzam, 2011</td>
<td>United States</td>
<td>4 hospitals</td>
<td>Apr 2009 to Mar 2010</td>
<td>Meetings, interviews, random chart audit and feedback</td>
<td>Not reported</td>
<td>Perceptions of PI prevention and intervention implementation Barriers and solutions to implement PI prevention programmes</td>
</tr>
<tr>
<td>Latimer et al., 2021</td>
<td>Australia</td>
<td>3 medical wards in a hospital</td>
<td>Sep 2019</td>
<td>Focus groups</td>
<td>20 20 nurses</td>
<td>Perceptions of PI prevention and intervention implementation</td>
</tr>
<tr>
<td>Li et al., 2022a</td>
<td>China</td>
<td>1 hospital</td>
<td>Aug 2020 to Dec 2020</td>
<td>Semi-structured interviews</td>
<td>27 27 nurses</td>
<td>Perceived roles in PI prevention and factors influencing PI prevention</td>
</tr>
<tr>
<td>Martin et al., 2017</td>
<td>Canada</td>
<td>1 hospital</td>
<td>2013 to 2014</td>
<td>Semi-structured interviews and focus-groups</td>
<td>35 Not specified (nurses, dietitians, PTs, physicians, managers and healthcare aides)</td>
<td>Perceptions of PI prevention programme</td>
</tr>
<tr>
<td>O'Brien and Cowman, 2011</td>
<td>Ireland</td>
<td>1 orthopaedic and 1 gerontology ward in a hospital</td>
<td>Nov 2007 to Dec 2007</td>
<td>Focus groups</td>
<td>13 13 nurses</td>
<td>Perceptions of PI prevention and intervention implementation</td>
</tr>
<tr>
<td>Roberts et al., 2016b</td>
<td>Australia</td>
<td>Medical, surgical and rehabilitation wards in 4 hospitals</td>
<td>Not reported</td>
<td>Semi-structured interviews</td>
<td>18 18 nurses</td>
<td>Perceptions of the impact of a PI prevention care bundle</td>
</tr>
<tr>
<td>Soban et al., 2016</td>
<td>United States</td>
<td>Medical and surgical wards in 6 hospitals</td>
<td>Nov 2011 to Feb 2013</td>
<td>Semi-structured interviews</td>
<td>48 48 nurses</td>
<td>Key components of PI prevention programmes Attention to and perceptions of PI prevention</td>
</tr>
<tr>
<td>Sving et al., 2012</td>
<td>Sweden</td>
<td>Medical, geriatric and orthopaedic wards in a hospital</td>
<td>Jan 2009 to Apr 2009</td>
<td>Observation and semi-structured interviews</td>
<td>9 9 nurses</td>
<td>Experiences and perceptions of PI prevention</td>
</tr>
<tr>
<td>Sving et al., 2017</td>
<td>Sweden</td>
<td>3 medical and 2 surgical wards in a hospital</td>
<td>Apr 2013 to Oct 2013</td>
<td>Semi-structured interviews and focus groups</td>
<td>36 31 nurses and 5 first-line managers</td>
<td>Experiences and perceptions of PI prevention</td>
</tr>
<tr>
<td>Sving et al., 2020</td>
<td>Sweden</td>
<td>Medical and surgical wards in a hospital</td>
<td>Not reported</td>
<td>Semi-structured interviews and focus-groups</td>
<td>32 27 nurses and 5 managers</td>
<td>Experiences and perceptions of PI prevention</td>
</tr>
<tr>
<td>Teo et al., 2019</td>
<td>Singapore</td>
<td>1 general ward in a hospital</td>
<td>Oct 2017 to Dec 2017</td>
<td>Semi-structured interviews and focus-groups</td>
<td>24 24 nurses</td>
<td>Factors influence PI prevention and management</td>
</tr>
<tr>
<td>Beeckman et al., 2011</td>
<td>Belgium</td>
<td>94 wards in 14 hospitals</td>
<td>Apr 2008</td>
<td>PUKAT and APuP</td>
<td>485 485 nurses</td>
<td>PI knowledge and attitudes of PI prevention Knowledge and attitude of PI prevention</td>
</tr>
<tr>
<td>de Almeida Tavares et al., 2015</td>
<td>Portugal</td>
<td>Medical and surgical wards in 5 hospitals</td>
<td>Feb 2011 to May 2011</td>
<td>PI subscale measure in GNKA</td>
<td>867 867 nurses</td>
<td>PI knowledge and attitudes of PI prevention Knowledge and attitude of PI prevention</td>
</tr>
<tr>
<td>Author(s), year</td>
<td>Country</td>
<td>Methodology</td>
<td>Participants</td>
<td>Study focus</td>
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</tr>
<tr>
<td>de Meyer et al., 2019</td>
<td>Belgium</td>
<td>Geriatric and rehabilitation wards in 16 hospitals in 55 hospitals in 6 hospitals</td>
<td>Total number: 390</td>
<td>Knowledge of PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ebi et al., 2019</td>
<td>Ethiopia</td>
<td>Orthopaedic wards in 1 hospital</td>
<td>Number in each health discipline: 120 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fulbrook et al., 2019</td>
<td>Australia</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 286 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getanda, 2016</td>
<td>Kenya</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 115 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greš Haláš et al., 2021</td>
<td>Slovakia</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 57 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gul et al., 2017</td>
<td>Turkey</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 106 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gunningberg et al., 2019</td>
<td>Sweden</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 72 nurse managers</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ilesanmi et al., 2012</td>
<td>Nigeria</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 11 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iranmanesh et al., 2013</td>
<td>Iran</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 57 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiang et al., 2020</td>
<td>China</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 1806 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaddourah et al., 2016</td>
<td>Saudi Arabia</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 105 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levine et al., 2012</td>
<td>United States</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 23 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Li et al., 2022</td>
<td>China</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 104 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malinga and Dlungwane, 2020</td>
<td>South Africa</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 198 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mengist et al., 2022</td>
<td>Ethiopia</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 372 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mishra and Mahmood, 2019</td>
<td>India</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 126 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miyazaki et al., 2010</td>
<td>Brazil</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 386 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Padula et al., 2015</td>
<td>United States</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 55 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parisod et al., 2021a</td>
<td>Finland</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 213 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parisod et al., 2021b</td>
<td>Finland</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 213 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rodrigues et al., 2016</td>
<td>Brazil</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 69 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sengul and Karadag, 2020</td>
<td>Turkey</td>
<td>Orthopaedic and surgical wards in 1 hospital</td>
<td>Total number: 308 nurses</td>
<td>Knowledge and barriers to PI prevention</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
None of the four mixed-methods studies (Balzer et al., 2014; Horup et al., 2020; Moir et al., 2022; Walker et al., 2019) clearly reported how the integration of qualitative and quantitative findings was achieved.

3.4. Themes

Four main themes were generated and are presented below supported by illustrative quotes and associated barriers and facilitators. The main themes are: 1) nurse-led multidisciplinary care, 2) patient participation in care, 3) practicability of guideline implementation and 4) attitudes towards pressure injury prevention and management. Supplementary Tables 3 and 4 show barriers and facilitators with allocated Theoretical Domains Framework domains and behaviour change techniques under each main theme. Supplementary Table 5 summarises findings and compares clinicians’ and patients’ views.

3.4.1. Main theme 1: nurse-led multidisciplinary care

This main theme highlights the importance of nurse leadership in initiating, directing and facilitating pressure injury multidisciplinary care. The importance of interdisciplinary and multidisciplinary teamwork for evidence-based decision-making was emphasised in three qualitative studies (Hommel et al., 2017; Soban et al., 2016; Teo et al., 2019).

“As staff nurses, the number one most important thing we would be able to do is to assess the patients’ needs for pressure injury prevention... when [junior nurses] encounter any problems, ... [nurse practitioners] advise what the appropriate things to do.”

Teo et al. (2019)

Across qualitative and quantitative studies, commonly reported facilitators to enhance nurse-led multidisciplinary care included improved awareness and knowledge of pressure injury prevention and management and communication across health disciplines to foster a multidisciplinary approach to pressure injury care. Other facilitators included: clarifying each health discipline’s roles and scope of practice in respect of pressure injury prevention and management; nominating a nursing clinical champion to drive, monitor and evaluate pressure injury prevention care; and creating and maintaining a supportive infrastructure to facilitate nursing leadership when integrating pressure injury care into routine clinical practices.

Only one study reported patients’ views on multidisciplinary care. Some appreciated clinical support received from different health disciplines. In contrast, others reported receiving conflicting advice from different health disciplines, being unclear about the role of nutrition in pressure injury prevention, dietetics service not meeting their expectations of pressure injury care, or disliking the prescribed diet to address nutritional needs (Roberts et al., 2014).

3.4.2. Main theme 2: patient participation in care

This main theme represents nurses’ and patients’ preferences for patient participation in hospital pressure injury care, with more evidence sourced from patient qualitative studies. Nurses who participated in pressure injury prevention implementation programmes with patient participation emphasised the importance of patient involvement in delivering patient-centred pressure injury prevention care (Barakat-Johnson et al., 2019, Chaboyer and Gillespie, 2014, Latimer et al., 2021, Roberts et al., 2016a, 2016b). They believed patient participation in pressure injury prevention improved clinician-patient communication, increased patient satisfaction, and reduced clinician workloads (Chaboyer and Gillespie, 2014, Roberts et al., 2016a, 2016b).

“If you’re getting the patient to try to mobilise, try to move themselves in the bed and things like that, then it’s less work on you really... it’s going to end up benefiting [nursing staff] in the long run”

Chaboyer and Gillespie (2014)
From qualitative studies, nurses felt they were responsible for promoting patient participation by providing education and imparting skills to patients to perform pressure injury prevention strategies appropriately and independently (Chaboyer and Gillespie, 2014; Roberts et al., 2014a, 2014b). Nurses and allied health professionals believed accessibility to high-quality patient education resources facilitated patient participation and education on pressure injury prevention strategies (Chaboyer and Gillespie, 2014; Latimer et al., 2021; Martin et al., 2017; Roberts et al., 2016a, 2016b).

Similarly, six quantitative and qualitative studies of patient views stated that patient participation was facilitated with face-to-face pressure injury education, daily engagement with clinicians, and accessible and interactive educational resources delivering simple and succinct messages in video, leaflet and poster format to equip them with pressure injury prevention and management knowledge and skills (Gillespie et al., 2014; Gourlan et al., 2020; Hultin et al., 2019; Latimer et al., 2014; Latimer et al., 2021; McInnes et al., 2014). Other factors influencing patient participation included physical pain, discomfort...
(Horup et al., 2020; McInnes et al., 2014), tiredness from medication and/or medical procedures (Roberts et al., 2017) and cognition and disability (Guihan and Bombardier, 2012; Latimer et al., 2014). Functionally dependent patients with pressure injury required a trustworthy caregiver capable of assisting pressure injury prevention and management (Gourlan et al., 2020; Latimer et al., 2020).

In qualitative studies of patient views, most patients at risk of or with a pressure injury expressed self-responsibility for their health. They preferred to be actively involved in pressure injury care in hospitals, including daily skin checks, repositioning, nutrition and decision-making facilitated by positive clinician interactions, which enhanced their perceived autonomy in care and self-efficacy in following optimal skin care practices (Hultin et al., 2019, Latimer et al., 2014, Roberts et al., 2016a, 2016b, Roberts et al., 2017).

“You have to be proactive about it. If you are not... then the decisions are made for you.”

Latimer et al. (2014)

However, some patients at risk of or with a pressure injury felt clinicians were responsible for providing pressure injury care, preferred a passive role, and only wanted to be informed of the care plan rather than involved in shared-decision making (Latimer et al., 2014; Roberts et al., 2017).

“Well, [the staff] tell you what is going to happen [about care] and I don’t say anything.”

Latimer et al. (2014)

Patients’ different expectations of involvement in pressure injury prevention and management influenced their preference for the level of participation (Latimer et al., 2014, Roberts et al., 2017). For instance, in two qualitative studies, those patients who had experienced pressure injury and knew pressure injury was preventable preferred to be more proactively involved in pressure injury care. Patients whose in-hospital pressure injury prevention care did not meet their expectations (indicated by unfulfilled mattress requests and the recurrence of pressure injury) found it particularly challenging to rebuild trusting relationships with clinicians, were frustrated with healthcare, and felt powerless to manage skin care (Gourlan et al., 2020, Latimer et al., 2014).

“It’s disempowering... makes me want to talk up a little little... I’ve asked numerous times ‘what’s happening’, and it’s got to the point where I just stop asking, ‘cos it’s frustrating.”

Latimer et al. (2014)

3.4.3. Main theme 3: practicability of guideline implementation

This main theme describes the practical difficulties of implementing pressure injury prevention and management guidelines from clinicians’ perspectives, which was similar to patients’ needs for clinicians’ support to receive pressure injury care. Clinicians in 15 quantitative and qualitative studies expressed that they had limited capacity to fully adhere to pressure injury guidelines due to competing priorities and significant workload demands in addition to involving in pressure injury assessment, diagnosis, documentation and commencing pressure injury prevention and management strategies (Barakat-Johnson et al., 2019; Latimer et al., 2021; Sving et al., 2017; Sving et al., 2020). Five quantitative and qualitative studies reported organisational-level barriers to guideline uptake included the difficulty in accessing updated pressure injury guidelines and unavailability of practical consultancy support from wound care nurses (Barakat-Johnson et al., 2019; Getanda, 2016; Kaddourah et al., 2016; O’Brien and Cowman, 2011; Sving et al., 2012). Other organisational-level barriers included a shortage of pressure-relieving support surfaces, skin care products and repositioning aids (Jankowski and Nadzam, 2011; Soban et al., 2016; Sving et al., 2012).

Additionally, clinicians from qualitative, quantitative and mixed-methods studies reported individual-level barriers specific to different pressure injury prevention and management strategies, primarily insufficient knowledge of; using pressure injury risk assessment tools, performing skin assessment, preventive skin care and wound care, repositioning patients appropriately, and appropriate support surface options. In two studies, nurses were unaware of how to use nutritional screening tools to prompt dietitian referrals for patients at high risk of pressure injuries and at high risk of malnutrition (Jankowski and Nadzam, 2011; Jiang et al., 2020).

Facilitators of guideline implementation mentioned in three qualitative studies included regular pressure injury incidence audits, actionable care plans, regular care plan follow-up, and sharing successful case studies (Barakat-Johnson et al., 2019, Hommel et al., 2017, Roberts et al., 2016a, 2016b). Given the high staff turnover rate in hospitals, clinicians from quantitative and qualitative studies highlighted the importance of regular workshops on evidence-based knowledge updates and practice-based training on pressure injury prevention and management to refresh existing clinicians’ knowledge or to train new clinicians in implementing guidelines (Barakat-Johnson et al., 2019, Ebi et al., 2019, Hommel et al., 2017, Parisod et al., 2021a, 2021b, Teo et al., 2019).

“[Educational courses] is kind of a refresher for us, because we already know the basic prevention all those already.”

Teo et al. (2019)

Similarly, patients who had hospital-acquired pressure injury believed pressure injury was attributed to not receiving timely appropriate support surfaces.

“I probably didn’t get an air mattress in time.”

Latimer et al. (2014)

Patients from three qualitative studies and one quantitative study also expressed their reliance on clinicians to access affordable equipment or consumables and impart skills for prevention and early intervention of pressure injury as part of discharge planning and education (Gourlan et al., 2020; Hultin et al., 2019, Latimer et al., 2014, McInnes et al., 2014). Across assorted health conditions, prior knowledge and experience of pressure injuries, patients expressed requiring different types and levels of support to perform pressure injury prevention and management (Gillespie et al., 2014; Gourlan et al., 2020; Latimer et al., 2014; McInnes et al., 2014).

3.4.4. Main theme 4: attitudes towards pressure injury prevention and management

This main theme refers to the diverse beliefs held by clinicians and patients on the importance of pressure injury care over other hospital priorities that drove their attitudes and preferences for performing prevention and management strategies, reflected in eight clinician-related and three patient-related qualitative studies. Despite recognising the clinical significance of pressure injury prevention and management (Kaddourah et al., 2016; Rodrigues et al., 2016), clinicians in four quantitative and qualitative studies, particularly physiotherapists, ranked pressure injury as a lower priority among other clinical tasks, such as fall prevention and medical emergency procedures (Barakat-Johnson et al., 2019; Kaddourah et al., 2016; O’Brien and Cowman, 2011; Sving et al., 2012).

“We would love to be able to turn every patient hourly to second hourly. We just don’t have that capacity within our staff to be able to do that because the patient’s about to have a fall, or the patient that’s occluding their airway, or the confused patient that you’re trying to resettle takes up that time away from going, ‘okay, let’s go and turn this patient’.”

Barakat-Johnson et al. (2019)
When hospital-acquired pressure injury occurred, nurses in two qualitative studies felt responsible for being unable to provide optimal pressure injury prevention and management care in a workplace with competing responsibilities, heavy workload, complex barriers, and time constraints (Barakat-Johnson et al., 2019; Sving et al., 2017).

"...when [pressure injuries] do develop past that stage two, there's almost no stopping them. ... and it's incredibly distressing for the staff, we're always so upset, the family are beside themselves..."

Barakat-Johnson et al. (2019)

Some nurses who recognised pressure injury was preventable in two qualitative studies expressed the need to change the mindset from pressure injury treatment to prevention by implementing a new pressure injury prevention clinical routine and fostering a desirable work culture using a reflective audit and feedback mechanism (Sving et al., 2017; Teo et al., 2019).

Clinicians’ attitudes to the use of pressure injury assessment tools varied in four qualitative and mixed-methods studies, ranging from tools supporting clinical reasoning for assessment to preferring clinical judgement over tools to predict pressure injury risk and to choose appropriate support surfaces (Balzer et al., 2014; Barakat-Johnson et al., 2019; Horup et al., 2020; Sving et al., 2012).

“A lot of clinical judgement and autonomy has been taken away from nursing in a sense that we just go by numbers... and I think that whole clinical thinking and critical thinking has been taken away.”

Barakat-Johnson et al. (2019)

Patients in qualitative studies expressed similar attitudes to pressure injury. Some patients at risk of, or with, a pressure injury reported they participated in pressure injury care as they were concerned about the health consequences, including pain, abnormal smell and increasing comorbidities (Gillespie et al., 2014; Gourlan et al., 2020; Latimer et al., 2014). Some patients who had experienced pressure injuries reported that returning to their everyday social life was a positive motivator to optimise skin health (Gourlan et al., 2020).

“While taking care of my skin I can enjoy life, go outside with my electric wheelchair and enjoy the nice days and sun to play p’etanque with my friends.”

Gourlan et al. (2020)

3.5. Theoretical Domains Framework domain allocation pattern

Fig. 2 provides an overview of the Theoretical Domains Framework domain allocation, represented by the identified barriers and facilitators in each pressure injury prevention and management strategy. The Theoretical Domains Framework domains that were allocated to specific barriers differed slightly between the types of prevention and management strategies; there were few strategy-specific barriers and facilitators identified from the included studies. Different determinants of behaviour identified in each theme imply the need for different implementation strategies to address barriers or promote facilitators related to each theme. The clinician-reported barriers associated with impracticability of guideline implementation including a lack of updated knowledge of current pressure injury prevention guidelines (Knowledge domain) and a lack of resources such as appropriate pressure relieving devices and consumables to perform evidence-based strategies (Environmental Context and Resources domain). Clinicians viewed nurse-led multidisciplinary care as a factor that could facilitate guideline implementation and highlighted the importance of improving interdisciplinary collaboration in relation to pressure injury prevention (Environmental Context and Resources domain). For patients, lack of patient participation in care was an impeding factor to guideline implementation. Common barriers related to this included a lack of understanding of pressure injuries (Knowledge domain) and a lack of caregiver involvement and unfulfilled pressure relieving
support surface requests (Environmental Context and Resources domain). Patients and clinicians shared views about the lack of access to educational resources in the hospital setting (Environmental Context and Resources domain) and the lack of skills and knowledge of how to facilitate patient or caregiver participation (Skills domain). Patients reported positive attitudes towards participating in pressure injury prevention and management was an enhancing factor in guideline implementation.

3.6. Behaviour change technique allocation pattern

Seventeen patient-related and 32 clinician-related barriers and facilitators were mapped to 13 Theoretical Domains Framework domains and were then allocated to 21 behaviour change techniques. Fig. 3 shows the frequency of barriers and facilitators coded to specific behaviour change techniques allocated for each Theoretical Domains Framework domain. As barriers and facilitators identified by clinicians were mainly mapped to the Knowledge domain and Environmental Context and Resources domain, “instruction on how to perform a behaviour” and “restructuring the physical environment” were the two common behaviour change techniques to which these domains were mapped. Patient-related barriers and facilitators were commonly mapped to “health consequences”, “identity associated with changed behaviour”, “negative reinforcement” and “reframing”, indicating the need for different implementation strategies between clinicians and patients to address barriers or promote facilitators that alleviate guideline implementation challenges.

4. Discussion

This mixed-methods systematic review used an innovative approach to synthesise and compare clinicians' and patients' views on implementing guidelines and provides insights into factors believed to affect evidence-based pressure injury care from the viewpoints of acute care clinicians and patients. These factors have been mapped to the Theoretical Domains Framework and allocated behaviour change techniques as part of the development of an end-user patient-centred intervention that is theoretically and empirically informed. This has informed a theoretical basis for multifaceted intervention development to improve guideline implementation. Our findings show clinicians, primarily nurses, and patients believed nurse-led multidisciplinary care and patient participation facilitate optimal guideline implementation and enhance individualised patient-centred care. However, clinicians raised concerns about the practicability of implementing aspects of guidelines mainly relating to pressure injury risk assessment, skin inspection and repositioning. These challenges were in turn related to both complex organisational- and individual-level barriers, leading to some uncertainty among clinicians about how to implement them. There was a convergence between clinicians' and patients' views on the lack of pressure injury knowledge, resources and how to facilitate patient and caregiver involvement in patient-centred care.

In this review, nurse-led multidisciplinary care was highlighted by clinicians, primarily nurses, as necessary for facilitating optimal guideline uptake. A multidisciplinary team approach, which refers to different health disciplines determining actionable strategies to achieve interprofessional collaboration (Scovil et al., 2019), is vital for optimal pressure injury prevention and management (Avsar et al., 2019). In a high staff turnover environment, clinical mentorship with interprofessional wound care experts allows inexperienced clinicians to develop the necessary knowledge and skills in facilitating multidisciplinary, evidence-based care provision (Suva et al., 2018). Nurses' role in holistic patient-centred skin care allows them to be primary advocates for patients' wound care (Delaney, 2018). As nurses rely on support from other health disciplines to maintain patients' skin integrity, multidisciplinary teamwork driven and coordinated by nurses appears appropriate (Samuriwo, 2012). An effective multidisciplinary team-based approach to pressure injury care has been found to improve patient outcomes and reduce hospital costs (Suva et al., 2018). In designing implementation programmes, clarifying the roles of different health disciplines in pressure injury care and equipping nurses with skills to facilitate nurse-led multidisciplinary care are essential. Further research is required to explore the perceived responsibilities among allied health and patients' views on multidisciplinary pressure injury care to inform strategies to improve nurse-led patient-centred multidisciplinary care.

In addition, this review shows that clinicians and patients desire patient participation in pressure injury care. Patient participation refers to “empowering and enabling patients to be actively engaged in the decision-making process” (Leder et al., 2020). Patient involvement in decision-making is crucial because: patients are cared for in a complex and dynamic hospital setting where things are traditionally ‘done’ to the patient (Leder et al., 2020); patient participation is fundamental in enacting patient-centred care and ensuring continuity of care (García-Sánchez et al., 2019; Kitson et al., 2013) and this can improve patient safety, self-efficacy, adherence to treatment plans, and...
satisfaction with healthcare services (Delaney, 2018; Ledger et al., 2020). However, there are many challenges in facilitating patient participation in nursing care (Tobiano et al., 2015). Many conditions need to be present for patient participation in direct ward care, including reciprocal clinician–patient interaction, information and knowledge exchange, treating patients as equal partners in care, and nurse advocacy for patient involvement in assessment and care planning (Sahlsten et al., 2008; Tobiano et al., 2016). Consistent with this review, equipping clinicians with patient participation skills and fostering a working environment that supports patient participation are critical components to support implementation programmes (Oxelmark et al., 2018).

Nurse-led multidisciplinary care and patient participation may help to address some organisational- and individual-level barriers related to the practicability of guideline implementation mentioned in this review and hence help alleviate negative attitudes towards guideline uptake. Regular workshops on knowledge updates and practice-based training on evidence-based prevention and management strategies targeted to a multidisciplinary team may help address some practical knowledge and skill barriers and improve interdisciplinary care. Fostering positive attitudes towards evidence-based care requires multi-level approaches, possibly including discipline-specific clinical champions who can promote self-reflexive learning, help bedside clinicians implement and sustain a pressure injury care team, and provide guidance and knowledge updates (Suva et al., 2018). Given the importance of patients’ role in ensuring patient safety in hospitals (Castro et al., 2016; Seale et al., 2015), interventions that include components targeting both clinicians and patients are recommended to enable evidence-based care (Coyer et al., 2022).

This review used existing evidence on clinicians’ and patients’ barriers and facilitators to implementing guidelines to develop lists of targeted behaviour change techniques to facilitate effective research translation into practice. Behaviour change techniques targeting patients’ views were selected based on interventions tailored and delivered by clinicians to improve patient participation and patient-centred care. However, most included studies provided information on barriers and facilitators applicable to the overall implementation of pressure injury guidelines without considering the potential differences in barriers and facilitators to implementing specific strategies such as repositioning and skin inspection. Situation-specific knowledge of impeding or facilitating factors contributing to guideline implementation is necessary to design an effective and tailored intervention (van Dulmen et al., 2020). This supports the need for more research to elucidate the barriers and facilitators to implementing specific prevention and management guideline recommendations. Whilst we have identified barriers to improving multidisciplinary care and patient participation in this review, it would be of value to conduct further research involving end-users as to which barrier is considered the most important and feasible to overcome from their perspective (Craig et al., 2017).

4.1. Strengths and limitations

A strength is identifying clinician and patient views on pressure injury care helps researchers address issues of importance and clinical relevance to clinical and patient end-users (Crowe et al., 2015). Mapping stakeholders’ perceived barriers and facilitators to the Theoretical Domains Framework and behaviour change techniques helps to systematically identify and target barriers and contribute to developing an effective intervention (Pesseau et al., 2015). The use of the behaviour change technique taxonomy enhances the reportability and transferability of active components of an intervention that will be evaluated in future research. This review also helped highlight literature gaps in understanding barriers and facilitators to implementing guidelines, including nutrition, preventive skin care and wound dressings.

This review contains several limitations. Only including peer-reviewed English-written published studies may have excluded relevant non-English written or unpublished literature. This review provides a context-specific understanding of barriers and facilitators to implementing guidelines in acute care to inform intervention development in similar clinical contexts. Therefore, the findings might not be generalisable to other healthcare contexts. This review is also limited by the methodological rigour of some of the included qualitative studies, which had unclear data collection methods and quantitative studies, that had issues with the representativeness of the target population and non-response bias risk. Therefore, the limitations of each included study have been acknowledged and presented, allowing readers to take this into consideration. The within-comparison of clinicians’ views between health professions was not possible because most findings were from nurses, and studies that involved several health professions did not provide details about which health profession provided what findings. In addition, only one included study described patients’ views on multidisciplinary care. More research is required to elucidate patients’ preferences, expectations and experiences of multidisciplinary pressure injury care.

5. Conclusion

Synthesising and comparing clinicians’ and patients’ views on pressure injury guideline implementation using a mixed-methods systematic review approach have enabled the identification of key components of a patient-centred implementation intervention to improve guideline uptake. This bottom-up approach to implementation intervention development will help address issues of importance and relevance to clinical and consumer end-users. The findings from this review suggest that an implementation intervention in an acute care setting should develop strategies to enhance nurse-led multidisciplinary care, promote patient participation and address practical and attitudinal barriers. Clinicians who participated in implementation programmes and patients showed positive attitudes towards pressure injury prevention and preference for patient participation, suggesting an implementation intervention should address attitudinal barriers to pressure injury prevention and promote patient participation. Impeding and facilitating factors to improve the guideline uptake were specific to each theme, indicating the need for different implementation strategies. Strategies specific to clinicians and patients are also warranted. Further research is required to investigate the effectiveness and sustainability of a multicomponent patient-centred implementation intervention comprising these four key components identified from this review.

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CRediT authorship contribution statement

Ching Shan Wan: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Project administration, Writing – original draft, Writing – review & editing. Hei Lok Cheng: Data curation, Formal analysis, Writing – review & editing. Mika Musgrave-Takeda: Data curation, Formal analysis, Writing – review & editing. Mark Guosheng Liu: Formal analysis, Writing – review & editing. Georgia Tobiano: Formal analysis, Writing – review & editing. Jake McMahon: Data curation, Writing – review & editing. Elizabeth McNees: Conceptualization, Data curation, Supervision, Writing – review & editing.

Data availability

Due to the nature of extracting data from published studies in a systematic review, data has already been made available.
Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/jijnurstu.2023.104557.

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