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REVIEW

Medical and surgical nurses' approach to patient pressure injury prevention education: An integrative review

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Abstract

Aims: Identify and synthesise the published literature on the approaches and practices nurses use during the delivery of pressure injury prevention (PIP) education to hospitalised medical and surgical patients.

Design: An integrated review.

Methods: Whitmore and Knaff's (2005) five-stage methodology guided this review: (1) research problem identification; (2) literature search; (3) data evaluation; (4) data analysis; and (5) results. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (2020) Statement was followed. The quality of included studies was assessed using the Mixed Method Appraisal Tool (2018). Extracted data were analysed using inductive content analysis.

Data Sources: Journal publication dates from 1992 to 2022. Systematic searches of CINAHL (Cumulative Index of Nursing and Allied Health Literature) complete, Embase, PsycINFO (via Ovid) and Scopus databases were undertaken.

Results: A total of 3892 articles were initially identified, four quantitative and two qualitative studies were included. Articles were published between 2013 and 2022. Two themes were identified: responsibility and workplace culture determine nurses' approach to PIP education delivery; and nurses tailor education strategies to address challenges and opportunities for PIP education delivery.

Conclusion: Nurses require resources to facilitate approaches to PIP education with medical and surgical patients. In the absence of clear instruction to support nurses' practice, PIP education for patients is at best delivered in an informal and ad hoc manner. Nurses require accessible education resources to enable them to tailor the content and frequency of PIP education to patients in med-surg settings.

Patient or Public Contribution: No patient or public contribution.

KEYWORDS
implementation, nurse perceptions, patient education, PI prevention

1 | INTRODUCTION

Pressure injuries (PI) are adverse events caused by continuous and/or unrelieved pressure, friction or shear (European Pressure Ulcer Advisory Panel (EPUAP), 2019). PIs impact 2 million hospitalised adults globally per annum (Li et al., 2020), causing a sequelae of psychological, physical and psychosocial complications increasing morbidity and mortality (European Pressure Ulcer Advisory Panel (EPUAP), 2019; Li et al., 2020; Padula & Delarmente, 2019). Hospital-acquired pressure injury (HAPI) prevalence is a global concern, with a 10-year pooled prevalence rate of 8.4% up to 2018 (Li et al., 2020). The economic burden for PI prevention (PIP) and treatment in the United States (US), United Kingdom (UK) and Australia, costs US $26.8 billion (Padula & Delarmente, 2019) and UK £5.3 billion (Guest et al., 2015), $9.1 billion (Nghiem et al., 2022) per annum, respectively. Increased healthcare costs are associated with prolonged length of stay, treatment and productivity costs (Moore et al., 2017; Nghiem et al., 2022). The Australian Commission for Safety and Quality in Healthcare (ACSQHC) (Australian Commission for Safety and Quality in Healthcare, 2019), found that if the rate of PIs in Australian hospitals mirrored the top 25% of peer hospitals globally, there would be 986 fewer HAPI, saving 29,447 bed days and reducing the economic burden by $58,894,248.00.

Similar to many other countries, HAPI prevention is an Australian healthcare priority, a nurse sensitive quality of care indicator and a hospital performance clinical indicator (Australian Commission on Safety and Quality in Health Care, 2015; Australian Council on Health Standards (ACHS), 2014). Multiple factors increase patients' vulnerability to HAPI development including medication side-effects (Webster et al., 2011); diminished mobility, prolonged bed rest and surgical procedures (Chen et al., 2020). The World Health Organization, recommends doctors, allied health personnel (e.g. physiotherapists) and nurses (Marcus, 2014; World Health Organisation, 2010) work collaboratively in care delivery, to improve healthcare outcomes for patients at risk of HAPI (European Pressure Ulcer Advisory Panel (EPUAP), 2019). Preventing HAPI requires nurses' to implement PIP strategies (e.g. risk assessment, skin care, repositioning) (European Pressure Ulcer Advisory Panel (EPUAP), 2019; Fulbrook et al., 2019) into routine patient care (Australian Commission on Safety and Quality in Health Care, 2015; Australian Council on Health Standards (ACHS), 2014) including the delivery of patient education on or soon after admission (European Pressure Ulcer Advisory Panel (EPUAP), 2019). In fact, patient education is a key component of nurses' scope of practice according to the governing body in most Australian jurisdictions (Bergh et al., 2015). Patient education should be underpinned by global PIP clinical practice guidelines (CPG), providing evidenced based recommendations to guide nurses delivery of education (European Pressure Ulcer Advisory Panel (EPUAP), 2019). Yet, a disconnect exists between nurses' assumed knowledge and skill in the delivery of PIP education (Lovegrove et al., 2021) and the content and frequency of education delivery (European Pressure Ulcer Advisory Panel (EPUAP), 2019).

What does this paper contribute to the wider global community?

- Nurses' delivery of pressure injury prevention education to the medical and surgical patient is limited.
- To improve PIP education delivery and possibly prevent HAPI, nurses require PIP education resources that are individualised, accessible, adaptable, and engaging for the patient.
- Medical and surgical nurses need guidance on the approach, content, and frequency of PIP education in the hospitalised setting.

2 | BACKGROUND

One in eight patients in Australian hospitals develop a HAPI during their episode of care (Padula & Delarmente, 2019). Nurses in medical and surgical (med-surg) settings are responsible for providing patients' with PIP care during their hospital stay (European Pressure Ulcer Advisory Panel (EPUAP), 2019). This includes patient PIP education regarding their individual PI risk and prevention strategies (European Pressure Ulcer Advisory Panel (EPUAP), 2019). Accordingly, nurses require knowledge on individualised PIP strategies and effective education delivery methods to promote optimal patient learning (Lehane et al., 2019). However, Australian (Lawrence et al., 2015) and international literature (Beeckman et al., 2011) concludes that nurses PIP knowledge is sub-optimal. A large study on 1806 nurses across 10 tertiary general hospitals in China (Jiang et al., 2020), reported 41.7% of nurses had insufficient PIP knowledge and 21.8% possessed poor PIP behaviour. This included PI health education delivery; rated the lowest of all implemented PIP strategies, whilst 46.6% held negative attitudes towards PIP (Jiang et al., 2020). Conversely, a recent study found that nurses held positive attitudes towards patient PIP education and want to deliver evidence-based practice in their daily activities (Lawrence et al., 2015). However, nurses' positive attitude towards PIP is insufficient to ensure PIP practices occur (Moore & Price, 2004).

Patient education is a high priority in healthcare (European Pressure Ulcer Advisory Panel (EPUAP), 2019), as 60% of hospital patients have low health literacy (Australian Commission for Safety and Quality in Healthcare, 2014). Education delivery enables the sharing of information and knowledge between nurses and patients (Australian Commission for Safety and Quality in Healthcare, 2014). Nurses deliver education in both informal (ad hoc) and formal (structured) ways (Dunn & Milheim, 2017). Well-designed patient education delivered by nurses helps bridge the health literacy gap, increasing patient satisfaction, promoting autonomy and reducing HAPI burden in hospitalised patients (Latimer et al., 2014; Marcus, 2014; Oyetunde & Akinmeye, 2015). An abundance of literature highlights insufficient patient PIP education is provided by nurses, with patient education commonly reported as the least

implemented PIP strategy (Li et al., 2022; Moore et al., 2015). Greater research is needed to understand inhibiting factors for education delivery (European Pressure Ulcer Advisory Panel (EPUAP), 2019; Barakat-Johnson et al., 2018), as 61.54% of European and up to 76.92% of Australian PI experts stated 'content and frequency' of staff and consumer education in PIP knowledge is a research priority (European Pressure Ulcer Advisory Panel (EPUAP), 2019).

In clinical practice, nurses consider many factors in the delivery of patient education (Australian Commission for Safety and Quality in Healthcare, 2014; Marcus, 2014; Oyetunde & Akinmeye, 2015), which occurs in time-pressured and fast-paced ward environments (Coyer et al., 2015). Given the minimal and inconsistent levels of PIP education received by patients, reports suggest nurses lack the confidence to determine the appropriate PIP content to deliver (Stoffers & Hatler, 2017). Interestingly, whilst nurses feel 'competent' in teaching patients, deficiencies in their own PIP 'knowledge' and 'confidence' leads to low engagement in education delivery (Oyetunde & Akinmeye, 2015). An Australian study (Latimer et al., 2021) reported that patients desire more education, promoting enhanced participation in PIP during hospitalisation (Latimer et al., 2021; McInnes et al., 2014; Roberts et al., 2017). It is imperative that new avenues are explored to enhance nurses' engagement with the current processes or develop new education strategies for delivery of PIP education to patients (Latimer et al., 2017).

To address current gaps in the literature, further research is required to better understand the approach nurses use when delivering PIP education to med-surg patients, including the frequency and content (European Pressure Ulcer Advisory Panel (EPUAP), 2019).

3 | AIM

The aim was to identify and synthesise the published literature on nurses' approaches and practices during the delivery of PIP education to hospitalised med-surg patients.

4 | METHOD

4.1 | Design

An integrative review methodology was used to identify the current published literature to identify gaps in research evidence, highlight uncertainty and variations in practice, and synthesise research findings (Noble & Smith, 2018; Whittemore & Knafl, 2005). This methodology encompasses a mixture of approaches (theoretical, qualitative, quantitative, mixed-method) (Whittemore & Knafl, 2005) to conceptualise new knowledge and comprehensively describe (Whittemore & Knafl, 2005) the PIP education approaches used by med-surg nurses. An a priori review protocol was registered with The International Prospective Register of Systematic Reviews (PROSPERO 2022/CRD42022311135). The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) checklist (Page et al., 2021) guided the conduct and reporting of this review.

Whittemore and Knafl's (2005) five-stage integrative review methodology guided this review. These five stages include (1) problem identification, (2) literature search, (3) data evaluation and extraction, (4) data analysis and (5) presentation of results (Whittemore & Knafl, 2005). The SPICE (setting, perspective, intervention, comparison, evaluation) framework (Booth, 2006) guided the development of the search strategy as follows:

1. *Setting*–Med-surg units in acute care hospitals.
2. *Perspective*–Registered Nurses and adult inpatients on medical and surgical wards.
3. *Intervention*–PIP care education (approach, content, frequency) delivered by nurses for inpatients, however defined by study authors.
4. *Comparison*–Other strategies/interventions, if applicable, however defined by study authors.
5. *Evaluation*–Identification of the enablers and barriers to delivering PIP education for med-surg patients and the processes used to facilitate PIP education.

We posed the following review questions:

1. What approaches do nurses use to deliver PIP education?
2. What PIP content do nurses include in patient PIP education?
3. How frequently are patients given PIP education by nurses during their hospital stay?

We applied the following review definitions:

The term PI has been used in this paper for the purposes of consistency. This term is used interchangeably with pressure ulcer in the broader literature (Table 1).

4.2 | Structured literature search

A well-defined literature search strategy was used to improve the accuracy of the database search results and contribute to research rigour (Whittemore & Knafl, 2005). In consultation with a university health librarian, a comprehensive and systematic search of electronic databases CINAHL (Cumulative Index of Nursing and Allied Health Literature) complete, Embase, PsycINFO (via Ovid) and Scopus was undertaken by the authors during January and February 2022 (updated in November 2022). Search terms in each database were adapted using specific filters and a combination of keyword and MeSH terms.

Keywords used were ("nurs*" OR "nurse") AND ("pressure inj*" OR "PI" OR "pressure sore*" OR "bed-sore*" OR "bedsore*" OR "decubitus ulcer*") AND ("Educat*" OR "teach*" OR "instruct*" OR "health literacy" OR "guide"). MeSH Terms for CINAHL were (MH "Nurses+") AND (MH "PI+") AND (MH "Education+"). MeSH terms

TABLE 1 Definitions.

Word	Definition
Acute care setting	Includes the diagnosis, treatment and management of patients with med-surg conditions in a hospital setting (Independent Hospital Pricing Authority, n.d.). This involves short term treatment for a serious injury or illness, post-operative recovery, or urgent medical treatment (Independent Hospital Pricing Authority, n.d.).
Approach	The practices and actions (teaching, instructing, guiding) used by nurses in the delivery of PIP education to med-surg patients
Content	The PIP information delivered by the nurse to patients
Frequency	How often nurses' deliver PIP information to patients during their hospital stay.
Medical/surgical patients	Are adults aged 18 years and older, receiving specialist care in an acute hospital setting (Australian Commission for Safety and Quality in Healthcare, 2014).
Nurse	Is a registered, enrolled, enrolled endorsed, licensed or assistant nurse (under delegation and supervision of registered nurses) (Australian College of Nursing, 2019) who have completed the prescribed education preparation, with demonstrated competency to practise, following authorisation by the relevant regulatory body in their country of practice (Nursing and Midwifery Board of Australia, 2016).
Patient education	Is the process of guiding patient behaviour to produce changes in skills, attitudes and knowledge deemed necessary to improve health literacy and promote active participation in their healthcare (Bergh et al., 2015).

TABLE 2 Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
• Hospitalised adult patients (aged >18 years) • Nurses working on adult med-surg wards. • Acute care setting (hospital), medical units, surgical wards • PI Prevention • Education, knowledge, and attitudes • Primary qualitative, quantitative, randomised controlled trials, mixed method published studies and grey literature including theses and dissertations only. • Published in English • Titles, Abstracts, and keywords • Published 1992–2022	• Infants, paediatrics, teenagers, and adolescents (<18 years) • Community and primary care • Palliative or end of life care • Intensive care units, emergency departments and operating theatre • Maternity and birthing suite • Mental health settings

for Embase included 'nurse'/exp AND 'decubitus'/exp AND 'education'/exp, whilst mapping to subject headings included exp Nurses/ AND Exp Education/. A preliminary database search was completed to ascertain the most appropriate set of keywords to garner the highest relevant results.

Only English language publications were included, due to limited financial resources for translation services. The search dates were limited to 1992–2022. The year 1992 was selected as the Agency for Healthcare Policy and Research first published CPGs for PIP in 1992 (Agency for Health Care Policy and Research, 1992). Following database searches, citations were exported into the web-based software review management platform Covidence™ (Veritas Health Innovation) and duplicates removed. Using the review inclusion and exclusion criteria (Table 2), the titles and abstracts were independently screened for relevance by three researchers (JD, BG, SL) with the full-text articles independently reviewed by two reviewers (JD, BG). Each citation was assigned the following ratings: Include—relevant screen full text, Exclude—irrelevant, and Maybe (unsure) for adjudication (where there was a lack of consensus). A third reviewer (SL or RW) adjudicated any discrepancies.

4.3 | Data extraction and evaluation

To ensure methodological rigour, a systematic data evaluation and extraction process was undertaken (Whittemore & Knafl, 2005). Using Covidence™, data from the included full text articles were extracted using a data extraction tool specifically developed for this review which was pilot tested on three included articles. Two researchers (JD, SL) independently extracted data in relation to author/year/country, aim, setting/sampling, findings/results, and limitations. Findings were compared and presented to other members of the research team. Following this, any suggested changes agreed by the team were incorporated into the final version of the data extraction tool. Where team members were study authors, an independent researcher reviewed these papers to mitigate a potential conflict of interest.

The Mixed Methods Assessment Tool (MMAT) (Hong et al., 2018), was used to evaluate the methodologoical quality of the studies in relation to study design, methods, sample, intervention and outcome measures. Both qualitative and quantitative articles were used in the synthesis, hence the MMAT was the most appropriate tool for the integrative review (Hong et al., 2018). This enabled evaluation

of the quality of various methodologies to establish validity and reliability (see Table 4) (Pace et al., 2012). The design of each study design was assessed against five MMAT methodology criteria and assigned quality ratings of: Y = yes, N = no, CT = cannot tell? (Hong et al., 2018). Two researchers (JD, BG) independently appraised each article, discussing the overall strengths and weaknesses using the MMAT to guide their appraisals (Hong et al., 2018). Discrepancies were resolved through discussion. The findings of the MMAT appraisal are reported in a table narratively specific to the study research questions.

4.4 | Data analysis

A systematic synthesis of the extracted data was undertaken using inductive content analysis as described by Graneheim and Lundman (2004) to identify data patterns. This approach is recommended where topic knowledge is limited (Graneheim & Lundman, 2004). Researchers (JD, SL) familiarised themselves with the studies, comparatively analysing each study to synthesise their findings. Quantitative and qualitative studies were separately analysed with a reflexive and iterative process to recognise data patterns and meanings (Graneheim & Lundman, 2004). Two researchers (JD, SL) reviewed the results data for each article (Graneheim & Lundman, 2004). Meaning units were first assigned from line-by-line extraction including information within qualitative text and quantitative tables, and condensed meaning units were created with a description like text formulated (Graneheim & Lundman, 2004). Next, each meaning unit was further condensed to provide an interpretation by the researcher (JD) of the underlying meaning (Graneheim & Lundman, 2004), and analysed by exploring patterns in the data and identifying elements that may justify differences across the studies (JD, SL) (Graneheim & Lundman, 2004). Finally, coding of the data occurred, with similar meaning units organised into sub-themes (JD), subsequently arranged into themes (JD) and described narratively in relation to our research questions (Graneheim & Lundman, 2004). Throughout this phase, fortnightly meetings were held by the research team to discuss the data analysis and reach consensus on the final included themes.

4.5 | Appraising the quality of the data

Qualitative research rigour was established through credibility, validity, reliability and dependability (Graneheim & Lundman, 2004). Credibility was maintained during the data extraction and analysis through analytical rigour. Throughout this phase, reviewers held regular team meetings to discuss emerging concepts, based on documented versions and emails with all preliminary findings discussed with every member of the research team (Graneheim & Lundman, 2004). The results of each analytical discussion were documented and verified to ensure credibility, validity and reliability (Graneheim & Lundman, 2004). This documented process included initial data coding, and then collapsing meaning units into sub-themes and themes. Two reviewers (JD, SL) independently extracted, appraised and analysed data to maintain interpretive validity as to not overstate conclusions. Definitions were created for each theme, reviewed, revised and confirmed through an iterative process by all authors to maintain reliability and validity of findings. Credibility and reliability of MMAT was also achieved though consultation with an independent party where conflicts of interest were identified. Dependability was achieved by documenting all research processes and procedures, ensuring reliability and consistency of the data (Lincoln et al., 1985).

5 | FINDINGS

5.1 | Study characteristics

In total, 3892 articles were initially identified: 3891 from electronic database searches and one article through website searching. Six qualitative studies were included, published between 2013 and 2022 (Figure 1).

Three studies were conducted in Australia (Latimer et al., 2016, 2021; McInnes et al., 2013), two in China (Li et al., 2021, 2022) and one in Germany (Hoviattalab et al., 2014). Four of the studies were observational (Hoviattalab et al., 2014; Latimer et al., 2016; Li et al., 2021; McInnes et al., 2013) and two were qualitative descriptive studies (Latimer et al., 2021; Li et al., 2022). In total, 932 participants (min $n = 26$; max $n = 577$), which included patients and nurses, were recruited. Five of the studies had predominantly female participants (53%–100%) (Hoviattalab et al., 2014; Latimer et al., 2016, 2021; Li et al., 2022; McInnes et al., 2013), whilst one study had a higher number of males (56.5%) (Li et al., 2021). Table 3 provides a summary of the design, data collection, setting, sample and findings/results of the six included studies in this integrative review.

5.2 | Study quality appraisal

Each study was evaluated for methodological quality using the MMAT (Hong et al., 2018), encompassing qualitative and quantitative descriptive criteria. Across the six studies (Hoviattalab et al., 2014; Latimer et al., 2016, 2021; Li et al., 2021, 2022; McInnes et al., 2013), methodological quality was high; however, all presented with limitations (Table 4). Three quantitative studies identified a risk of bias (Hoviattalab et al., 2014; Li et al., 2021; McInnes et al., 2013), whilst the trustworthiness of the qualitative studies was well reported (Latimer et al., 2021; Li et al., 2022).

5.3 | Content analysis

Overall, a dearth of research relating to the approach, content and frequency of PIP education delivered by nurses in the med-surg

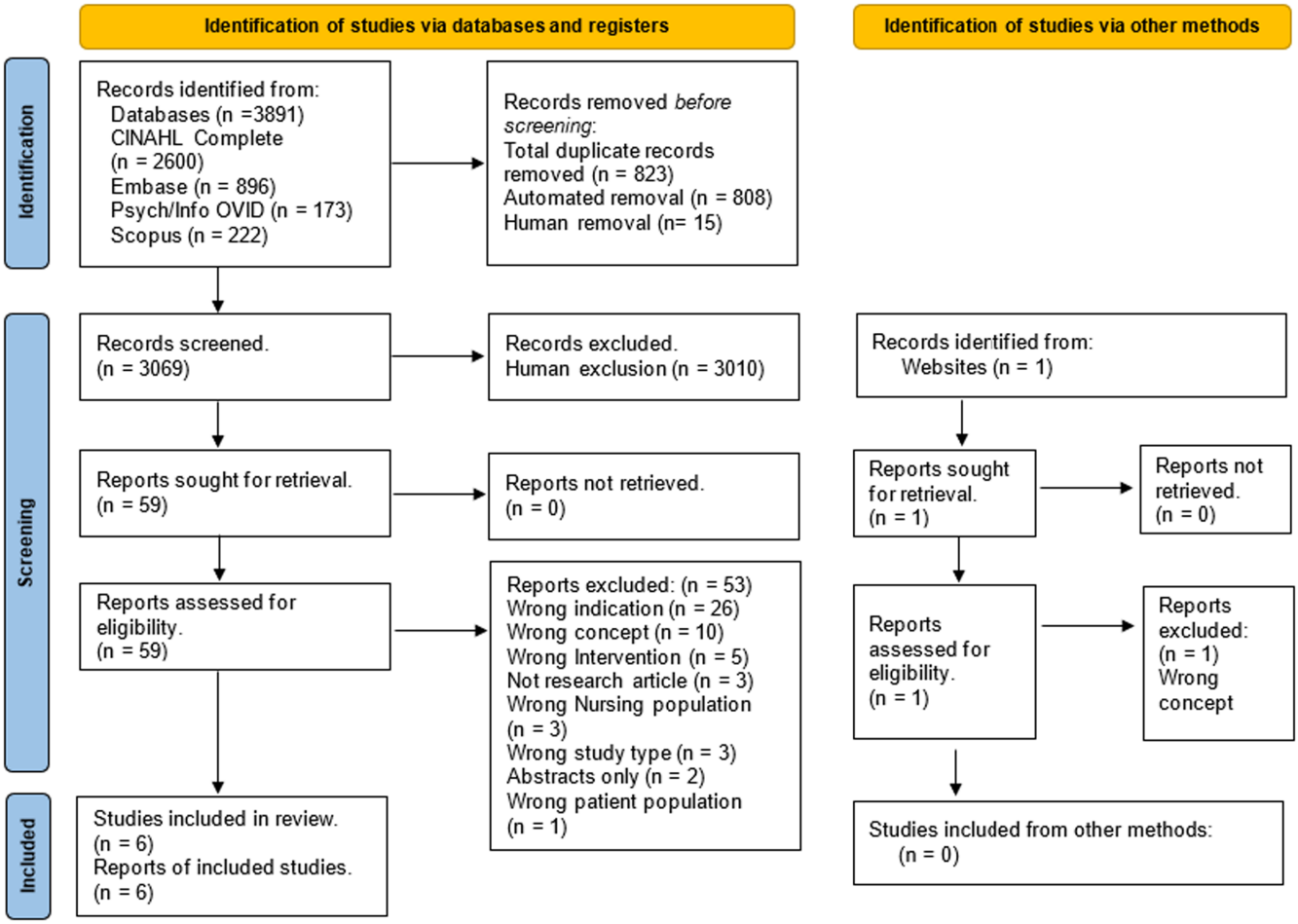

FIGURE 1 Prisma flow diagram. [Colour figure can be viewed at wileyonlinelibrary.com]

setting was found. Two themes were inductively identified in this review. The first theme describes nurses' responsibility and workplace culture determines how they approach the delivery of patient PIP education. Furthermore, the content and frequency of PIP education delivery by nurses is conducted in an informal and ad hoc manner included within daily tasks. The second theme describes how nurses tailor education strategies to address challenges and opportunities of the content and frequency of PIP education delivery. Table 5 provides an overview of the themes and sub-themes to emerge.

5.3.1 | Theme 1: Nurses responsibility and workplace culture determines the approaches they use to deliver patient PIP education

Nurses approach to PIP education delivery is guided by a self-perceived sense of responsibility to prioritise (Latimer et al., 2021; Li et al., 2022), guide, raise awareness and implement PIP strategies for patients in their care (Latimer et al., 2021). Whilst nurses rely on hospital policy and clinical practice guidelines to support PIP practice (Li et al., 2022), up-to-date knowledge is required by nurses to facilitate delivery (Li et al., 2022). Although generalist PIP strategies are broadly described, guidance on the approach to PIP education delivery by nurses is both underreported and limited (Hoviattalab et al., 2014; Latimer et al., 2016, 2021; Li et al., 2021, 2022; McInnes et al., 2013). A major influence in determining approaches to PIP education delivery is a positive workplace culture with proactive nursing management and collegial support, coupled with access to multidisciplinary team members helps to improve delivery of PIP education (Li et al., 2022). Nurses' delivery of PIP education to patients is informal, occurring on an ad hoc basis and incorporated when undertaking daily nursing tasks such as regular repositioning and skin hygiene (Latimer et al., 2021; Li et al., 2021), and to a lesser extent providing education on PI risk and development (Li et al., 2021). However, nurses believe that lack of patient and carer knowledge in PIP results in poor compliance (Li et al., 2021), with strategies needed to encourage patients to actively participate in PIP education.

5.3.2 | Theme 2: Nurses tailor education strategies to address contextual challenges and opportunities for PIP education delivery

The optimal timing and frequency of patient PIP education delivery is not known. Nurses deliver informal PIP education during a patient's hospital admission in response to challenges in PIP education

TABLE 3 Study characteristics.

Author year country	Design data collection	Setting sample	Findings/results
Hoviattalab et al., (2014) Germany	***Design***: Non-participant observational descriptive design ***Data collection***: 4 months between February and July 2011. Data were collected using a study specific patient questionnaire (demographic and PI category) and observational checklist (observed PIP practices patient received over 24 h: morning, evening, and night shift).	***Setting***: medical and surgical patients in two general hospitals in Germany ***Sample***: $n = 32$ adult patients who were at high risk of developing or currently had a pressure injury were observed during all shifts in medical and surgical wards Sex: Female: $n = 17$ (53.1%) Age: 70+ years $n = 28$ (87.5%) Surgical: $n = 17$ (53.1%) HLOS: ≤10 days $n = 21$ (65.8%)	**Approaches** • Written materials for patient education not available on recruited wards nor a feature of the work of nurses. • 'Patient education', the least frequent PIP measure. Only one patient was informed about pressure injury prevention. **Content** • Patients did not receive any information about pressure injury prevention. • Patients were not taught how to reposition themselves when sitting on a chair. **Frequency** • Not stated
Latimer et al., (2021) Australia	***Design***: Descriptive qualitative study ***Data collection***: Semi-structured patient interviews and nurse focus groups conducted in September 2019	***Setting***: Three, 28-bed adult acute medical units (respiratory, general medical and infectious disease) at one Australian hospital ***Sample***: Nurses: purposive sample; Patients: consecutive sample regardless of their PI risk ***Nurses*** $n = 20$ Sex: Female ($n = 15$; 75%) and registered nurses ($n = 17$; 85%). Age range: 22–68 years (Mean = 40; SD = 13) ***Patients*** $n = 9$ Mostly female ($n = 7$; 78%), median age of 71 years (IQR = 27:80).	**Approaches** • Face to face conversation, demonstrations • Multi-modal PPIPCB including brochure, poster, and DVD in nine languages. • Nurses using different approaches to raise patients' awareness of their PI risk and prevention strategies. • Nurses having access to resources to educate patients and families about preventing PI. • Patients and nurses valued the PPIPCB as an education tool that should be implemented into clinical practice. • Nurses acknowledged difficulties in accessing individualised education for culturally diverse patients. • A passive approach to patient education is due to the workload pressures nurses experience during the complicated hospital admission process. • Workload pressures meant nurses delivered patient PIP education in a rushed manner, with surface learning of complex PI concepts only. **Content** • Nurses state their goal was to raise patients' awareness of their PI risk and prevention strategies, such as repositioning and moisturising their skin. Content delivered included 'Telling them that we are going to get them to sit up in the chair' and 'I always tell them I've got to move them off their bottom because it's getting red'. • Nurses stated existing hospital PI education resources were unenticing. • Nurses suggested video education might encourage unwell or impaired patients to reposition. **Frequency** • Nurses noted hospital admission is a stressful time for patients, inhibiting participation in PIP education sessions. • Nurses conceded PIP education is situated in a vast amount of health and safety information delivered to patients on admission. • Nurses acknowledge education on ward orientation is dependent on patient acuity and readiness to participate. • Conducting education on an ad hoc basis on admission and throughout the hospital stay i.e., activities of daily living and/or mealtimes. • Patients appreciated they could access the PPIPCB in a flexible and autonomous manner.

(Continues)

TABLE 3 (Continued)

Author year country	Design data collection	Setting sample	Findings/results
Latimer et al., (2016) Australia	***Design***: Observational study ***Data collection***: From November 2011–February 2012. Two data collection methods: chart audits and semi-structured observations -semi-structured observations of PIP practices were conducted at 30-minute intervals over a continuous 24-hour period (0700–0700)	***Setting***: Four medical units across two Australian metropolitan hospitals; two units at each facility. ***Sample***: Consecutive sample of adult medical inpatients with reduced mobility and a hospital length of stay of ≥3 days prior to recruitment Subsample analysis of participants assessed at PI risk on admission was undertaken. Sample: $n=241$ Hospital A: $n=165$ (68.5%) Age: median 70 years Sex: Male (54.5%) HLOS: 5.0 days Hospital B: $n=34$ (75.5%) Age: median 70 years Sex: Male (68.4%) HLOS: 6.0 days Sub-sample: $n=45$ Hospital A: Male (45.5%) Hospital B: Male (64.7%)	**Approaches** • Nurses delivered PIP education however specific approach not described. • Nurses observed implementing PIP education at the patient's bedside, in medical unit or documentation on medical file. • Most participants did not have documented evidence that pressure injury prevention education had occurred. **Content** • Not discussed beyond generalised 'patient PIP management plan' **Frequency** • Frequency of education delivery not described. • **Patient PIP education** in general was documented in chart; patients with limited mobility: Hospital A sample ($n=16$; 9.7%) and Hospital B sample (sample: $n=11$; 14.5%), sub-sample (patients at PI risk): $n=10$; 22.2% received PIP education • Approximately 10% of Hospital A sample ($n=16$; 9.7%) and subsample ($n=1$; 9.1%) received patient PIP education, with these rates higher at Hospital B (sample: $n=11$; 14.5%; subsample: $n=9$; 26.5%).
Li et al., (2022) China	***Design***: Descriptive qualitative study ***Data collection***: From August to December 2020, semi-structured individual interviews with Registered Nurses	***Setting***: Two medical and two surgical wards at one tertiary hospital in Beijing, China ***Sample***: Purposive sampling Nurses: $n=27$ Age: median 33 years Range 26–39 Sex: Female: $n=27$ (100%) Education: Bachelor's degree $n=21$ (77.8%)	**Approaches** • Patient education materials (in general) were used to support PIP. • Nurses… lead PIP, guiding and coordinating various PIP aids and resources. • PIP nurse-led…who took primary responsibility for providing patients with PIP care. • Nurses' desire for better physician engagement with PIP • A variety of tools, devices, and equipment to support PIP. • Nurses collaborate/support each other in PIP. • Wound care experts provide advice on PIP…wound care team support PIP. • Nurses…require appropriate resources, assistance and support from other healthcare personnel, patients, and carers. • Nurses highlighted importance of keeping up to date on the latest knowledge and CPGs. • Nurses suggested evidence-based patient education materials and video education is preferrable for patients. **Content** • Patient education materials are part of a suite of strategies available for nurses in PIP–specific content not described. **Frequency** • Nurses coordinated the acquisition and implementation of resources to support PIP in their 'daily practice'.

TABLE 3 (Continued)

Author year country	Design data collection	Setting sample	Findings/results
Li et al., (2021) China	***Design***: Prospective observational study ***Data collection***: June and December 2020, total of 65 observation days in four wards (30 days in medical wards. 35 days in surgical wards) for a total of 4536 patient-hour of observation. Direct patient observation (1-hrly intervals for 8 hr on the observation day, ranged from 09:00 to 17:00) and chart audit data collection.	***Setting***: Two medical wards (respiratory, neurology) and two surgical wards (orthopaedics surgery, general surgery) in a tertiary hospital in Beijing, China ***Sample***: Patients: $n=577$ Surgical wards $n=294$ (50.9%) Sample mean age 63.1 years (SD 14.7) Sex: Male; $n=326$ (56.5%)	**Approaches** • Face to face patient education was not commonly 'observed' but was documented in 75% ($n=433$) of audited charts • Surgical patients received more education on skin hygiene and repositioning $n=112$ (39.6%) and $n=198$ (70%), however medical patients received more education on PI risk and nutrition $n=5$ (1.7%) and $n=5$ (1.7%) **Content** • Education on the risk of pressure injury development and nutrition was lacking. • Education content was observed as follows. • Repositioning education was most provided; $n=247$ (42.8%) • Skin hygiene education was provided $n=150$ (26%) • PI Risk education: $n=8$ (1.4%) • Nutrition education: $n=6$ (1.0%) **Frequency** • Repositioning and skin hygiene education was observed more frequently in surgical patients.
McInnes et al., (2013) Australia	***Design***: Observational study and chart audit ***Data collection***: Patient position observed for a 2 × 30 min per shift, totalling 3 h of observation for each patient over a period of 24 h. Equates to 1 h total of observation time per three consecutive shifts (day, evening, and night) **Chart audit**: documented PIP practices such as patient education	***Setting***: Orthopaedic and neurology wards of one metropolitan Australian hospital ***Sample***: Patients $n=26$ Age: Median 66 years [IQR (21)]. Sex: Female: $n=15$ (58%) Orthopaedic Ward: $n=17$ (65%). Admission PI risk category Waterlow at PI risk or higher: $n=12$ (46%) The inclusion criteria included patients hospitalised for 24 h or more	**Approaches** • Structured Observations of face-to-face patient education • Documented patient/carer PI education **Content** • Not explicitly described–pressure injury education: **Frequency** • not stated

Note: The term PI (PI) has been used in this paper for the purposes of consistency. This term is used interchangeably with pressure ulcer (PU) in the broader literature.

Abbreviations: PI, pressure injury, PIP, PI prevention.

[Correction added on 06 July 2023, after first online publication: the layout of Table 3 has been changed to landscape orientation.]

TABLE 4 Quality assessment of included studies using the MMAT criteria.

Qualitative descriptive	Is the approach appropriate to answer the RQ?	Are the data collection methods adequate to address the RQ?	Are the findings adequately derived from the data?	Is the interpretation of results sufficiently substantiated by data?	Is there coherence between data sources, collection, analysis, and interpretation?	Limitations
Hoviattalab et al., (2014)	Y	Y	Y	Y	Y	• single site study, limits generalisability. • small sample size. • use of convenience sampling, possible selection bias
Latimer et al., (2021)	Y	Y	Y	Y	Y	• single site study, limits generalisability. • small sample size. • mainly female nurse population and viewpoint • inequality in time participants spoke in focus groups
Latimer et al., (2016)	Y	Y	Y	Y	Y	• single site study, limits generalisability. • small sample size
Li et al., (2022)	Y	Y	Y	Y	Y	• single site study, limits generalisability. • small sample size
Li et al., (2021)	Y	Y	Y	Y	Y	• possible selection bias • Observer bias and hawthorn effects • reliance on medical record data, which may be incomplete or inaccurate
McInnes et al., (2013)	Y	Y	Y	Y	Y	• single site study, limits generalisability. • small sample size • pilot study; limits generalisability • Most patients independently mobile; possible selection bias • Reliance on patient records which may be incomplete or inaccurate. • Unable to determine how many patients received education.

Abbreviation: RQ, Research question.

TABLE 5 Content analysis of nurse's approach to PIP education delivery.

Theme	Sub-theme	Exemplar (direct wording from articles)
Nurses' responsibility and workplace culture determines approaches to delivery of patient PIP education	• Nurses have a responsibility to deliver PIP to patients, with up-to-date knowledge, hospital policy and workplace culture guiding practice. • Nurses value a multidisciplinary and family centred care approach to PIP delivery.	• The primary nurse educates patients about PI prevention (Latimer et al., 2021) • The implementation of preventative care may have something to do with the nurse's sense of responsibility (Li et al., 2022) • Nurses acknowledge it is their role to educate patients about PIP… (Latimer et al., 2021) • Nurses' implement prevention strategies as per hospital policy (Li et al., 2022) • Nurses highlighted the importance of keeping up to date on the latest … clinical practice guidelines (Li et al., 2022) • Nurses indicate that contextual, social and cultural factors influence PIP (Li et al., 2022) • …nurses spoke about the importance of using a team approach to support each other in PIP (Li et al., 2022) • Family members take great responsibility to keep patients safe…which enabled PIP (Li et al., 2022)
Nurses tailor education strategies to address challenges and opportunities for PIP education delivery.	• Nurses' delivery of PIP education varies; founded on clinical judgement, risk assessment and opportunities for engagement to facilitate practice. • Nurses want to deliver PIP education to patients on admission, however patient acuity, and readiness challenge practice. • Using individualised teaching approaches promotes opportunities for patient engagement in PIP. • Having accessible high quality multi-modal and multi-lingual resources provides nurses with opportunities to deliver PIP education and promote patient participation in PIP care.	• Approximately 10% … received patient PI prevention education (McInnes et al., 2013) • Patients did not receive any information about how they could … reposition themselves… (Team et al., 2020) • Nurses provided PIP education to patients (or their carers) in only 2 (17%) of cases (Li et al., 2021) • Delivery of education on the risk of PI development and nutrition was lacking with 1.4% and 1.0% respectively (Hoviattalab et al., 2014) • Nurses use their clinical judgement when determining PIP (Li et al., 2022) • Many nurses described that relying on risk assessment results was not enough when determining PIP (Li et al., 2022) • Skin hygiene and repositioning education was delivered more frequently to surgical patients (Hoviattalab et al., 2014) • Nurses conceded PIP education was often rushed and situated in a vast amount of health and safety information delivered to patients on admission (Latimer et al., 2021) • Only one patient was given information on the prevention of pressure sores (Team et al., 2020) • Nurses said that if patients and/or their carers did not view PIP as important, they were less likely to cooperate with prevention (Li et al., 2022) • Education has the greatest impact when individualised (Latimer et al., 2021) • Multi-lingual PIP care bundle resources were viewed as filling a practice gap (Latimer et al., 2021) • Hospital patients are powerless … relying on nurses to guide them (Latimer et al., 2021) • Nurses suggested families and carers could watch the video and encourage unwell or impaired patients to reposition (Latimer et al., 2021)

delivery such as workload during admission (Latimer et al., 2021), admission type (medical or surgical) (Li et al., 2021), patient acuity and readiness (Latimer et al., 2021), all challenging education delivery. Clinical judgement complements standardised risk assessment tools: as risk assessment tools alone are deemed insufficient by nurses in determining the content of a patients' PIP care, including education (Li et al., 2022). Notwithstanding, the delivery of PIP education by nurses can empower patients to play an active role in their PIP care, but high-quality education resources are lacking (Latimer et al., 2021). Tailoring education approaches with access to multimodal and multilingual teaching resources creates opportunities for nurses to provide patient-centred PIP education for diverse populations (Latimer et al., 2021).

6 | DISCUSSION

Our review findings suggest there is a paucity of research relating to how nurses' approach the delivery of PIP education to hospitalised patients. Moreover, description of the content and frequency of PIP education delivery was limited in the included studies. Across the six studies included in this review, themes emerged relating to approaches such as nurses' self-perceived sense of responsibility to prioritise PIP, workplace culture and including patients and their families in PIP care. Secondly, informal moments create opportunities to deliver PIP education, where access to tools and resources would afford nurses the opportunity to tailor education for the individual patient.

6.1 | Nurses' role in the delivery of PIP education

Nurses play a key role in partnering with patients through PIP education (Team et al., 2020), an important clinical priority in healthcare settings globally (McInnes et al., 2014; Schoeps et al., 2017). CPGs recommend educating patients about PIP at the earliest opportunity following admission (European Pressure Ulcer Advisory Panel (EPUAP), 2019); however, globally evidence of the implementation of PIP education remains limited (Chaboyer et al., 2017; Latimer et al., 2014, 2016). This review found that whilst nurses possessed a self-perceived responsibility to prioritise PIP care in general (Latimer et al., 2021; Li et al., 2022), only a handful of med-surg patients received selected PIP education interventions during their admission (Hoviattalab et al., 2014; Latimer et al., 2016, 2021; Li et al., 2021, 2022; McInnes et al., 2013). When education was delivered, content predominantly focussed on two individual PIP strategies: repositioning and skin hygiene education (Latimer et al., 2021; Li et al., 2021). In contrast, PI aetiology and risk where the least implemented PIP education strategy in our review. Our finding reflects the broader literature (Latimer et al., 2014; Schoeps et al., 2017), with Gillespie et al. (2021) finding a lack of guidance for nurses implementing PIP education across 11 of 12 evidenced-based clinical guidelines. Hence, in the light of the limited recommendations in PIP guidelines around education (European Pressure Ulcer Advisory Panel (EPUAP), 2019), our findings suggest that there has been little, if any, improvement in the comprehensive delivery of patient PIP education by nurses, a finding supported in the wider literature (Deakin et al., 2020; Schoeps et al., 2017; Team et al., 2020).

In this review, several studies described nurses providing education to patients in an informal manner when conducting tasks such as repositioning or transferring patients from bed to chair (Latimer et al., 2021; Li et al., 2021). Informal education is used by nurses to expedite instructions to patients, targeting specific tasks based on patients' needs and augments autonomy in learning (Dunn & Milheim, 2017). Informal education is at best sporadic, and restricted by time demands (Dunn & Milheim, 2017; Werquin, 2012), with our review finding challenges to patient PIP education. These include workload and time pressures during admission, patients' acuity and readiness to receive information, and insufficient resources to facilitate PIP education delivery (Latimer et al., 2021). A recent study (Niksadat et al., 2022) on 384 patients with cardiovascular disease in Tehran found that nurses paid the least attention to patient readiness (individual, mental and physical preparedness), an important consideration in patient education (Niksadat et al., 2022). On busy nursing wards, patient experiences such as pain and anxiety can inhibit their ability to comprehend information (Niksadat et al., 2022). It is plausible that repetitive nursing tasks such as repositioning and skin hygiene afford regular opportunities for engaging in informal teaching moments (Dunn & Milheim, 2017). Conceivably, the busy med-surg nurse may have inadequate time to prepare formal (planned) PIP education with patients, who are overwhelmed and unable to comprehend the vast amount of information during the first 24 h of admission, relegating comprehensive PIP education to a low order priority.

6.1.1 | Guidelines for practice

CPG (European Pressure Ulcer Advisory Panel (EPUAP), 2019) inform hospital policy relating to PIP, ensuring the most up-to-date evidence is available. However, education strategies are rarely translated into patient PIP care, with an absence of clear instruction nor a 'reciprocal exchange of information' occurring in the clinical setting (Team et al., 2020). Moreover, teaching approaches to guide nurses in the delivery of PIP education are not explicitly addressed in the CPG (European Pressure Ulcer Advisory Panel (EPUAP), 2019). Content on individual PIP strategies such as skin assessment and repositioning is present, yet frequency of comprehensive PIP education delivery during patient's hospital admission is limited (European Pressure Ulcer Advisory Panel (EPUAP), 2019). The collective prevalence of delivered PIP education across our review ranged between 0% and 36% (Hoviattalab et al., 2014; Latimer et al., 2016, 2021; Li et al., 2021, 2022; McInnes et al., 2013), hence most patients are not receiving any PIP education during admission. Our finding is consistent with an Australian multi-site study (Chaboyer et al., 2017) reporting a 36.7% patient PIP education prevalence rate. In contrast, a study of 180 Norwegian and Irish patients found only 2% of patients received PIP education, the least adopted PIP strategy (Moore et al., 2015). Of concern, an Australian hospital study of 2500 nurses found 80% (2000) had not read the PIP guidelines, manifesting in unsatisfactory knowledge levels (Fulbrook et al., 2019). Varied access to current hospital PIP guidelines is identified as a barrier to PIP delivery including education, with 60% of nurses working on medical wards not having access to PIP guidelines, and only 33.3% stating appropriate PIP education was received on their ward in a recent international study (Gaballah & El-Deen, 2021). Interestingly, prior studies identify a lack of correlation between access to CPGs and best practice implementation due to an absence of explicit instruction on strategies to enhance the delivery of PIP care (Alshahrani et al., 2021; Coyer et al., 2019).

6.2 | Tailored education resources to enhance frequency of education PIP

6.2.1 | Frequency

Whilst nurses are the key meditator to education delivery, our review found informal moments augment delivery of PIP education (Latimer et al., 2021; Li et al., 2021, 2022). The frequency of PIP education delivery during a patient's admission was not described in the literature, highlighting a significant practice gap (Latimer et al., 2021; Li et al., 2021, 2022), a finding consistent with earlier research (Team et al., 2020). Interestingly, the informal manner to which education is delivered, coupled with varying acuity of the med-surg patient (Inott & Kennedy, 2011; Marcus, 2014), hinders frequency of PIP education delivery (Latimer et al., 2021). Most med-surg patients are impacted by illness and/or injury which alters comprehension (Bergh

et al., 2015). It is plausible that any informal education provided by nurses may have minimal impact for patients. Notably, healthy patients comprehend 20% of the information they hear and only 10% of the information they read, yet when patient education combines both spoken words and practical demonstration, a 90% comprehension level is achieved (Beta, 2014).

A multi-site randomised control trial of 80 surgical patients found patients who received multiple learning modalities during admission, obtained significantly higher knowledge than patients who received written information only (Zhitomirsky & Aharony, 2022). Moreover, most PIP education includes giving information, shown to be the least effective way a patient comprehends information (Moore et al., 2015). Furthermore, our study supports the need for increased time required by nurses to check for patients' comprehension (Latimer et al., 2021). Importantly, when patients comprehend health information, higher levels of satisfaction, compliance with instructions and better outcomes result (Marcus, 2014). We were unable to identify the optimal frequency of PIP education delivery, aligning with CPG recommendations for further research (European Pressure Ulcer Advisory Panel (EPUAP), 2019).

6.2.2 | Tailored tools/resources

A lack of resources to support the delivery of PIP education was found in 50% of the included studies (Hoviattalab et al., 2014; Latimer et al., 2021; Li et al., 2022), with nurses wanting guidance in support of patient PIP education. The ACSQHC recommend patient education should form part of a patient's PIP plan; however, improved processes are required (Australian Commission for Safety and Quality in Healthcare, 2012). Our review found inconsistencies both within and across studies in terms of the education delivered. Enthusiastic approval of the benefits for including multi-modal education for patients (Latimer et al., 2021) may help to standardise how nurses deliver PIP education, and minimise the disparity arising across the nursing cohort (Tuong et al., 2014). Multi-modal resources are commonly referred to as 'care bundles' (Gillespie et al., 2014). Specifically, a small Australian study tested and evaluated a pressure injury prevention care bundle involving a multi-modal package consisting of a brochure, poster and DVD in 2014 (Gillespie et al., 2014). Further research over the past 8 years (Chaboyer et al., 2016; Deakin et al., 2020; Roberts et al., 2017), including our review study by Latimer et al. (2021), attest that nurses and patients value resources that aid in revisiting PIP education throughout admission; however, small sample sizes limits generalisability.

Nurses in our review indicated they could leave the patients watching the video at the bedside (Latimer et al., 2021), allowing a quick reference point via accessible in-room televisions, a benefit supported by the wider literature (Tuong et al., 2014; Wirihana et al., 2017). Given the time constraints identified with nurses in our study, and in line with broader findings (Wirihana et al., 2017), time saving achieved through multi-modal education could afford nurses improved patient care opportunities to reflect on the information taught with subsequent nurse/patient interactions (Wirihana et al., 2017). This is a departure from the informal nature of current PIP education practice, requiring a more structured approach to education delivery for the med-surg patient—an area requiring further research.

6.3 | Strengths and limitations

We acknowledge limitations with this review. A smaller number of six studies in this review limits generalisability of the findings (Whittemore, 2007). All six articles are single site reviews with four studies based on small sample sizes (≤32), hence results are not generalizable to the broader population. The dearth of literature encompassing the approach, content and frequency of PIP education delivery highlights the need for further research, through undertaking rigorous research. Whilst PIP education was the focus of this study, grouping of PIP care more broadly in the literature, limited opportunities to understand the impact of nurses' approach to delivery of education as a specific strategy. Furthermore, the content analysis is subjective in nature, therefore the resultant interpretations may impact validity and reliability of the study outcomes (Whittemore, 2007). To mitigate, active involvement by all researchers was achieved in the analytical process and in deducing the results (Whittemore, 2007). All reviewers met regularly to discuss developing themes, comprehensive memos were kept by the lead author (JD) enabling a decision trail and version control of each iteration was maintained. An external party was consulted where conflicts of interest applied.

7 | CONCLUSIONS

The findings of this review indicate a paucity of literature related to the approaches, content and frequency of PIP education delivery adopted by nurses in the med-surg hospital setting. Further research is needed to develop the tools, resources and strategies needed to aid nurses in the provision of PIP education to hospitalised patients, improving engagement with PIP education and promoting patient and family participation in their PIP care.

8 | RELEVANCE TO CLINICAL PRACTICE

This review found a scarcity of research relating to the nurses' approach, content and frequency of PIP education in the med-surg setting and confirms nurses' limited engagement with patients about prevention. The findings provide a platform for further research to guide the development of resources to build confidence in nurses to deliver optimal PIP education, and partner with patients to improve PIP safety during hospitalisation.

AUTHOR CONTRIBUTIONS

Substantial contributions to conception and design: Jodie Deakin, Brigid Gillespie, Sharon Latimer and Rachel Walker. *Acquisition of data*: Jodie Deakin and Sharon Latimer. *Analysis and interpretation of data*: Jodie Deakin, Sharon Latimer and Brigid Gillespie. *Drafting and revising the article critically for important intellectual content*: Jodie Deakin, Brigid Gillespie, Sharon Latimer and Rachel Walker. *Final approval of the version to be published*: Jodie Deakin, Brigid Gillespie, Sharon Latimer and Rachel Walker.

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CONFLICT OF INTEREST STATEMENT

The following conflicts are disclosed by the authors. Authors Gillespie and Latimer have co-authorised two papers included in this review (Latimer et al., 2016, 2021), whilst the first author Deakin has co-authored one paper (Latimer et al., 2021). Authors Gillespie, Latimer and Walker are collaborators with the co-author Liz McInnes, who has one paper included in this review (McInnes et al., 2013). Conflicts of interest were addressed via consultation with an external party to ensure credibility of findings in this review.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

TRIAL AND PROTOCOL REGISTRATION

An a priori review protocol was registered with The International Prospective Register of Systematic Reviews (PROSPERO 2022/CRD42022311135).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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