





ORIGINAL ARTICLE

Nurses' experiences of hospital-acquired pressure injury prevention in acute healthcare services in Victoria, Australia: A qualitative study using the Theoretical Domains Framework

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Abstract

We investigated nurses' experiences of hospital-acquired pressure injury (PI) prevention in acute care services to better understand how PI prevention may be optimised. We used the Theoretical Domains Framework to systematically identify barriers and enablers to evidence-based preventive practices as required by the International Guideline. This study was one element of a complex capacity building project on PI surveillance and prevention within the acute health service partners of Monash Partners Academic Health Science Centre, an accredited academic health partnership located in Melbourne, Australia. We adopted a qualitative descriptive design. We interviewed 32 nurses that provided care in intensive care units, general wards and COVID wards of four acute care services. Nurses were recruited from four large acute care services (three public, one private) located in Melbourne. Most of them worked with patients who were at high risk of hospital-acquired PI on a daily basis. Interview transcripts were coded and analysed using thematic analysis guided by the Theoretical Domains Framework. The domains referred to most frequently by all participants included: Knowledge, Skills, Social/Professional Role and Identity, Beliefs about Capabilities, and Environmental Context and Resources. The key barriers discussed by nurses included gaps in nurses' knowledge and skills related to identification and staging of PI, heavy nursing workload and inadequate staffing levels, stigma and self-blame related to PI identification, and exacerbating impacts of the COVID-19 pandemic. Main facilitators discussed were training programmes, nursing audits and feedback, and teamwork. Participants suggested improvements including accessible and tailored training, visual reminders, and addressing heavy workloads and

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emotional barriers nurses face. Investing in tailored training initiatives to improve nurses' knowledge and organisational changes to address low level staffing and heavy workloads are urgently needed to support nurses in delivering optimal care and preventing hospital-acquired PI.

KEYWORDS

coronavirus, hospitals, interview, nurses, pressure ulcer

Key Messages

- Pressure injuries (PIs) are a common and costly hospital-acquired complication across the globe.
- We interviewed 32 nurses that provided care in intensive care units, general wards and COVID-wards of four acute care services to elicit their experience of hospital-acquired PI prevention.
- This paper adds a theoretically sound, systematic approach for understanding and addressing the behaviour change required for prevention of hospital-acquired PI by considering how nurses act in hospital care.
- We systematically present the key barriers identified by nurses and highlight the need for the complex multi-level hospital-acquired PI prevention intervention, addressing these barriers on both individual and organisational levels.

1 | INTRODUCTION

Pressure injuries (PIs) are a common adverse event in patients worldwide, with significant implications for healthcare workers. Substantial evidence has found that PIs are associated with pain, poor health outcomes, limited mobility and reduced quality of life.¹ PI is defined as a 'localised damage to the skin and/or underlying tissue, as a result of pressure or pressure in combination with shear'.^{2,p. 16}

PIs acquired or progressed at any point during the hospital stay are commonly referred as hospital-acquired pressure injury (HAPI) and reported as indicators of quality of care.³ As a common yet dangerous hospital-acquired complication, understanding how healthcare workers consider and implement evidence-based practice in the detection of PIs is critical to reducing this healthcare burden. A 2020 Australian study reported that, based on a prevalence of 12.9% of hospitalised patients, the total cost of PIs in public hospitals was approximately \$9.11 billion (95%CI: 9.02, 9.21), and HAPIs accounted for a total of \$5.50 billion.⁴ The reported costs of treating HAPI in other countries are also high.^{1,5,6} A cost-effectiveness analysis study⁷ concluded that prevention strategies for all hospitalised patients are cost-effective, and that hospitals should invest in improving nursing compliance with international prevention guidelines.²

In Europe, the widespread shortages of nursing personnel affect chronic wound prevention and management.⁸

In previous years, the European Wound Management Association (EWMA) focused on improving health professionals' knowledge and skills and raising their awareness of the evidence-based clinical practice guidelines, and promoted integrated patient care pathways. The EWMA current focus, however, is on organisational innovation that can assist health care systems in better utilising human resources.⁸ The European Pressure Ulcer Advisory Panel (EPUAP) and the National Pressure Injury Advisory Panel (NPIAP) formed the Prophylactic Dressing Standards Initiative (PDSI), which is academic, clinical, and commercial partnership to develop testing methodologies specifically for assessing performance of prophylactic dressings.⁹

An ageing global population and increasing incidence of chronic illness will increase PI risk. Novel human infections, such as COVID-19, have been linked to HAPI in prone-positioned patients with acute respiratory distress syndrome.¹⁰⁻¹⁵ The combination of these factors may lead to longer average hospital stays, increasing the scale of the problem and related healthcare costs.¹⁶ The EPUAP, NPIAP, and Pan Pacific Pressure Injury Alliance Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline (International Pressure Injury Guidelines thereafter)² require nursing staff to conduct a PI risk screening on all admissions and apply risk-reducing strategies post admission, including regular skin inspections, patient repositioning, moisture

control, the use of off-loading devices, nutrition, and promoting early mobility. Complex capacity-building approaches^{17,18} are frequently required for quality improvement in this field.^{19,20} The Australian healthcare system includes public universal free hospital care covered by Medicare, as well as private hospital care covered by insurance. Similarly to other developed countries, public hospitals in Australia experience a pressure to improve the quality and patients' outcomes with limited resources.²¹ To date, there were no studies conducted in Australia that applied a complex framework to investigate multiple factors that shape nurses' beliefs, behaviours, attitudes, experiences, and processes related to the HAPI prevention.

The aim of our study was to understand nurses' beliefs, behaviours, cognition, attitudes, experiences, and processes related to the HAPI prevention. As this research is about how nurses navigate their environment, we elected to take a qualitative approach that would allow for a structured understanding for action via the Theoretical Domains Framework.²² This complex integrative framework was developed by Michie et al.²² to explain behaviours related to the use of evidence-based guidelines, and later refined by Atkins et al.²³ for cross-disciplinary behaviour change and implementation research in healthcare field.²⁴ The TDF was widely applied by researchers to manage the collection and analysis of quantitative and qualitative data,²⁵ and synthesis of quantitative and qualitative evidence in systematic reviews²⁶ to better understand health and healthcare related behaviours. The TDF comprises a synthesis of multiple behavioural theories clustered into 14 domains: (1) Knowledge, (2) Skills, (3) Social/professional role and identity, (4) Beliefs about capabilities, (5) Optimism, (6) Beliefs about consequences, (7) Reinforcement, (8) Intentions, (9) Goals, (10) Memory, attention and decision-making, (11) Environmental context and resources, (12) Social influences, (13) Emotions, and (14). Behavioural regulation, and multiple constructs²³ (Table A1).

We applied the Atkins et al.²³ version 2 of the Theoretical Domains Framework, which provides a framework for identifying various barriers and enablers to HAPI prevention that individual nurses may face. Previous research has applied the Theoretical Domains Framework to understand PIs in other cultural contexts. In the UK,²⁷ for example, the TDF was applied to examine the barriers and facilitators to PI prevention in nursing home residents reported by nurses and other staff. Our application of the Theoretical Domains Framework to nurses' perceptions of factors impacting HAPI prevention in Australian acute care settings is a practical extension of this work.

2 | MATERIALS AND METHODS

2.1 | Study settings

This study was one element of a complex capacity building project on HAPI surveillance and prevention within the acute health service partners of Monash Partners Academic Health Science Centre (Monash Partners), an accredited academic health partnership located in Melbourne, a city of 5 million. Monash Partners is a partnership among the 12 leading health services, research and teaching organisations that serve a population of almost 3 million Australians (www.monashpartners.org.au). The partner organisations include Alfred Health, Monash Health, Monash University, Cabrini Health, Epworth HealthCare, Eastern Health, Peninsula Health, Baker Institute, Burnet Institute and Hudson Institute with La Trobe University and Latrobe Regional Hospital as associate partners.

We employed the constructivist paradigm to address epistemological questions of how nurses address the issue of 'How can I know the reality?' through the interpretation of routine nursing events and activities, and daily care practices related to HAPI in hospital wards. We used a qualitative methodology to explore events and activities in clinical practice related to HAPI and conducted semi-structured telephone interviews with acute-care nurses who worked in intensive care units, COVID wards and various other acute care wards. We selected these settings because the risk of acquiring HAPI in these settings is particularly high both in Australia^{28,29} and globally.³⁰ The COVID ward was selected because of the increasing admissions of people with existing PIs from the Residential Aged Care Facilities during the initial years (2020–2021) of COVID-19 pandemic in Victoria, Australia.^{31,32} While we initially planned to conduct face-to-face interviews, they were disallowed by the participating health services during the COVID pandemic; and we conducted phone interviews.

2.2 | Recruitment strategies

We utilised purposive and snowball sampling strategies and applied matrix sampling technique³³ to ensure we recruited nurses from both private and public healthcare settings and various ward types. The participant selection criteria were set up prior to the interviews. We included nurses holding permanent full-time and part-time positions, and excluded agency and student nurses as the number of hours they worked in a particular setting was limited. Nurses on casual contracts were excluded as the casual staff turnover during the COVID-

19 pandemic was particularly high. Nurses from the Project Advisory Committee members' professional networks were contacted in-person and provided a brief explanation of the project. Nurses expressing interest were provided with the study coordinator's contact details; and the coordinator then answered questions and arranged an interview. All steps were designed to ensure safety during COVID-19 pandemic. At the end of the interview, participants were asked to connect other nurses who might be interested with the study coordinator. Recruitment continued until data saturation was reached, while ensuring that approximately similar numbers were recruited at each site.

2.3 | Data collection

Data collection took place between November 2020 and March 2021, a period during which Melbourne and its surroundings were on a strict lockdown protocol for COVID. Semi-structured interviews with acute care nurses were conducted by two authors (LT and VT) using open-ended questions. Interview questions aimed to elicit discussion related to (1) knowledge and skills related to HAPI prevention; (2) barriers and enablers to evidence-based practice for HAPI prevention; (3) perceptions of patients' expectations for HAPI prevention; (4) professional roles and attitudes to HAPI prevention; (5) awareness of the International PI guidelines; (6) nurses' educational needs and (7) suggestions for improvement of current HAPI prevention and surveillance. The interview guide included questions and prompts related to the HAPI prevention practices, including risk screening, skin inspection, moisture control, the use of pressure relieving equipment, repositioning, nutrition assessment and promoting mobility as recommended by the International PI guidelines.² The interview guide was developed by chief investigators (VT and CW) in consultation with LT. The draft version of the interview guide was sent to the site-specific chief investigators and the Project Advisory Committee members for their input and revised following their suggestions. Developing the interview guide, we loosely followed the TDF and did not map the questions directly onto the TDF domains. Following the latest suggestions for the use of the TDF in qualitative research,²⁵ we decided to apply an inductive approach at the stage of data collection to facilitate more synergistic findings and reduce the risk of missing the non-TDF-related data.

The average interview time was 62 min, with interviews ranging between 26 and 99 min. We recorded all interviews with the participants' prior permission, using the voice recorder. All audio files were transferred to the University drive accessible only to the research team and

deleted from the voice recorder. The available audio files were uploaded in the transcription agency's portal and transcribed verbatim by a medical transcriptionist. The transcription agency adheres to the *Commonwealth Privacy Act* (<https://www.legislation.gov.au/C2004A03712/latest/versions>). The audio files uploaded in the transcription agency's portal are protected with file encryption. All transcriptionists signed a confidentiality agreement. Prior to coding, four randomly selected transcripts were compared to recordings to ensure data quality. Only one participant requested a copy of their transcript although this opportunity was available to all participants. The participants' names were replaced with the interview codes, including the participants' role, research site and the interview number in all transcripts.

2.4 | Data analysis and synthesis

We analysed data concurrently with data collection using NVivo Plus software for qualitative data management Version 20.3 (available at <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home/>). Thematic analysis was applied using three levels of coding, where themes were generated from the Theoretical Domains Framework constructs and domains. Two investigators (VT and LT) coded the first three transcripts, applying the Theoretical Domains Framework as a coding framework. The applied codes were then reviewed by two other investigators (CW and JBH), who compared the coding with corresponding quotes. Given no issues, all subsequent manuscripts were coded by the same two investigators (VT and LT). And coding was regularly compared using selected codes for which there were multiple quotes (CW), ensuring coding consistency and objectivity. Two early career researchers (AB and YQ) contributed to data analysis.

We applied the theory-driven conceptual framework³⁴ to data analysis. Deductively, first and second level nodes were created to match the Theoretical Domains Framework domains (first level nodes) and constructs (second level nodes). Third level or child nodes were created inductively by identifying specific barriers and enablers to HAPI prevention, and by identifying educational needs and suggestions for clinical practice improvement. Technically, participants' utterances were linked to particular barriers or enablers, and then all barriers and enablers were mapped across the coding framework. Data saturation was reached by the 24th interview, when data analysis did not generate any new barriers and enablers or needs and suggestions related to HAPI prevention within the Theoretical Domains Framework domains and constructs.

The following sociodemographic and role-related data were collected in the beginning of the interview and utilised in the analysis of the participants' experiences: age, gender, level of education, current position title, current area of work, number of days worked per week, duration of clinical bedside practice, duration of work in the health service, completion of course on PI/skin integrity and frequency working with patients at risk of HAPI.

2.5 | Rigour

In this study, we employed a range of strategies to meet the credibility, dependability, transferability and confirmability criteria, which are considered quality markers of qualitative research.³⁵ The interviews were conducted by a research nurse with extensive experience in chronic wound research, who had no pre-existing relationship with the participants. Data was coded and analysed by researchers who have medical and nursing backgrounds and extensive experience in chronic wounds research. The coding framework, the process of coding and preliminary results had been discussed with the project Advisory Committee during regular monthly meetings and notes kept to ensure trustworthiness. The Advisory Committee included representatives from acute care services, the partnership organisation, and a consumer.

2.6 | Ethics approval and informed consent

Ethics approval was granted from the Alfred Health (HREC 62256). Site specific approvals were received from the human research ethics committees of the participating acute care services: Alfred Health (252/20), Cabrini Health (03-08-10-20), Monash Health (RES-20-0000846L—62256) and Peninsula Health (SSA/62256/PH-2020). At the beginning of interviews, participants provided verbal consent for participation, which were recorded with participants' permission. Signed consent forms were sent to the project coordinator following interviews.

3 | RESULTS

3.1 | Participant characteristics

Semi-structured interviews were completed with 32 nurses from the four Monash Partners hospitals, three public and one private, all located in Melbourne. Only three participating nurses were male (9.4%), while 29 were female (90.6%). Most nurses had completed a

postgraduate course. Half of the interviewed nurses had been in clinical practice for 10 years or less. Thirty nurses worked with patients who were at high risk of HAPI on a daily basis. Thirty-one nurses had already completed a training course on PI or skin integrity (Table 1).

3.2 | Summary of the domains

The domains referred to most frequently by all participants included: Knowledge (mentioned 939 times), Skills (737 times), Social/Professional Role and Identity (425 times), Beliefs about One's Own Capabilities (136 times) and Environmental Context and Resources (967 times) (Figure 1 shows the frequency of domain mentions). Other important domains were mentioned by the majority of participants and included: Social Influences (138 times by 95% of participants), Emotions (93 times by 91% of participants) and Memory, Attention and Decision Making (112 times by 88% of participants). Less frequently mentioned domains were: Goals, Behavioural Regulation, Intentions, Optimism, Beliefs about Consequences and Reinforcement. Illustrative quotes for each domain and related constructs are provided in Table 2 and a summary of the barriers and enablers to PI prevention is provided in Table 3.

3.3 | Knowledge

All but one nurse completed PI training modules as part of skin integrity and wound management courses. They rated their knowledge of PI staging as good, but pointed out that sometimes it can be problematic to stage PIs, because some do not look like the images provided in the guidelines.² For example, some had difficulty classifying a PI as either Stage II or Stage III in the presence of incontinence-associated dermatitis. Differentiation of Stage IV and unstageable PI was also challenging and highlighted the complexity of procedural knowledge for HAPI prevention. This skill requires knowledge of PI classification and practical experience of PI staging. In general, PI prevention requires complex skills and multiple competencies, such as knowledge of riskscreening, nutrition assessment, skin checking, classification, repositioning, reporting, promoting mobility, patient and family education, dressing selection, prevention in obese patients, device-related PI, the use of protective equipment and referral processes. Nurses reported that to get the latest information on PI prevention they read journal articles and attended local and international conferences for nurses, wound industry free events, and webinars delivered by Wounds Australia—the peak body for wound prevention and management in Australia.

TABLE 1 Participant characteristics (nurses, $n = 32$).

Participating health services		
Public health service 1	8	25.0%
Public health service 2	7	22.0%
Public health service 3	8	25.0%
Private health service	9	28.0%
Gender		
Male	3	9.4%
Female	29	90.6%
Age		
22–25 years	3	9.4%
26–30	11	34.4%
31–35	5	15.6%
36–40	1	3.1%
41–45	1	3.1%
46–50	5	15.6%
51–55	3	9.4%
56–60	1	3.1%
61–65	2	6.3%
Education		
Diploma Nursing/Enrolled nurse/Certificate 4	3	9.4%
Diploma Nursing/Bachelor Nursing	2	6.3%
Bachelor Nursing Overseas—UK, Manila, India	4	12.5%
Bachelor Nursing	7	21.9%
Bachelor Nursing/Cert Wound management	1	3.1%
Bachelor Nursing/Paramedical	1	3.1%
Bachelor Nursing/Postgrad Oncology	1	3.1%
Bachelor Nursing/Postgrad Critical care	6	18.8%
Bachelor Nursing/Masters Preventative Health	1	3.1%
Bachelor Nursing/Masters Nursing	1	3.1%
Bachelor Nursing/Masters Advanced Nursing Practice	1	3.1%
Bachelor Nursing/Masters Critical care	1	3.1%
Bachelor Nursing/Masters Cardiac Nursing	1	3.1%
Bachelor Nursing/Masters Haematology	1	3.1%
Bachelor Nursing/Masters Nursing	1	3.1%
Current position title		
Enrolled Nurse Div 2	3	9.4%
Registered Nurse—RN Div 1	10	31.3%
Senior Clinical Nursing Professional	6	18.8%
Critical Care Registered Nurse—CCRN	1	3.1%
Associate Nurse Unit Manager/Associated Charge Nurse—ANUM/ACN	3	9.4%
Nurse Unit manager—NUM	9	28.1%
Days worked per week		
1	1	3.1%
2 days	3	9.4%
2.5 days	1	3.1%

TABLE 1 (Continued)

Participating health services		
3 days (nights)	3	9.4%
3.5 days (2 nights)	2	6.3%
4 days	12	37.5%
5 days	11	34.4%
Current area of work (some staff have portfolios in wound care and skin integrity)		
Bariatric high dependency unit	2	6.3%
Emergency	1	3.1%
Intensive care unit	6	18.8%
Medical ward	7	21.9%
Rehabilitation	2	6.3%
Respiratory and cardiac/respiratory ward	3	9.4%
Surgical ward	11	34.4%
Duration of clinical bedside practice		
1–10 years	16	50.0%
11–20 years	8	25.0%
21–30 years	5	15.6%
31–40 years	2	6.3%
40–50 years	1	3.1%
Duration of work at health service		
0–5 years	9	28.1%
6–10 years	12	37.5%
11–15	5	15.6%
16–20	3	9.4%
21–25	0	
26–30	2	6.3%
31–35	1	3.1%
Completion of course on PI/skin integrity		
Completed	31	96.9%
Not completed	1	3.1%
Frequency working with patients at risk of PI		
Daily	30	93.8%
Weekly	2	6.2%

Abbreviation: PI, pressure injury.

Nurses reported the need for more frequent refresher courses, where they could receive updates on research and recommendations. Some nurses raised issues with the availability of education for night staff, because they could not attend workshops, training sessions, and various meetings that ran during the day. Nurses also expressed the need for training courses specific to care on particular hospital units, such as PI prevention in intensive care units. The favoured learning methods were a

quick reference guide, online modules that could be accessed at any time, and bed-side training, particularly for recently graduated nurses. Suggested topics for future educational events included PI classification and staging, differential diagnosis of PI and incontinence-associated dermatitis, device-related PI, PI prevention in people with obesity, PI prevention in prone-positioned people and recording PI in the electronic medical record system.

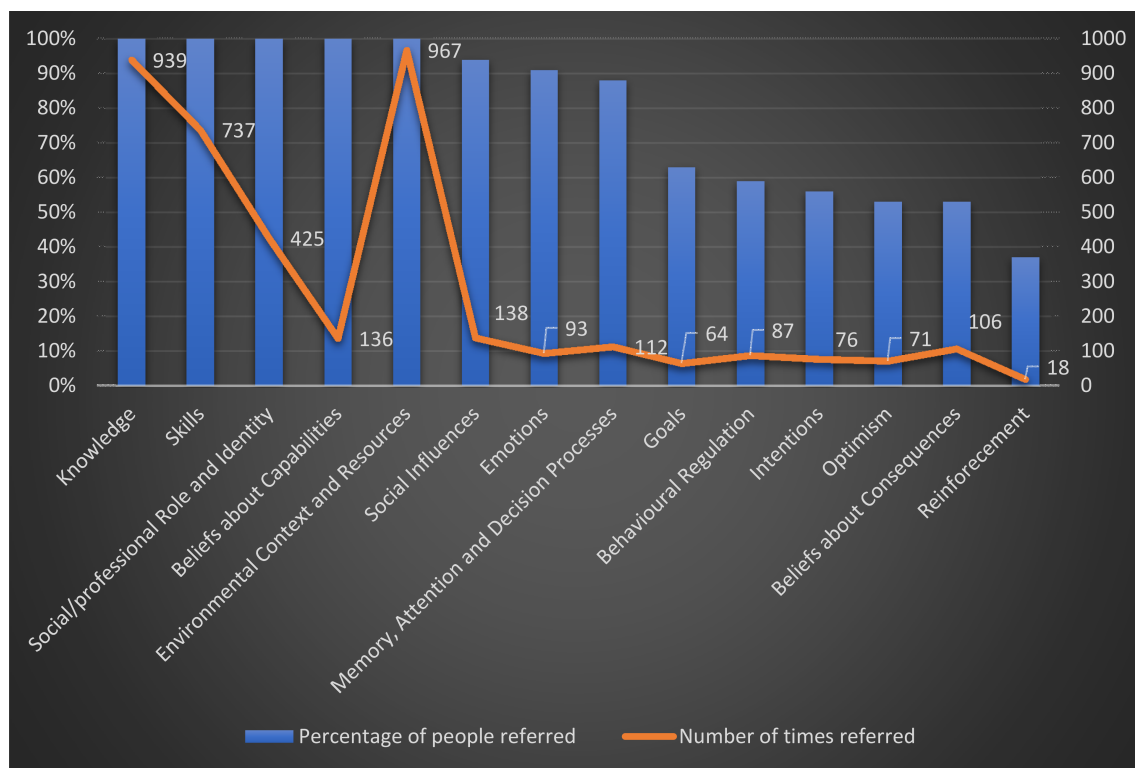


FIGURE 1 Summary of the TDF domains: percentage of the participants referred and the number of times referred.

3.4 | Skills

Participants identified a complex list of skills and competencies to prevent HAPI. While most of the participants said they were competent, they acknowledged that some of their own and other nurses' skills required further development, particularly around staging:

I have to say, it's so frustrating when people say they've got a stage two and it's not, it's a stage one, or it's not even a stage one yet, and it's this misunderstanding of the skin dynamic itself when they look at a reddened area of skin. And my question is, 'Have you touched it?' That's always my first question when people come to me... Does it blanch? but its just a learning curve for so many people. N106

Respondents reported that less-experienced nurses, in clinical practice for a short period of time, tended to underestimate the risk of PI in hospitalised patients. Nurses acknowledged PI differential diagnosis skills could be improved, especially in patients with incontinence-associated dermatitis and skin tears. PI staging skills, including staging PI in dark-skinned patients also needed to be improved. The main facilitators discussed by nurses were induction for new staff and graduate nurses, as well as

ongoing professional development, skill assessment and ongoing performance appraisal. One of the main barriers to education and skill development was the lack of staff, particularly during COVID-19 outbreaks, when clinical staff were too busy with care responsibilities to take on educational activities:

Obviously, education's always a huge thing, but getting people off the floor to education sessions can be hard, especially in some of the really heavy wards. Just time and people are the biggest factor, I feel, because we just don't have enough staff, and we don't have enough time, and our patients are quite sick. N108

Intensive care unit nurses also discussed how quickly their hospital educators organised training for nurses on HAPI prevention in the prone-positioned patients to meet the increasing needs related to COVID-19 pandemic.

3.5 | Social/professional role and identity

Nurses reported that their professional responsibilities for HAPI prevention included: identifying and reporting HAPI, providing holistic care, building patient-professional

TABLE 2 Barriers and enablers to pressure injury (PI) prevention and management: domains, constructs, and quote examples.

Domain	Constructs	Examples of quotes
Knowledge	Knowledge of condition	<p><i>PI staging</i></p> <p>I think there is some discrepancy between unstageable and full thickness, like can we re-stage—so we know that suspected deep tissues and unstageables are non-defined, but in some instances the unstageables are always going to be full thickness, is what some literature says. Whereas for our organisation, we can say that an unstageable could be just a stage two, when we can actually see the base. N107</p> <p><i>Differential diagnosis</i></p> <p>We occasionally have issues with the moisture lesion with the PI. But look, it's usually fairly obvious if it's not on an actual pressure point, and it's usually more ... perineal sort of and maybe buttocks, and it's more of a widespread sort of issue. But then we do have those occasional ones, where you've got what looks like a moisture lesion, but is that a PI there as part of that moisture lesion. N201</p> <p><i>Knowledge of guidelines</i></p> <p>I obviously have gone to a lot of seminars and such like, but the education that I have done has pretty much just been myself with the National Standards and the recent update to Pan Pacific Guideline. N107</p> <p>Q: How do you became aware of those guidelines?</p> <p>A: I think because I've got an interest in wound management. I knew where they were. Doing my postgraduate in wound management, I knew exactly where they were, and what to do. N108</p> <p>Q: Are you aware that there would be guidelines for PI management and prevention?</p> <p>A: 100%, there's guidelines for everything. No, I couldn't tell you the exact ones that they are. Sorry. N209</p> <p><i>PI prevention in COVID-19 patients</i></p> <p>For PI prevention [in COVID-19 patients]? I received something in my email. There was a lot of stuff for health care workers and PI prevention during COVID. There was a lot of recommendations of essentials of COVID learning. I don't recall seeing PI prevention on that list from our nursing education. It was mainly based on respiratory assessments, basic life support and those sorts of things. So, I don't recall seeing it. N101</p> <p>Q: Did you have to attend any courses for the prevention of PI in COVID patients with ARDS [Acute Respiratory Distress Syndrome]?</p> <p>A: No, no, I didn't. But I did my own reading, and [the wound care nurse] sent me through some information which I printed off. One was to do with proning patients, and also to do with specific skin manifestations of—that have been seen in COVID patients, the purpuric skin, often on the toes, and how people can sometimes confuse that with deep tissue injury. I did do my own personal reading on that. It didn't really come up for us, we only had three true COVID patients, the rest were suspected COVID patients, and we only had one death. So, although we were on high alert for all of last year and it was a stressful time, we didn't really see many true COVID patients. And they didn't—I think the one that died did have some skin manifestations, but the others didn't. N406</p>
		Procedural knowledge

(Continues)

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
		<p>because if they're independent and they're mobile, you know that they're low risk. But if they need one to two assist, and they're not very mobile, and they're not getting up on their own, you know that they're going to need more attention and assistance in getting up and encouragement in moving. N207</p> <p>Well, the initial assessment has to be done within 8 h of admission, and then, depending on the result, it could be daily, or every second day, or every third day, depending if we find someone at high risk. N304</p>
Skills	<p>Practice</p> <p>Skill assessment</p> <p>Skill development</p>	<p>The biggest one [barrier] I find is just the amount of staff that are familiar with the equipment to be able to utilise it properly and consistently, which unfortunately for us ends up being a lot of our very high-risk patients fit into that boat unfortunately. So, we've got these—we call it the repo sheet, which we use at our [unit] to help reposition larger or bariatric patients, or patients who are completely immobile. A lot of our staff will train—they do an annual competency in their safe moves and those sorts of competencies. They just don't get used in the demonstrations. They're in the training videos and they're throughout the electronic package. In terms of the competency assessments, they're never assessed. So, people then don't—well in our area I've never seen them be assessed, so then people don't feel comfortable using them. They revert back to what's the most comfortable... N101</p> <p>Knowing the difference between just a bit of redness or—in stage 1, for example, if it's red but it's blanching then it's not a PI, this sort of things. And then also, sometimes, knowing the difference between a PI and a moisture lesion can be a bit difficult. N208</p> <p>Q: Is there a chance that you could underestimate the risk of PIs?</p> <p>A: Yeah, there could be with patients who are extubated and do move around the bed. There is an assumption that the patient can manage by themselves to not get PIs. On my end at least, that's how I would feel. When I see a patient that's moving around the bed I assume that the patient might be at less risk of PIs. N306</p> <p>Any information that comes through directly tends to send emails with updates to us; and I think through our email as well we get updates, if there's—we get an email saying that there's been an update to the policy or if there was an update to any of our assessment charts that would be addressed as well and education would be given on that as well. N205</p> <p>We've got our safe moves assessors, and we're now going through a transition where previously it was just our clinical support and development nurse who assesses people as to being safe and proficient. We've now gone to our specialists and said: 'We really do need about three or four of you to be able to safely assess and know how to use all these devices and help educate people'. N101</p> <p>So we do annual internal course competencies PIs; and, then, I have done some external PI and advanced wound management in the past. N305</p> <p>A: Competencies are like CPR every year, blood, and blood products, or any blood transfusions. Self-administration of medication so you don't need two people to check, there are those types of policies, and procedures, that need to be done. The self-checking is every 3 years, the CPR is every year, basic life support... There're things like respect for staff...</p> <p>Q: Is there a PI one, that they have to do?</p> <p>A: There isn't a PI one, and this is what I'm saying, it needs to be an annual thing, just as CPR, because everything that will delay a hospital stay, which will cost the hospital money, should be done as a competency so everyone is aware. N304</p> <p>Well there might be more than one wound liaison nurse on each ward. We've got a few that have done this course, however because of staff transfers and moving et cetera we can lose some. So, at the moment on my ward I've done it—there's maybe about four of us who have done it. So, the idea is that obviously it spreads across all shifts because I'm not there 24 h a day, so you need people who are there all the time watching this happen and managing the risk assessment and managing the risk. N101</p> <p>We had no nursing staff that had physically proned a patient prior to this [COVID-19]. We had proned patients in our unit before, but it just happened to be that the</p>

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
		nurses that had supervised that had just moved on in the months prior to COVID. So, we had to quickly formulate a policy, get our training up and running. And the ICU consultant that helped us with that had been involved. N202
Social/professional role and identity	Professional role	I have a wound [management] background, working in dermatology, burns, plastics clinics, I'm more aware of the impacts of skin with pressure, and so my focus is on holistic care. N108 I think it's going to be no matter how much research we put into it, no matter how much time and effort and energy, and policies and procedures, and dressings and all these things that we put into it, I think it is always going to be with nurses. It's always going to be one of our challenges. Just like speeding is always going to be a problem with driving, and addiction is always going to be a problem with pain relief. N402
	Organisational commitment	<i>Audits</i> We do auditing. So, we get staff from other wards, they go to each ward and they pick a couple of patients, a couple that have wounds and a couple that don't. They go through all the paperwork, they look at the patient, they go through the notes and they tell us what's missing, or they tell us what we've done well. I think that's another factor...of how they're changing the practices, through that auditing. N209 There is a wound care specialist, of course. Every month there will be audit on PIs and force. Every month there is audit. N302 So audits are done periodically. Earlier on we used to do a monthly audit, but now it's like once in 3 months. So that helps to see that we are keeping up with the standards and all that. N404 <i>PI prevention resources for clinicians</i> Q: And just touch on again the policies and protocols on PI prevention available at your—health service... A: Everything is on what we call our [online] system. So, you could just go [online] and put in PI care and that will tell you what you're supposed to be doing and when you're supposed to be doing it. But as I say with our surgical plan of care the way that we set it up was what we call the skincare bundle with the skin assessments, the keep moving, the incontinence moisture, the nutrition and the education, and then it's got information under each of those headings. It just makes it a lot easier for the nurses to go through it and identify the issues, but also to identify what they need to do about said issues. N201 On the hospital Intranet, we've got lots of information regarding PIs, the stages and the dressings and the products. There is lots of information there to refer to. And if people come and ask, then we're able to help them. N404 The skin integrity nurses will send out updated resources by email. And there's always the—we've got our skin integrity portfolio folder on the ward. The ward nurse that's aligned with Standard Five will attend meetings and receive a lot of updated information she then disseminates out to the rest of the unit. N407 I do a skin integrity professional development day. Usually we do a couple of them each year. And just general skin integrity study days, which always include PI. N401
Beliefs about capabilities	Perceived competence	Q: Just with competency standards of nurses that are within your department, you talked about their ability to use equipment or not—they're trained for it, but not confident in using it. Is there anything could help overcome that? A: It's an annual competency. I personally think that a lot more emphasis should be going onto assessments and reassessments of competencies for safe movement. I don't know how to solve it because I acknowledge it would be a very time-consuming activity. I think that we've got a lot of products in there in terms of things like our hover mats for transfers, we've got the repo sheets. They're all great products. They're things that come across that people will use aside from the—I guess the hover mat, because that should be more frequent. The rest of them, the indication of use comes across very, very infrequently in that patient population, so you have a long time between one nurse needs to use it and then another nurse needs to use it. N101

(Continues)

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
	Self-confidence	<p>Q: How confident do you feel providing those messages to patients about getting moving and it's in their best interest and nutrition and all that sort of thing? A: Yeah, I feel quite confident. It really links back in with our surgery as well. Yeah, so I feel competent explaining all of that to them. N205</p> <p>Q: And what competency standards for nurses are used, like assessments or reviews or anything like that? A: To deem if I'm competent in PI prevention? I don't think it's an official thing. It would just come down from—we're taught by our senior nurses or our experienced nurses. And if someone was to notice that you were doing the wrong thing or if you were unsure, you would just go get help. It comes more down to just monitoring. N208</p> <p>Now I feel very confident. It took me 9 months to get there. Before that I wasn't confident in my knowledge, and I felt like I was learning too much to be able to tell somebody what to do. I wasn't at that point in my career where I could confidently say that what I am saying is correct. N103</p> <p>I think most of the nurses would say that they feel confident. I feel more confident as time goes by. N201</p> <p>I feel confident. I wouldn't say extremely confident. I'm in a very lucky position that we actually have really good tools at our disposal for preventing pressure. It's often having to diagnose PIs on patients that come to us with a pre-existing injury and diagnosing them. I would say I'm confident, not extremely confident though. N202</p> <p>Q: How confident do you feel making a PI diagnosis? A: I feel fairly confident making the diagnosis, probably a little bit less confident with the staging a bit only, yeah, a slight difference. N205</p> <p>Q: How confident, do you feel, using the classifications, the different stages according to the National Pressure Ulcer Advisory Panel? How do you go with your staging? A: I think I'm, reasonably, confident. I wouldn't say that I'm confident, I always think that I know what I'm doing, like others, but I like to have it reaffirmed, by someone, just checked out. But I've never, usually, been far off the mark, and if anything—as long as you learn about new products that would create healing. N304</p> <p>I'd say I'm not hugely confident on dressing selection. I choose the best to my ability and if I don't know I'll ask around. N305</p>
Environmental context and resources	Barriers	<p><i>Moving from paper-based records to electronic medical records</i></p> <p>A: I mean, EMR, to be honest, has just thrown us... It's so much more complicated, to having to get used to all the EMR stuff, and at the same time you're trying to manage PIs. I guess that's a different topic, but...</p> <p>Q: It's part of the problem, isn't it? A: It is, I would say it is slightly part of the problem. Because it's now forgotten in the lists of things that needs to be done because it's not like a top priority on an EMR list. I would say even adding that on as the priority would probably get the nurses looking at it a bit more. I don't remember getting extra staff looking after us. We had some super users that walked around and helped you out in the first few months, but it was still quite hard. Because it's not like you had a super user right next to you helping you out with all these other things, it's filling up the information. The EMR rollout was insane. N306</p> <p>Q: So, when you've found a PI, how do you usually report it and what documents do you need to complete that report? A: We do Riskman, if it's stage two or above. And then we just capture it in the EMR, we've got—so it's totally useless, it's literally—it's just a tick box that says location, stage, measurement and then you can go and do a wound chart. But the problem with the EMR is it's timestamped when you've done your skin assessment. People want to put their whole skin assessment in there. But if they've got multiple things going on, like a stage two on the heel and some blanching erythema on the other heel, there's no left and right, there's no way to separate them out unless you do another timestamp. But then you risk it looking like you changed your mind or there's no way</p>

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
		<p>of grouping it like you would do in progress notes. And a lot of people once there is a new one will write a progress note to say: 'New one identified, this is how I concluded what it is. I've told the nurse in charge and this is what we've put in place'. And then they'll go and update the chart in iView and the planner care. N102</p> <p><i>Patient-related barriers</i></p> <p>We get a few patients with complex care needs, whether it's—we get a lot of brain tumours patients who are often quite delirious. I think nursing staff get very torn between respecting what a patient's articulating of what they want and what's going to keep them safe, and I think the biggest barrier to me is the sort of refusal of engagement from the consumer, you know: 'I don't want to be turned. I don't want to be assessed'. That's a huge barrier. N101</p> <p>In terms of—so for your low-risk patients, your independent patients, they often don't get an assessment done every shift, purely because they're up walking around. Often young—we've got a lot of young cystic fibrosis patients who just are too embarrassed. They don't want their skin checked every day. And they feel like it's unnecessary. So that's with our independent patients. So often, they get missed, purely because the patients don't want them done. In terms of our higher risk patients, generally they all do get a skin assessment done. The time that they wouldn't, we've found in the past is if the patient is acutely unwell, they often—we're trying to stabilise the patient first and then often their skin assessments get missed. Or they get done quickly, but not a full, thorough skin assessment like the whole body. So often, that can get missed if the patient is acutely unwell. N104</p> <p>Q: What would you say are the barriers for being able to actually perform that regular skin assessment twice a day?</p> <p>A: We need consent obviously, that's often for me the biggest barrier that the elderly males will know they have a wound; and they don't want us to look at it. Or it's a male nurse on and the women don't want the male nurse to look at it. So, consent is a big one. N209</p> <p>Q: What sort of barriers, or what can prevent you from being able to conduct regular skin assessment?</p> <p>A: Patient compliance... Some of them are very independent and don't like you being in the shower with them or—and so you have to take their word that they're observing their own skin. And just sometimes it's difficult. You'll need two or three staff to turn some of the larger patients and just getting that hands-on to turn patients and check their whole skin out. N401</p> <p>A: Gen med's definitely the heaviest [patients]; and ICUs have a turning team, so there's no excuse. They have nurses on every shift that go around and turn their patients. We don't have that.</p> <p>Q: How many staff would you need to turn a patient?</p> <p>A: At the moment we have a 220-kilo man and to turn him it takes six of us. But we have one of those fancy beds as well that really helps. He doesn't have any PIs. N103</p> <p><i>Nurse-to-patient ratio and staff availability</i></p> <p>A: Are there any changes that I'd recommend did you say?</p> <p>Q: Yeah, any changes.</p> <p>A: Yeah, give me more staff. It's a time management issue I guess, but again it's a priority issue. So, staff will have to prioritise some areas over other areas, that's just the life of being a nurse. N201</p> <p>Q: Do you have enough staff?</p> <p>A: I think it also depends the kind of patient allocation you have. If you've got someone that's confused and you're... preventing them from falling, you might not neglect, but you might not give as much attention to the others. Nightshift, we find particularly challenging because technically our ratio can be anywhere up to one to eight. On our ward now, you might have three post-operative patients in the same room. You might have someone that's in rapid AF, someone that's confused; and when you're trying to manage eight patients on an acute ward I feel that, this is being</p>

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TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
		brutally honest, pressure injury management sort of goes down the pile really, literally off the line. You're on the line trying to keep everyone alive. N307
		I think, obviously education's always a huge thing, but getting people off the floor to education sessions can be hard, especially in some of the really heavy wards. Just time and people are the biggest factor, I feel, because we just don't have enough staff, and we don't have enough time, and our patients are quite sick. N108
		We do have porters that come around. They are meant to come at set times, but it's depending on how busy the other wards are, because they're spread out across all the wards; and they do patient transfers as well, so it can be quite busy. We can page them too—if a patient needs toileting or those kinds of things but there's always a delay. Yeah, so it doesn't actually happen at set times. It, kind of, happens ad hoc almost, if you see a porter, yeah, get them to help. If I'm getting a patient out of bed, depending on the patient and how confident I am with them, I won't always wait for them, I might get another nursing staff member to help me instead or the physiotherapist, if they're doing an assessment we'll do it together. N305
		<i>Staff skill mix and staff turnover</i>
		A: We've got a lot of junior staff in ICU at the moment. So, every time you go in there, I feel like I'm repeating myself, exactly the same thing, to the different staff members because they've got a high turnover of staff, which is also an issue.
		Q: With the high turnover of staff, is that bank staff or agency?
		A: No, that's regular staff. We get a lot of new junior staff wanting to start the course, and then the senior staff leave to do other roles. N108
		Q: Do you think there's a chance you could underestimate the risk of a pressure injury for some patients?
		A: Oh, I think so. It depends on—how should I put this—I think it depends on the experience of the nurses. We have quite a regular turnover of staff. Whenever I'm in charge I always say to person, if they're not sure to come and get me, but other people probably don't. N304
		I think it's important that the nurse in charge who's allocating to the patients knows that she's allocating nurses to particular areas where the patients are more at risk. But you've got nurses there that are aware of the risk and will be taking care of the patients as in being more vigilant with these issues. Obviously, it's a lot easier when it's all my own staff; if I have agency staff it's a little bit more difficult for me to—I can't be beside them the whole of a shift making sure they're doing everything. N201
		<i>Care priorities</i>
		Well, I think there needs to be more of a focus on it. Everyone knows about pressure care, but I think that in the scheme of things, the number of staff, people have on a shift, with the number of patients they have to look after with ratios, and that, I think if they're so busy it can become part of the sideline, it goes on the sideline. Even though we have these checks in place, with saying that skin care's got to be done on admission, before 8 h, and it needs to be second daily, or whatever. I think people put that down as a low priority. N304
		A: I think there's good resources available. There's lots of things we have as a resource, it just staff knowing what they are and utilizing them, thinking about it.
		Q: And what do you think could help them utilize these resources?
		A: That's a hard one. I say 'hard' because I feel like there are so many competing priorities on our ward. N105
		<i>COVID-19</i>
		We had maybe five COVID-positive patients at the start of the cluster. They all—we found them got moved over to the designated infectious diseases ward from there. But yes, we did have them for a brief period of time. It's certainly—I guess my gut told me that there was a bit of a blowout in terms of somebody maybe on twice-hourly pressure care for full reposition or offload, 2 h was stretched to two and a half to 3 h of time we saw staff start to fatigue from PPE; PPE fatigue. That was what sort of I saw out on the ground, yeah. N101

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
		<p>The process involved in turning a COVID patient—it had to be planned for 8 h ahead. Because you had to have the amount of staff to do it. We needed at least eight people in the room. So, it had to be timed—a time where we had eight spare staff. So, it had to be at staff changeover times, get your consultant involved. They had to be—all the PPE in getting ready. Entering the rooms. All of that. Once they'd left the room, you're on your own. N202</p> <p>Q: And were there any changes to pressure injury reporting that were introduced because of the COVID outbreak, in your area?</p> <p>A: The only thing I would say is, it's a bit hard if we have a COVID positive in our ward, because you have to do all the PPEs, and you don't get to see the patient as often as you would like to, when they are in the ward that you can check them anytime. And like with the COVID patients, it's a bit of a hassle that you're doing all the PPEs before you get to see the patient. And if you are with a patient, you don't want to rush, otherwise you go out, do the PPEs again, and then go inside and do the PPEs and it is so annoying. I think it's too hot with the PPE, the gown, the mask, and the face shield. I think that's a bit of a hindrance, that you don't check their pressure area. N301</p> <p><i>Availability of dressings and pressure offloading devices</i></p> <p>Devices we've got the high-density foam chair, the tug chair and the princess chair. We've got heel wedges, the blue booties and often just the lengthways pillow, because it raises the heels much, much better. N101</p> <p>I was so overwhelmed at how many sliding sheets are available at [acute healthcare service]. That was one of the big things I noticed when I first started. I was like, 'Oh my God!' I used to have to beg, borrow and steal to get sliding sheets in the UK, so to come here and they're all just waiting there with the linen. I was mind blown. It was brilliant. N106</p> <p>It's very rare that if you ask for an air mattress, it can't turn up within your shift. Because there's such a high turn-over of patients being discharged that equipment does become available. N106</p> <p>We have standardised our wound care products—sorry, we've refined our products right down. There were too many. So yeah, we use just a few. All the wards are au fait with them, all the staff are okay with them. We just found that refining the amount of products we had down just to two, really, two, plus the moisture prevention products and the barrier products—yeah... much, much easier. N202</p> <p><i>Availability of patient educational materials</i></p> <p>Q: Any ideas you've got we could empower them [patients] more and get them on board?</p> <p>A: I think they run ads on the telly which I think is good. I know patients have mentioned it to me one time...</p> <p>There's like a channel that just runs ads like social distance and this that; and they have ads for the PIs; and if patients are really bored they watch that. N103</p> <p>We also have a leaflet that we give to patients on admission, just encouraging patients to be involved in their care. We also have information leaflets on PI prevention; and we've got that available in different languages on our intranet. So, we've got English on the ward that we can give to patients, and then we also have it available on the intranet in different languages. N104</p> <p>And yes, we do give them pieces of paper that they have by their bedside for when they're having a cup of tea, and want to read a bit more about things, without getting scared. We provide these pages because it's all a part of them being in the team, what they can do. It's not that we're doing everything, they have to have some responsibility too. N304</p>
Social influences	Group norms	<p>I definitely think there's very much a culture, certainly now, and I don't think it's unique to our ward, PIs—essentially PIs equal bad care is the sort of feeling that comes through. So, there's sort of a sense of disappointment from sort of the broader team. N101</p>

(Continues)

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
		<p>Q: If a physio had noticed a PI, would they do any of the reporting? Or do they default back to the nursing staff to do it?</p> <p>A: I think, as a generalized, they normally default back to the nursing staff.</p> <p>Q: And what about doctor involvement in the reporting and planning and documentation?</p> <p>A: I think the reporting, they would revert to nursing staff. I guess, on the severity, they might be involved in treating. But I would say the majority of it is on nursing staff. N105</p> <p>We try to foster it's more of a—it's a non-blame, that's the right thing isn't it, a non-blame system. So with our RiskMans, I think when we first introduced them there was that sort of reticence that you're blaming other people, but we've got used to it now over the years and you write what's happened in one box, what exactly have you found, basically just a short sentence, and then underneath it's detailing what it is and what's been found, and as I said you also detail what interventions have been in place and what interventions you're going to put into place. But you don't go into, 'The staff member who looked after the patient last time didn't do X, Y, or Z', that's not the type of system it is. It's a system that's basically—state the facts, state what you found, it's happened, now deal with it. N201</p>
	Social support	<p>Q: How would you differentiate between a PI and incontinence associated dermatitis?</p> <p>A: It's more like blanching and rash and it's usually quite large compared to a pressure area, which is not blanching. But we always put in a wound care referral if we're confused and then [the wound nurse consultant] will come down and tell us what it actually is. N103</p> <p>[The wound nurse consultant] tends to send emails with updates to us; and we get updates if there's—we get an email saying that there's been an update to the policy or if there was an update to any of our assessment charts that would be addressed as well and education would be given on that as well. N205</p> <p>We've got very good clinical support and development nurses who won't just tell someone how to do something. They'll often take them to the resource and do it together, which I think is really helping on our ward. N105</p> <p>Well, with the wound liaison nurse course which was set up really because we only had one [wound nurse consultant] and obviously it was hard for her to get around the whole of hospital, so she wanted nurses on each of the units to be all over this and be able to guide other staff members. N201</p>
	Alienation	<p>Often on the day, it depends if the nursing staff have been looking after them from days, you can get quite an almost defensive reaction from them, 'It wasn't there yesterday' sort of thing. 'I have been doing my skin assessments' those sorts of things. N101</p>
Emotions	Positive and negative affect	<p>Q: And if a PI is found is there any stigma or any issues?</p> <p>A: I think it depends on when you find it. If you find it on admission it's really, really good because it's not our fault. If you find it the day after admission, even though the evidence shows that it can take up to 3 days for it to manifest, I think people feel like we've dropped the ball or it's a problem with handover or whatever. But yeah generally I think people feel, well you feel awful for the patient but I think we're pretty good at reporting it, but it feels awful. N102</p> <p>Each of us would probably feel guilty if a patient's been in for X amount of time and they've developed an unstageable PI. I think I would personally feel some guilt from that. But I don't know of any stigma around that. N207</p> <p>Well, if abrasions been in for a few days, like a week, and then it's discovered, whoever finds it is, of course, pretty annoyed because it, obviously, let's down the team, but this rarely occurs. We try and say that there's no blame, but whenever there has been a discovery of someone with PI, we ensure we have another education session to ensure the importance of everyone checking these patients as per the plan. N304</p>

TABLE 2 (Continued)

Domain	Constructs	Examples of quotes
	Fear	<p>Q: Yeah, for the COVID patients that you were looking after.</p> <p>A: Well, I think there was just the fear. I think it was still quite novel and unknown and no one knew too much about it. I think there was just that fear of, I'm just going to go in, do the bare minimum, and get out because of the fear. Also, the type of patient that we got in the second wave. The first wave, it was more young travellers who, you're going to be in this room for a few days waiting for your swab. But with the second wave, it was more patients from the nursing home who had Alzheimer's, dementia, and so forth, and so it was a very complex situation to manage, not just because there was distress for the patient, but there's also distress for the healthcare worker because, for example, there'd be some that were aggressive and they would rip your PPE off. They would spit, or bite, which does create aerosol, and then make the nurses scared to spend any more time than they have to there. N307</p>
Memory, attention and decision processes	Memory	<p>Q: Are you aware of the PI guidelines for prevention and management?</p> <p>A: Yes, I've seen them and I've read them, but I couldn't tell you them off the top of my head. N207</p> <p>I would say that one's more difficult to assess because device-related PIs are much smaller. And it slips off my mind from time to time, especially on a busier patient. N306</p> <p>So, we're supposed to fill out a VHIMS, but whether—so I know I don't always remember to do it, and whether everyone knows that we're supposed to do it? I couldn't actually say. So, I reckon, lots of times I've reported they look like they're getting pressure ulcer, or they're at risk of PIs, or I reckon I've filled out a VHIMS maybe twice on that. Just again, partly it's forgetting, and partly it's just not an immediate thought. N402</p>
	Attention	<p>Honestly, I just think multitasking doesn't actually really work. There's too many things going on and you might start. I think that people really, they zoom in on the bottom and the heel and the perineal area, all of that gets really good assessment. I think the spine and shoulders probably not too bad. I think elbows get missed. N102</p> <p>I would say that one's more difficult to assess because device-related PIs are much smaller. And it slips off my mind from time to time, especially on a busier patient. N306</p>

relationships, ongoing self-education, including mandatory training and committee representation. While identifying and reporting HAPI was discussed as distinct from other nursing responsibilities, nurses reported that it was part of holistic care:

It's all about getting your surgery done, getting home, and getting on with your life, but if you're delayed in hospital, because of a pressure sore, then that brings everything down; your whole confidence about wanting to go home, about being able to manage at home. I think it's important, it's about holistic care from the start. N304

Nurses discussed the importance of establishing patient–professional relationships, as part of their role:

So, it's all that sort of interpersonal relationships and nurse–patient relationship and building up those connections, so that the patient feels safe to do it, and then you'll find that they will allow you to do the turning, and even though they've got dementia or whatever they have they sort of understand on some level. N201

Nurses also acknowledged that, sometimes, it is difficult to establish a nurse–patient relationship for many reasons, which impacts HAPI prevention. In the following case, patient perceptions of nurses' professional role seem to be a barrier to appropriate care and discourage the nurses from providing care:

They could be delirious, confused, not understand, lack of education. The fact that look—

TABLE 3 Summary of barriers and enablers to pressure injury (PI) prevention.

Domains	Barriers	Enablers
Knowledge	<ul style="list-style-type: none"> Sometimes staging PI can be problematic because some PIs do not look like the images provided in the guidelines used Difficulty classifying PI as either Stage II or Stage III in presence of incontinence-associated dermatitis Difficulty differentiating Stage IV and unstageable PI Multiple competencies, including knowledge of risk assessment, nutrition assessment, skin check, classification, repositioning, reporting process, promoting mobility, patient and family education, dressing selection, prevention in obese patients, device-related PI, the use protective equipment, and referral process Night staff could not attend workshops, training sessions, and various meetings that ran during the day 	<ul style="list-style-type: none"> Completion of PI training modules as part of skin integrity and wound management courses Getting the latest information on PI prevention from journal articles Attending local and international conferences for nurses, wound industry free events, and webinars delivered by Wounds Australia More frequent refresher courses
Skills	<ul style="list-style-type: none"> Complexity of skills required for PI prevention Less-experienced staff with limited skills Focus on direct patient care and inability to attend educational courses at the time of COVID-19 outbreak PI staging and differential diagnosis skills require further improvement 	<ul style="list-style-type: none"> Induction for new staff and graduate nurses Ongoing professional development Skill assessment Ongoing performance appraisal Quick facilitation of training courses for nurses on PI prevention in the prone positioned patients to meet the increasing needs related to COVID-19 pandemic
Social/professional role and identity	<ul style="list-style-type: none"> Difficult to establish a nurse–patient relationship for many reasons, which impacts PI prevention (e.g., delirious, confused patient) 	<ul style="list-style-type: none"> Understanding professional responsibilities for PI prevention: identifying and reporting PI, providing holistic care, building patient–professional relationships, ongoing self-education; including mandatory training, and committee representation Nurses' leading role in coordinating the teamwork
Beliefs about capabilities	<ul style="list-style-type: none"> Lack of confidence in using some types of lifting equipment because that equipment was either not used or used only occasionally, even though they were trained how to use it Less experienced nurses tend to underestimate the risk of PI 	<ul style="list-style-type: none"> Practicing for a long time increases confidence in nurses' PI prevention skills Confidence in using some types of lifting equipment to reposition patients because they used it on regular basis It is better to overestimate the risk of PI
Environmental context and resources	<ul style="list-style-type: none"> Patient consent to regular skin checks, particularly among young patients, patients of opposite gender, older male patients, but also confused patients Patient's increased body weight as a barrier to skin checks and repositioning Transition from paper-based records to electronic medical records as a barrier to PI reporting The lack of priority due to low nurse-to-patient ratios and lack of staff availability Patients' acuity as a competing priority Limited availability of porters and other available staff on the ward impacted nurses' ability to conduct regular skin checks and to reposition obese patients The COVID-19 pandemic exacerbated the situation in terms of limited staff availability, limited personal protective equipment availability, and fatigue related to the use of personal protective equipment Availability of different dressing types and offloading equipment, so that it is difficult to choose the right one 	<ul style="list-style-type: none"> Extra precautions by the nurses in charge to ensure that the pressure care was provided as required Establishing turning teams to reposition prone-positioned patients with acute respiratory distress syndrome during the COVID-19 pandemic Refining dressings and pressure offloading equipment to avoid confusion with dressing selection Fast delivery of pressure offloading equipment by consignment companies Availability of print and televised educational materials on PI prevention for patients

TABLE 3 (Continued)

Domains	Barriers	Enablers
Social influences	<ul style="list-style-type: none"> • Alienating behaviour when a PI was detected: 'I was not there yesterday' 	<ul style="list-style-type: none"> • Perceiving PI prevention as nurses' direct responsibility • Putting a patient before the paperwork • Accepting that PIs are a sign of quality care • Team work • Support from the wound nurse consultant • Availability of educational materials and online courses for clinicians • In-service lectures • Skin integrity study days
Emotions	<ul style="list-style-type: none"> • Fear of getting infected with COVID-19 at the time of pressure care • Stigma, guilt, anger, disappointment and frustration, if a PI was identified • Blame and self-blame related to PI reporting 	<ul style="list-style-type: none"> • Positive affect if a PI was identified on admission
Memory, attention and decision processes	<ul style="list-style-type: none"> • Missing to check patients' elbows, heels, sides of the toes, and the back of the head due to the lack of time • Missing to check skin prone to device-related PI • 'Automatically' or 'robotically' tick-out the boxes that a particular task was performed 	<ul style="list-style-type: none"> • Skin check and risk assessment reminders on the ward and nursing station

I'm young apparently is a thing as well... They were like—they've made comments on my age and that how would I know this, and I'm just a nurse. The idea of a nurse as just being like a bum wiper I think is a huge thing—because when they [patients] were young, nurses did on the job training, there's no degree, it was more of a trade, and they just think that we just clean patients and stuff like that. N103

While nurses acknowledged that HAPI prevention requires team work, they believed that they should have a leading role in coordinating the teamwork. Acknowledging the role of occupational therapists and nutritionists in pressure care, nurses mentioned that HAPI prevention was their professional responsibility: 'I think it [HAPI prevention] is always going to be with nurses' [N402].

3.6 | Beliefs about capabilities

Nurses' self-confidence was affected by the extent of their clinical experience, and nurses who had been practicing for a long time were more confident in their HAPI prevention skills. Even nurses with years of experience discussed how they had lacked confidence during their graduate years. They acknowledged that their self-confidence improved with practice: 'Now I feel very confident. It took me nine months to get there. Before that I

wasn't ... at that point in my career where I could confidently say that what I am saying is correct' [N103].

They also discussed their own and other nurses' level of confidence in relation to various skills and tasks related to HAPI prevention. For example, one nurse [N101] said that nurses in her ward were very confident in using some types of lifting equipment to reposition patients because they used it on regular basis; however, even though they were trained to use other types of lifting equipment, they were less confident because that equipment was either not used or used only occasionally. To address this issue, the required skills related to the use of lifting equipment were included in the list of competencies.

In regards to staging, some nurses pointed out that PIs evolve and requires assessment of wound progression with support provided by a wound specialist nurse, which was regular practice in all health services. For example, nurses reported that a Stage I PI (unbroken reddened skin) detected on one shift could rapidly progress to Stage II (open wound), and this would mean the injury was incorrectly classified during an earlier shift.

Referring to risk screening, when this was still practiced, nurses believed they were confident and competent to do this, although some of them acknowledged they were confident in using only the particular risk screening scale used in their health service. Some senior nurses said that they always tended to overestimate and re-screen HAPI risk; and they taught this practice to less experienced and less confident nurses, who they believed, frequently underestimated risks.

3.7 | Environmental context and resources

Patient consent was one of the barriers to regular skin checks, particularly among young patients; in these cases, nurses frequently relied on the patients' word that they did not have skin problems: 'We've got a lot of young cystic fibrosis patients who just are too embarrassed. They don't want their skin checked every day' [N104]. Nurses reported that patients of the opposite gender, older male patients, but also confused patients tended to refuse skin checks. Patient acuity was also discussed as a barrier to skin checks and repositioning; and nurses often 'tried to stabilise the patient first and then often their skin assessments got missed' [N104]. Patients' weight too was reported as a barrier to regular skin checks and repositioning because these preventative activities required involvement of many staff: 'At the moment we have a 220-kilo man and to turn him it takes six of us' [N103].

The most frequently discussed barrier related to HAPI reporting was the transition from paper-based to electronic medical records in public hospitals. While many participants acknowledged they prefer the electronic medical record system to a paper-based, they discussed issues with this new reporting system, including their lack of skills related to reporting HAPI; and limited support with the electronic system: 'We had some super users [nurses that completed the EMR training course] that walked around and helped you out in the first few months, but it was still quite hard...The EMR rollout was insane' [N306].

Other reported barriers were low nurse-to-patient ratios and lack of staff availability, with nurses sometimes required 'to prioritise some areas over other areas' [N201]. HAPI prevention was particularly problematic during night shifts when the nurse-to-patient ratio was sometimes reported as low as one-to-eight. HAPI prevention was 'off the line' while nurses tried 'to keep everyone alive' [N307]. Some nurses honestly said that 'there are so many competing priorities' on their ward [N304]. The lack of staff and the acuity of patients were also discussed as a barrier to ongoing education, and nurses frequently were unsuccessful with 'getting people off the floor to education sessions' [N108]. The availability of porters and other staff on the ward impacted nurses' ability to conduct regular skin checks and to reposition obese patients. Staff turnover and related skill mix, particularly when there were many junior, bank and agency nurses required extra precautions by the nurses in charge to ensure that the pressure care was provided as required: 'Whenever I'm in charge I always say to a person, if they're not sure, to come and get me, but other people probably don't' [N304].

Nurses reported that the COVID-19 pandemic exacerbated the situation in terms of limited staff availability, limited personal protective equipment availability, fatigue related to the use of personal protective equipment and new training-related needs. They acknowledged that it was impossible to follow established protocols for HAPI prevention: 'I guess my gut told me that there was a bit of a blowout in terms of somebody maybe on twice-hourly pressure care for full reposition or offload, two hours was stretched to two and a half to three hours of time and we saw staff start to fatigue from PPE' [N101]. Participants involved in care for COVID-19 patients discussed how they had attended courses and received materials on HAPI prevention in the prone-positioned COVID-19 patients. They reported that their health services established turning teams to reposition patients during this time.

When discussing resource availability, nurses reported access to many different dressing types and offloading equipment: 'We've got so much equipment at the moment it's absolutely fantastic' [N106]. In some health services, the wound nurse consultant decided to reduce the availability of dressings and pressure offloading equipment to a select few to avoid confusion with dressing selection: 'We've refined our products right down. There were too many' [N202]. If air mattresses were not available, they could be ordered and delivered within a couple of hours: 'If we don't have a consignment mattress available, they're usually delivered within the hour or two hours. The company has also agreed to leave us with two consignment mattresses as well' [N407].

Participants also discussed the availability of print and televised educational materials on HAPI prevention for patients. These materials were used to inform patients and involve them in HAPI prevention: 'We provide these pages because it's all a part of them being in the team, what they can do. It's not that we're doing everything, they have to have some responsibility too' [N304].

3.8 | Social influences

When discussing social influences, nurses identified professional group norms, including perceiving HAPI prevention as nurses' direct responsibility, putting a patient before the paperwork and accepting that PIs are a sign of quality care. They valued team work, and appreciated support they receive from the wound nurse consultant, wound liaison nurse on their unit:

Well, with the wound liaison nurse course which was set up really because we only had one [wound nurse consultant] and obviously it

was hard for her to get around the whole of hospital, so she wanted nurses on each of the units to be all over this and be able to guide other staff members. N201

They discussed individual nurses' alienating and defensive behaviours when a HAPI was detected:

Often on the day, it depends if the nursing staff have been looking after them from days, you can get quite an almost defensive reaction from them, 'It wasn't there yesterday' sort of thing. 'I have been doing my skin assessments' those sorts of things. 'I was not there yesterday'. N101

In terms of organisational commitment, regular audits and availability of educational materials and online courses for clinicians were discussed as the main facilitators. Audits were usually conducted monthly, but then reduced to every 3 months. The results of the audits and related feedback were presented at the time of the ward meeting: 'So, audits are done periodically. Earlier on we used to do a monthly audit, but now it's like once in three months, that helps to see that we are keeping up with the standards' [N404].

In addition to the regular audits and wound nurse consultant support, health services developed online educational resources and ran in-service lectures, skin integrity study days, and wound care courses, where they focused on HAPI prevention: 'I do a skin integrity professional development day. Usually, we do a couple of them each year. And just general skin integrity study days, which always include pressure injury' [N401].

3.9 | Emotions

Nurses discussed complex psycho-social issues related to HAPI prevention and diagnosis. A positive affect was reported by nurses if a PI was detected by them on admission. Nurses shared their feelings of stigma, guilt, anger, disappointment and frustration, if a HAPI was identified during their care. Also, while many acknowledged they worked in a stigma and blame-free environment, they expressed self-blame. Some nurses blamed themselves for 'letting down the team' and experienced guilt for 'causing harm' to a patient:

You know, it's just guilt. And because you don't want to cause harm to your patients. And I mean, a pressure injury is causing harm to your patients even if it wasn't that person

that found it. Yeah, the nurses definitely do well, and personally I feel bad if I've ever found it or if I find one on the ward, I feel bad. N108

Some nurses projected blame to patients for their lack of motivation to prevent a HAPI. Self-doubt was also a common feeling—'what have I done wrong'. One nurse compared a HAPI that occurred in her care with a medication error. Many nurses shared a sense of hopelessness—'pressure injury occurs, no matter what we do'. In the beginning of the COVID-19 pandemic, nurses who provided care for COVID-19 patients shared their feeling of fear of infection every time they were to reposition their patients or conduct a skin check.

3.10 | Memory, attention and decision processes

When discussing attention, nurses frequently focused on the need to pay more attention to HAPI risk re-screening, as this risk could change in a short period of time. They also discussed how important it was to conduct skin checks at least once every shift. When conducting the skin check, they reported that they could miss checking patients' elbows, heels, sides of the toes, and the back of the head due to the lack of time. They also acknowledged that they could miss checking skin prone to device-related HAPI: 'I would say that one's more difficult to assess because device-related PIs are much smaller. And it slips off my mind from time to time, especially on a busier patient' [N306]. They also said that they could 'automatically' or 'robotically' tick-out the boxes that a particular task was performed, even when it was not, as one of the nurses [N101] said: 'I worry that there is a risk of underestimation with it being sort of that kind of—you can tick, tick, tick through and that's sort of a task that's done rather than really an assessment being made'. They suggested that having skin checks and risk re-screening reminders on the ward and nursing station would be helpful.

3.11 | Ward type and hospital site comparisons

Participants from both private and public sectors discussed that nurse shortages at the time of COVID-19 pandemic might have affected the quality of care, including HAPI prevention. However, nurse shortages were reflected more in the experiences of the participants from public hospitals. Nurses' availability to attend professional development

courses were equally affected across different settings. There were no differences in strategies to address barriers to HAPI prevention identified in different wards. However, nurses expressed their preference for educational materials and courses on HAPI prevention specific to their ward type.

The most frequently discussed barrier related to HAPI reporting in public hospitals was the transition from paper-based to electronic medical records. This was not an issue in the private health service, where nurses continued to use paper-based records. Participants from the ICU wards discussed how their health services established repositioning teams to reposition the prone-positioned COVID-19 patients during this time. These services were not available in other wards limiting nurses' capacity to undertake skin checks and reposition patients.

4 | DISCUSSION

We examined the experiences of nurses in HAPI prevention in acute care settings, applying the TDF to identify and systematise the main barriers and enablers.

4.1 | Barriers

Our participants indicated that there was a fairly consistent deficit in knowledge, skills, confidence, and environmental resources for HAPI prevention. Very few of these issues could easily be attributed to individual action or competency, but rather contextual issues that exist within healthcare. For example, our participants discussed the complexity of skills and knowledge required, but also noted the difficulty in attending training, which happens outside of their working hours. The issues around moving from paper-based to digital systems with suboptimal documentation, and limited staff availability for training, are likely linked to a subsequent lack of confidence. Our participants did allude to stigma, guilt and blame shifting; these affected junior colleagues more than older ones. Our findings indicate that better, higher quality training on the job is useful, including regular refreshers. We also highlight the importance of having the basic knowledge, skills, and time to enact good quality care, with social support reinforcing knowledge transfer into action. This needs systems and organisational change to address these barriers.

There were lessons learned from the COVID-19 pandemic that are also relevant. Our findings suggested that COVID-19 exacerbated PI care in the eyes of nurses because of knowledge and contextual issues. The lack of staff, particularly during the COVID-19 outbreak, and

inability to involve staff in direct clinical care in educational activities are critical issues for time and training staff to the extent that facilities try to address staffing shortages by dropping training, likely weakened the ability to staff to respond appropriately to HAPI prevention. Nurses also reported fatigue and difficulty in prioritising competing demands on patient care, further weakening HAPI prevention. Increased workload, nurses' fatigue, limited social support and limited training are likely to reduce the quality of care. Nurses' limited capacity to provide evidence-based care as recommended by the guidelines due to other competing priorities and increased workload demands were reported in other studies and reviews.^{36–39} These findings are not novel in the context of nursing at the time of COVID-19.^{40–42} For example, in the US, UK and Australia the increased load in the healthcare systems during COVID-19 for crucial care, and subsequently high costs, led to job cuts and high levels of resignations for highly experienced nurses.^{43–45} Funds for professional development were cut and redirected to the COVID-19 response⁴⁶; the opportunities for education and career progress were reduced.⁴⁴ The consequences of cuts like these are under-explored in Australia, but they are likely similar. This highlights the adverse impact of inadequate staffing and limited opportunities for ongoing professional development on patient care as a micro quality of care.

4.2 | Facilitators

Our participants discussed some key facilitators that can be used by health systems to capitalise on areas of strength for health systems, and can be leveraged to further improvements in HAPI prevention. The main facilitators tended to focus on training, including induction for new staff and graduate nurses, ongoing professional development, skill assessment, and performance appraisals. Nurses discussed their experiences in socio-environmental context and highlighted the importance of good quality reminders. Being aware of how these facilitators interact likely will have a positive impact on HAPI prevention, and may inform better interventions.

Frequently, nurses were most appreciative of information access in all the forms possible, with other facilitators being an extension of this phenomenon. With the exception of statements in relation to equipment (e.g., dressings, pressure offloading equipment, delivery of these items), most of the facilitators were about how getting good information, maintaining that information in a practical way, and learning about how well they were doing informally (i.e., with others, self-education and leadership) and formally (through assessments).

Confidence is likely an extension of these concepts, as being able to check on one's progress frequently would lead to greater confidence in enacting better care. When information was clearly available (as signs or through easily accessed training), nurses expressed that they felt more confident in their ability to prevent HAPIs. These facilitators of information access, skill appraisal and training are contextually similar to other studies.^{27,47} High quality, efficient training also has been shown to have positive impacts on skills, knowledge and confidence.⁴⁸

Our participants discussed many social and environmental factors that affected their practice in addition to direct skill acquisition, and these factors could also be a target for designing the training. Confidence is context-dependent; people tend to be more confident in their skill when surrounded by social resources with leaders they can approach with a wealth of experience. Our participants expressed that they liked the representation and the leadership of nurses, and the social norms of study days. By leveraging social norms and teamwork in efficient training mechanisms, we can capitalise on the strong bonds that nurses have as leaders within HAPI care; and there are positive examples of nurse-led multi-disciplinary care.⁴⁹

4.3 | Suggestions for improvement

Increased nursing staffing, reduced workload and improved work environment are required for achieving optimal patient outcomes. It is likely that there will be continued pressure on health systems, and with that, reduced time available for nurses to prevent and treat PIs. In order to overcome these concerns, efficient, consistent tools for nurses needs to be more prevalent. The suggestion to have bed-side visual reminders for nurses is not new, and the authors of previously conducted studies and reviews have already raised its significance.^{50–52} However, integration of information on the available psychosocial support in the reminder might help nurses dealing with guilt, anger, and self-blame related to HAPI identification. Establishing a blame-free environment and ensuring the quality of care at the same time could be achieved through a responsibility culture, where clinicians are held responsible in cases of avoidable and foreseeable errors and could learn from their mistakes.⁵³

It was inevitable that reduced pressure care would result during the worst of the COVID-19 pandemic, due to nurses' fear of spreading infection to generally older, at risk, and delirious individuals. This was particularly when nurses had to provide care at the beginning of the outbreak when some health services had limited personal protective equipment in many countries.^{54,55} In general,

meeting patient care needs while staying safe has been previously discussed as one of the issues that impacted mental health of clinicians at the time of COVID-19 pandemic.^{31,56–58} Therefore, addressing this psychological reaction by creating a safe environment are essential for both nurses and patients in reducing HAPI rates. During COVID-19, infection prevention and control were fairly stark; and rapid, efficient training is critical to ensure that healthcare can maintain standards.⁵⁹

4.4 | Educational and skill-development needs and solutions

The main sub-themes discussed by nurses include night staff access to educational courses concerns, the use of electronic medical record education, development of the ward/intensive care unit specific courses on HAPI prevention, the benefits of online education at the time of COVID19 pandemic, and potential topics for HAPI educational courses for clinicians. PI staging skills, including staging PI in dark-skinned people need to be improved too; and were the most frequent topics suggested by nurses for future educational courses.

The latest systematic reviews and meta-analyses^{48,60} of PI training programmes for nurses indicate these programmes may improve nurses' knowledge, attitudes, competencies and practice. However, the remaining question is how to incorporate these programmes in a critical hospital environment. Based on nurses' suggestions provided at the interviews, Monash Partners now hosts webinar series on various topics related to HAPI prevention and management for clinicians. All webinars are recorded and placed on Monash Partners website, which allows accessibility to staff who were unable to attend this webinar and night staff, who usually miss day-time training activities. We also developed online training modules on HAPI for clinicians, which could be accessed at any time, are free to access, and required no registration (<https://monashpartners.org.au/education-training-and-events/pressure-injury/>). By providing efficient, accurate information via Monash Partners, we believe there is a strong potential to help healthcare professionals to update their knowledge.

4.5 | Strengths and limitations

This was a large, theory-informed study that involved four large urban acute care services, both public and private. This study provides important ideas for how to tailor or develop reminder systems that other studies perhaps have not addressed, especially considering the lack

of qualitative research on nurses' experiences of pressure care at the time of COVID-19 pandemic. While the pandemic did provide some challenges in the study's conduct, the conditions were an excellent representation of nurses' experiences of HAPI prevention and care under high stress working conditions. Nurses were willing to extensively discuss their challenges as they were part of an international narrative, including their emotional issues which they may not have done otherwise. Using the Theoretical Domains Framework, our study also ensured that we could take a comprehensive approach to finding both barriers and facilitators in practice through having nurses identify a range of issues in the workplace. This advantage is likely unique, as other studies that take a strictly behavioural or resource-focused approach would not be able to capture these issues; instead, nurses clarified the motivations and rationale behind both behaviours and resources in situ.

Our study did have areas that future researchers should examine and address. While we attempted to recruit nurses with different experience levels, most of our participants were experienced nurses. They had worked in the field for more than 6 years and were in senior clinical and managerial positions. Less experienced nurses might, therefore, have a different experience of the process of HAPI prevention. The pressure of the pandemic and related measures may have affected our findings; it is likely that without COVID-19, emotional barriers would have been less likely to be a key theme. Hospital policies on the involvement of the frontline clinical staff in research at the time affected our study design to some degree, as we could not pilot our interview guide, although during the interview guide development we did seek the input from nurses who were on the Project Advisory Committee. The transcripts were not sent back to the nurses to verify the content, although this opportunity was offered to all participants, and declined primarily due to COVID-19-related priorities.

Despite these issues, our findings would still be of interest to large urban acute care services in countries that have a health system, which is similar to Australia. This is because most of the barriers and facilitators are unlikely to be directly related to COVID-19, and would still be valuable to systems under increasing pressure—a near-inevitability in some countries due to economic problems, like the NHS.^{61,62}

4.6 | Conclusion

This study examined nurses' beliefs, behaviours, cognition, attitudes, experiences and processes related to prevention of HAPI. Nurses provided keen insights into challenges in reducing HAPI due to lower staffing levels,

increased workload, the lack of opportunity for professional development and stressful work environment, particularly at the time of COVID-19 pandemic. From these findings, high quality, scalable, social, and efficient care training needs to be tested and incorporated to improve nurses' confidence, skills and knowledge. Only by investigating nurses' experiences and involving them in the co-design of the training courses can we reduce HAPI rates in acute care services.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data are not publicly available as containing information could compromise the privacy of research participants.

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APPENDIX A

TABLE A1 Summary of the Theoretical Domains Framework (Version 2) domains and constructs.

1. Knowledge	Knowledge Procedural knowledge Knowledge of task environment	2. Skills	Skills Skills development Competence, ability Interpersonal skills Practice Skill assessment
3. Social/professional role and identity	Professional identity Professional role Social identity, identity Professional boundaries Professional confidence Group identity Leadership Organisational commitment	4. Beliefs about capabilities	Self-confidence Perceived competence Self-efficacy Perceived behavioural control Beliefs Self-esteem Empowerment Professional confidence
5. Optimism	Optimism Pessimism Unrealistic optimism Identity	6. Beliefs about Consequences	Beliefs Outcome expectancies Characteristics of outcome expectancies Anticipated regret Consequents
7. Reinforcement	Rewards, incentives Punishment, consequents Reinforcement Contingencies, sanctions	8. Intentions	Stability of intentions Stages of change model Transtheoretical model and stages of change
9. Goals	Goals (distal/proximal) Goal priority Goal/target setting Goals (autonomous/controlled) Action planning Implementation intention	10. Memory, attention and decision processes	Memory Attention Attention control Decision making Cognitive overload/tiredness
11. Environmental context and resources	Environmental stressors Resources/material resources Organisational culture/climate Salient events/critical incidents Person and environment interaction Barriers and facilitators	12. Social influences	Social pressure Social norms Group conformity Social comparisons Group norms Social support, power Intergroup conflict Alienation Group identity Modelling
13. Emotion	Fear, anxiety, affect Stress, depression Positive/negative affect Burn-out	14. Behavioural regulation	Self-monitoring Breaking habit Action planning

Source: Adapted from Atkins et al.²³, p. 4–5