

**ORIGINAL RESEARCH: EMPIRICAL
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Registered nurses' approach to pressure injury prevention: A descriptive qualitative study

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Abstract

Aims: To explore Registered Nurses' approaches to pressure injury prevention, including how they perceive their roles, how they prioritize pressure injury prevention and factors influencing prevention in the Chinese context.

Design: A qualitative descriptive study.

Methods: Audio-recorded, face-to-face, semi-structured individual interviews were conducted with Registered Nurses in a large tertiary hospital in China from August to December 2020. Using the System Engineering Initiative for Patient Safety Model, the interview guide was developed to describe the work system, processes and outcomes (three domains) associated with nurses' pressure injury prevention practices. Deductive and inductive content analyses were used.

Findings: Twenty-seven nurses participated in the interviews. Four themes related to two domains of the model emerged: Work system: (i) Nurses lead and coordinate pressure injury prevention; Work processes: (ii) Individualized pressure injury prevention is founded on comprehensive patient assessment; (iii) Collaborating ensures patients receive appropriate pressure injury prevention; and (iv) Competing factors influence the delivery of appropriate pressure injury prevention. One category emerged about work outcome: Nurses strive to do their best in pressure injury prevention but hold major concerns when pressure injuries occur.

Conclusions: Nurses play a leading role in pressure injury prevention delivery but require appropriate resources and assistance and support from other healthcare personnel, patients and carers. Understaffing, lack of resources, complex reporting and poor patient compliance challenge nurses in their delivery of pressure injury prevention.

Impact: Pressure injury prevention is primarily a nursing responsibility therefore nurses' approaches to prevention were explored. Nurses rely on collaboration with others and access to various resources to provide pressure injury prevention. They recognize the patients' and carers' roles and acknowledge the importance of accessing guidance and support from nursing leaders and wound experts. Acknowledging

nurses leading role in prevention and ensuring they have adequate resources are important for quality care.

KEYWORDS

interview, nurses, pressure injury prevention, pressure ulcer/injury, qualitative research

1 | INTRODUCTION

Pressure injury (PI), also termed pressure ulcer, is an adverse event that frequently occurs in hospitalized patients (Stalpers et al., 2015). PIs are defined as 'localized damage to the skin and/or underlying tissue, as a result of pressure or pressure in combination with shear' (EPUAP et al., 2019, Page 194). They can cause substantial suffering for patients including pain, distress, infection or even death (Gorecki et al., 2011), and are associated with increased costs to healthcare systems (Padula & Delarmente, 2019).

PIs continue to be a significant problem internationally. A recent systematic review identified that a pooled estimated PI prevalence and hospital-acquired PI (HAPI) rate was 12.8% and 8.4% in hospitals (Li et al., 2020). This review identified that European studies reported the highest (14.5%) while Asian studies reported the lowest (3.0%) prevalence rate. Three of the five Asian studies were from China, with the prevalence rate reported as 1.1% to 1.8% (Li et al., 2020). Another national-wide study in China reported a HAPI rate of 1.2% in immobile hospitalized patients (Liu et al., 2019). Thus, China's reported PI prevalence rates are much lower than those reported in the global literature. The factors that contribute to this low reported PI prevalence are unclear.

2 | BACKGROUND

Nurses, as the largest healthcare provider group, are responsible for delivering quality pressure injury prevention (PIP) care for patients (Alanazi et al., 2021). Current international clinical practice guidelines (EPUAP et al., 2019; National Institute for Health and Clinical Excellence, 2014) recommend a series of PIP key strategies, such as repositioning, using skin protection and selecting appropriate support surfaces. However, researchers have shown compliance with various PIP recommendations is suboptimal in western countries (Barker et al., 2013; Chaboyer et al., 2017; Latimer et al., 2016). Several studies have explored PIP care in China (Li et al., 2021; Liu et al., 2019). The compliance rate for repositioning was 90% with immobile patients in a cross-sectional study (Liu et al., 2019), much higher than that reported in Sweden (44.3%) (Baath et al., 2014) and Australia (66.4%) (Chaboyer et al., 2017). A recently published observational study also identified high completion rates of repositioning and risk assessment in a Chinese tertiary hospital, however, nurses' uptake of strategies such as providing an appropriate support surface, skin care and nutrition were less ideal (Li et al., 2021). The combination of low reported rates of PI along with variable

PIP practices implies a need for a deeper understanding of Chinese nurses' approach to PIP.

Therefore, this study was conducted to gain a better understanding of how medical and surgical nurses approach PIP. The Systems Engineering Initiative for Patient Safety (SEIPS) model (Carayon et al., 2006; Holden et al., 2013) was used to guide this qualitative study. It provides a framework to explore work systems, processes and outcomes of patient safety activities. The work system refers to the person(s) as the centre of the system associated with PIP. Processes are those associated with the delivery of PIP. Outcomes, which are both desirable and undesirable, relate to the patient, the professional and the organization. This model has been previously used to identify other patient safety issues (Bergman et al., 2017; Dalal et al., 2019) and shows good feasibility. To our knowledge, no previous studies have used SEIPS to gain a macro/micro system understanding of PIP care. This study expands current knowledge by embedding the data collection and analysis in the SEIPS model to help inform future PIP practice improvements based on both theory and research evidence.

3 | THE STUDY

3.1 | Aims

This study aimed to describe Registered Nurses' (RN) approaches to PIP, including how nurses perceive their roles in PIP, how they prioritize PIP and factors influencing PIP in a Chinese hospital context.

3.2 | Design

A qualitative descriptive study using face-to-face individual interviews was conducted. The System Engineering initiative for Patient Safety (SEIPS) model was used to guide the development of an interview guide and the data analysis method. The 32-item checklist of the Consolidated Criteria for Reporting Qualitative Studies (COREQ) was adopted to guide reporting of this study (Tong et al., 2007).

3.3 | Setting and participants

Interviews were conducted in a Chinese tertiary level hospital in Beijing from August to December 2020. The hospital has 1828 beds, with ten medical and eleven surgical wards. Registered Nurses

(RNs) were recruited from two medical and two surgical wards because these wards had a higher number of patients who required higher levels of nursing care. The four wards had between 40 and 46 beds each and provided a range of healthcare services including respiratory care, stroke care and perioperative care. Maximum variation purposive sampling was used with assistance from the head nurses to ensure a broad representation of nurses (Patton, 2005). Nurses were invited because of their roles (leaders vs. non-leaders), years of clinical experience in their current position (experienced vs. non-experienced), and whether they had specific PI training or not. Eligible criteria were: (i) RNs, (ii) worked in current ward ≥ 1 month, (iii) had responsibility for providing PIP care, (iv) willing to provide written consent. A purposive sample of six or seven nurses in each ward was invited to enable differences in the way they performed their roles to be represented, with a total of 24–28 nurses in the four wards being anticipated (Patton, 2005; Thorne, 2020).

3.4 | Interview guide

A semi-structured interview guide was developed based on the SEIPS model (Carayon et al., 2006; Holden et al., 2013). To explore nurses' perception of the work structures, work processes and outcomes of PIP, 10 questions were included to elicit their views about their roles in delivering PIP, how to prioritize PIP, perceived barriers and facilitators to deliver PIP in current practices, and their perceived outcomes in the Chinese hospital. This interview guide was reviewed by three PhD prepared experts who are experienced in qualitative research and pressure injury research including one who had used the SEIPS model in previous qualitative study, and minor edits were made. The guide was then piloted with two nurses not working in selected study wards and two questions were revised for clarity (Q4 & Q5) (Appendix S1). Probing questions, such as 'Please tell me more about that', were used to enhance the depth of discussion.

3.5 | Data collection

All interviews were conducted in Chinese from August to December 2020 by the first author, who is a female PhD candidate. She was trained in qualitative interview techniques and had no prior relationships with the participating nurses. After providing consent, nurses' demographic and professional data were collected prior to the interview, including their age, gender, education, current role in the ward, years of clinical experience, and whether or not they had received PI-related training. All individual interviews were audio-recorded with the nurses' permission and lasted between 15 and 55 min. Nurses were interviewed in private and quiet locations such as ward meeting rooms or empty staff offices during the nurses' shift change-over time when there were more staff on duty. Field notes of the interviewer's perceptions, feelings and key viewpoints from the participating nurse were documented during or immediately after the interviews and used in the data analysis along with

the transcriptions. Recruitment ceased when the first author concluded that the last few interviews did not add any substantially new perspectives to the collected data.

3.6 | Data analysis

Nurses' demographic and professional data were entered in SPSS (version 26.0; IBM Corp.). Descriptive statistics were used to describe numerical data. Interview data were managed in NVivo 11 (version 11; QSR International).

Each interview recording was transcribed verbatim by the first author. Content analysis was conducted using deductive then inductive approaches in an iterative way (Elo & Kyngas, 2008; Yin, 2017). First, based on the three SEIPS model's domains (i.e. work systems, work processes and outcomes), an analytic matrix was designed (Carayon et al., 2006; Holden et al., 2013). Second, the unabridged transcripts were read and re-read and examined line by line to highlight meaningful units, and these meaningful units of text were then sorted into this matrix, representing the deductive component of the analysis. Third, inductive analysis occurred whereby data codes in the matrix were assigned to the meaningful units of text. Fourth, similar codes in the interviews were grouped together and labelled as categories. The categories were then compared and contrasted to ensure they were incorporated into the most relevant domain. Interpreting and theorizing these categories led to the identification of themes. This process was repeated as many times as needed to allow a deep understanding of the data (Yin, 2017).

In order to preserve the original meanings of the interview, the data analysis was conducted using the original Chinese transcripts (Zheng et al., 2013). Two transcripts were translated to English and coded by the first author. The English transcription and emerging codes were reviewed by the author team. Any discrepancies were discussed and resolved with all authors. Subsequent analysis was undertaken in Chinese with another author (F.L.), fluent in Chinese checking the emerging codes, categories and preliminary theme, which were subsequently translated into English along with several exemplary quotes. These English translations were interrogated by the whole team over a series of meetings to ensure the veracity and consistency of the decision-making processes that led to each code, category and theme. The final Chinese and English versions of categories and themes were checked sentence by sentence by the author team. This review process ensured the accuracy of meaning after translation.

3.7 | Rigour

Strategies were adopted to establish the rigour of this study. The trustworthiness of qualitative research is considered in relation to credibility, transferability and auditability (Sandelowski, 1986). Credibility refers to the extent to which the lived experience can be recognized by the participants (Guba, 1981). As the first author

is a PhD nursing candidate and as 'the research tool', her cultural background, prior knowledge and clinical experience in the Chinese context helped her to gain insights into participants' responses. Although only the first author undertook the in-depth analysis, all members of the research team were involved throughout the data analysis process to establish consistency with data interpretation. Several meetings were undertaken among the researchers to discuss emerging categories and themes. Using purposive sampling allows a diverse sample to be gathered to improve credibility (Patton, 2005). Transferability refers to the extent to which the findings can be transferred to other settings or groups (Graneheim & Lundman, 2004). To facilitate transferability, selection and characteristics of participating nurses, clear data collection and data analysis processes have been clearly described. Auditability was achieved by memo keeping throughout the data collection and analysis periods to document any potential biases and preconceptions also ensured auditability (Sandelowski, 1986).

TABLE 1 Characteristics of participating nurses

Characteristics	Overall (n = 27)
Age (median [IQR])	33 (26–39)
Years of clinical experience (median [IQR])	11 (4–21)
Gender (female)	27 (100%)
Education	
Bachelor degree	21 (77.8%)
College diploma	6 (22.2%)
Current role	
Registered nurse	18 (66.7%)
Nurse leader	9 (33.3%)
Had PI-related trainings	25 (92.6%)

Abbreviation: IQR, interquartile range.

TABLE 2 Theme and categories

	Theme	Category
Work system	Theme i: Nurses lead and coordinate PIP	<ul style="list-style-type: none"> • PIP is nurse-led • Patient and carers/nurse assistants participate in PIP • Nurse managers supervise PIP • Nurses' desire for better physician engagement with PIP • A variety of tools, devices and equipment to support PIP
Work processes	Theme ii: Individualized PIP is founded on comprehensive patient assessment	<ul style="list-style-type: none"> • Risk assessment practices go beyond completing a risk assessment tool • PIP is augmented for high-risk patients
	Theme iii: Collaborating ensures patients receive appropriate PIP	<ul style="list-style-type: none"> • Nurses collaborate/support each other in PIP • Wound care experts provide advice on PIP • Wound care team support PIP
	Theme iv: Competing factors influence the delivery of appropriate PIP	<ul style="list-style-type: none"> • Enablers enacting PIP • Obstacles enacting PIP
Work outcome		<ul style="list-style-type: none"> • Nurses strive to do their best in PIP but hold major concerns when PI occurs

Abbreviation: PIP, pressure injury prevention.

4 | FINDINGS

A total of 27 nurses took part in semi-structured, face-to-face interviews. The age of participating nurses ranged from 23 to 51 years old and all were female. Their clinical experience ranged from 1 to 38 years. Most nurses (n = 25) had undertaken previous PI-related training, such as workshops in the ward. Further details of nurses' characteristics are presented in Table 1.

Analysis revealed four themes related to two domains of the SEIPS model and one category related to the third domain: Work system: (i) Nurses lead and coordinate PIP; Work processes: (ii) Individualized PIP is founded on comprehensive patient assessment; (iii) Collaborating ensures patients receive appropriate PIP; and (iv) Competing factors influence the delivery of appropriate PIP. One category but no themes were identified about outcomes. The findings displayed in Table 2.

4.1 | Nurses lead and coordinate PIP

In this theme, nurses described the strong and active role they had in delivering PIP, as reflected in the SEIPS model's domain of 'work system'. Nurses talked about their roles in leading PIP, guiding patients and coordinating various PIP aids and resources. PIP in this context was generally nurse-led and nurses were the core 'person' who took primary responsibility for providing patients with quality PIP care. All nurses made decisions about various PIP tasks including checking patients' skin, assessing patient risks, implementing prevention strategies and documenting PIP into patients' medical charts:

"We, nurses, are the first to discover bedsores ... for patients with ADL score lower than 60 points, or bedridden patients, we identify the patients' risk and give preventive strategies. I think we tracked the bed sore care from the beginning to the end." (Nurse #6)

Most nurses expressed that other personnel including nurse assistants, hired carers, family members and patients themselves also participated in PIP. Nurses said that they coordinated and supervised patients and assisted personnel to implement PIP because they knew more about PIP. Paid carers or family members “help to remind nurses” (Nurse #9) about PIP because “they always stay around the patients’ bedside...” (Nurse #9). If carers/nurse assistants undertook prevention such as helping the patients to change position, most nurses said they usually “go and double-check if the patient has been properly turned...” (Nurse #9). Nurse assistants, who were employed by the hospital also contributed to PIP but each assistant was assigned to 10–12 patients. Some nurses said that the nurse assistants had heavy workloads and lacked-specific professional knowledge, thus their contribution to PIP was limited.

Nurse Managers, as a group of ward leaders, played a major role in supervising and monitoring all PIP activities. Their leadership seemed to positively influence nurses’ attention to PIP: “The head nurse participates on morning rounds every day and checked patients’ skin with us. And she pays close attention to those high-risk patients with pressure ulcers” (Nurse #24).

Several nurses expressed the need for better engagement by doctors. They said doctors were only involved in wound treatment however, nurses needed to “remind the doctors to prescribe prevention” (Nurse #7) for at-risk patients to assist ensure timely prescribing of prevention strategies such as support surfaces and nutrition support.

A variety of tools, devices and equipment were used to support the delivery of PIP including the risk assessment tool (the Braden score), PI risk alert bedside card, support devices such as air alternating mattresses and foam mattresses, prophylactic dressings, patient education materials and electronic PI reporting systems. Nurses coordinated the acquisition and implementation of these resources to support PIP in their daily practice.

4.2 | Individualized PIP is founded on comprehensive patient assessment

This theme emerged from the ‘work processes’ domain of the SEIPS model and focused on the nurses’ PIP practices. Nurses discussed how they prioritized prevention strategies to individual patients to ensure quality care.

All nurses described the importance of assessing patients’ PI risk first when delivering PIP. Nurses expressed that they conducted structured risk assessments using the Braden scale for every patient on admission and documented the results in the medical charts. However, many nurses described that relying on risk assessment results was not enough; they also use their “clinical judgment ... we also consider more about patient’s nutritional status, hypoproteinemia, or skin problems, disease condition, or if the patient is fragile...” (Nurse #25) to conduct a comprehensive PI risk assessment. A few nurses talked about how every time they entered patients’ rooms, they took

the opportunity to observe patients’ skin and position, and used this information to supplement risk assessment.

There were repeated expressions of how PIP was augmented for high-risk patients. Most nurses described that they enacted individualized preventive strategies according to the patient’s situation. Various strategies were implemented for those high-risk patients, including daily risk assessment, skin inspection in each handover, keeping the bed linen clean and skin clean, two hourly turns, using support device, and prophylactic dressings and providing nutrition support:

“If the patient cannot move, first of all, we should be vigilant, all the risk bony prominences should be protected ... I usually use prophylactic dressings on bony prominences and air alternating mattresses to re-distribute the pressure of the patients’ body.” (Nurse # 17)

4.3 | Collaborating ensures patients receive appropriate PIP

This theme, which also emerged from the work process domain, centered on the importance of collaboration to ensure appropriate PIP was delivered to high-risk patients.

Nurses described how they helped each other when delivering prevention strategies, like turning the patients who usually required extra help: “Usually it needs four of us to lift one patient so the responsible nurse can check the sacrum skin during morning rounds” (Nurse #17). Several junior nurses described how they sought advice from senior colleagues when determining appropriate PIP strategies. Senior nurses and head nurses provided suggestions and guided juniors in this regard:

“I always ask senior teachers in the ward before I make decisions about bed sore care.” (Nurse #5)

Partnering with wound care specialists provided nurses with strong support in PIP care. Wound care specialists were regarded as a significant source of information and guidance, especially in the surgical wards. Nurses said the specialists updated them with updated wound care knowledge and gave advice when they needed to identify if a suspicious wound was a PI. If a PI occurs, nurses usually asked the wound care nurses for treatment advice:

“I will definitely consult the wound care nurse first because sometimes I am not sure about what to do next about the pressure ulcer ..., so they can tell me what to do and how to better treat and prevent it” (Nurse #22)

A few nurses spoke about the importance of using a team approach to support each other. They described that a wound care team was developed in the hospital, including a contact person in each ward and

wound specialists in the hospital. The contact person linked RNs to the team to ensure appropriate PIP:

"We have the wound care group in our hospital ... If any adverse event occurred, including pressure ulcers, I report the event in the group chat. So, these experts can tell me what to do next or double-check my reporting forms." (Nurse #18)

4.4 | Competing factors influence the delivery of appropriate PIP

This theme focused on factors influencing the delivery of PIP, which included 'Enablers' and 'Obstacles' to enact appropriate prevention and reflected the 'work processes' domain of the SEIPS model. Among various 'enablers', nurses' characteristics such as self-perceived responsibility were highlighted by most nurses:

"Frankly, [sic the implementation of preventive care] may have something to do with each nurse's sense of responsibility. If the nurse had a strong self-perceived responsibility, she would always have the high-risk patient in mind and keep reminding he/she to turn on time." (Nurse #20)

Several nurses said they were willing to proactively take measures to prevent PI because they thought "prevention is more important than treatment" (Nurse #11) and "save the efforts and money to treat a pressure ulcer in the future" (Nurse #11). Several nurses indicated that contextual factors such as a strict PI management system and social culture also facilitated PIP. All participants regarded PI as a serious patient safety issue and paid special attention to prevention. If a PI occurred, everyone in the ward would be informed and the PI reported into the Adverse Event Reporting System in the hospital:

"From the perspective of the nursing department, a pressure ulcer is an adverse event ... there are managers responsible for supervising those events in the nursing department. They emphasize the prevention of pressure ulcers and impact us to think highly of this issue." (Nurse #3)

A couple of nurses indicated that social and culture factors influence implementation of PIP strategies commenting that "Chinese people are more compliant to rules and policy, especially in nurse groups. Nurses implement prevention strategies as the hospital policy required" (Nurse #4). Other nurses mentioned the impact of "the traditional filial piety culture" (Nurse #15) in China where it is common to have family members taking care of senior sick relatives in hospitals noting that "Chinese families are more willing to take care of each other" (Nurse #10). Thus, these family members take great responsibility in keeping the

patient safe and sound in the hospital, which enabled PIP strategies, such as helping patients keep skin clean and turning regularly to prevent PI.

Some surgical nurses said that having sufficient PIP equipment including prophylactic dressings, and air alternating mattress, facilitated their PIP activities. One nurse said "At present, there are enough support devices in our ward ... Foam dressings and hydrocolloid dressings are sufficient and we can use them at any time" (Nurse #12)

Although most nurses appeared to have positive attitudes towards PIP, they also described various obstacles to PIP delivery. The first obstacle perceived by most nurses was a lack of helpers. A majority of nurses said that their heavy workloads meant the responsibility of repositioning patients mostly rested with patients' carers. They noted that especially during COVID, with fewer carers allowed in the hospital, nurses were not able to implement good quality care:

"If there is no carer with the patient, like now during COVID, it is difficult for us to implement PIP relying on nurse alone. For example, it is so hard to turn the patient in every two hours." (Nurse #13)

Some nurses highlighted concerns about patients' and carers' "oor compliance" (Nurse #16) with prevention care. They thought possible reasons included pain, discomfort and lack of knowledge about PIs. Nurses said that if patients and their carers did not view PIP as important, they were less likely to cooperate with prevention: "When I ask the patient to move more, he/she doesn't do it at all." (Nurse #16)

Some nurses, especially those on the medical wards reported that they did not have access to some PIP equipment such as prophylactic dressings and specialized support surfaces. They described how they prioritized the limited resources to patients most at risk and tried to persuade patients and relatives to purchase devices that were in short supply. "We have only one big gel mat and one small gel mat ... We don't have enough devices..." (Nurse #1). Also, several nurses reported the use of protective dressings was restricted by the current medical insurance reimbursement policy:

"What's embarrassing now is that we cannot use many prophylactic dressings to just prevent pressure ulcers ... One dressing is about 100 RMB, and cannot be claimed in current medical insurance." (Nurse #4)

Complex PI reporting processes were described as a significant obstacle. About half the nurses said that the current reporting process was too complicated and time-consuming. Nurses said that they had to "write a few hundred words to describe how bedsore occurred, and usually take about one to two hours to complete the reporting forms" (Nurse #15). Also, nurses needed assistance from the head nurses and senior nurses to check their reporting results. Reporting is never the end, "there are loads of follow-up work after reporting" (Nurse #25) such as "quality improvement meetings" (Nurse #25), which added to their already heavy

workload. Thus, four nurses mentioned omission of reporting may occur; one said *"only the worst bedsores will be reported"* (Nurse #21).

4.5 | Nurses strive to do their best in PIP but hold major concerns when PI occurs

One category emerged in the 'work outcome' domain of SEIPS model but lacked sufficient depth to develop a theme. This category can be viewed as a professional outcome as nurses were evaluating their current PIP practice. About half of the nurses thought that they had strived to the best of their ability to deliver PIP and perceived they have done a good job of it. The occurrence of HAPI was rare in their current context and PIP was already being embedded as a routine in their daily practice:

"Based on my understanding, I think current prevention is enough, we basically meet patients' requirements in our ward. Except for the pressure ulcers brought to the hospital, ah, very few pressure ulcers happened in the ward during hospitalization." (Nurse #8)

Despite this, several nurses suggested that current PIP practices could be improved. Most nurses highlighted the importance of keeping up to date on the latest knowledge and clinical practice guidelines. They said ongoing training was required to improve their knowledge about PIP. Several nurses suggested evidence-based patient education materials and preferred video education for patients:

"The knowledge of pressure ulcer is updated every year ... there should be more knowledge training to clinical nurses, to help us understand more." (Nurse #11)

But, nurses said they still held major concerns about the occurrence of PIs. They tended to blame themselves if a PI occurs under their watch; nurses *"feel pressured and depressed if a PI occurs in my shift"* (Nurse #17). Several nurses described their concerns about the negative impacts of PI reporting on the team's collective honour and worried about the strict follow-up management from the nursing department. These perceptions may influence the way nurses communicate and reporting of potential PIs:

"If you report PIs too often, great attention will be attracted and strict management from the high management level will be followed. It's very troublesome..." (Nurse #10)

5 | DISCUSSION

To our knowledge, this is the first reported qualitative study of RNs' PIP practice in mainland China. This work also represents a novel approach by using the patient safety model, SEIPS, in exploring nurses'

approach to PIP. Nurses in this study elucidated the leading role they had in PIP. This is consistent with previous studies that most nurses perceived that they took the most responsibility in preventing PIs development in hospitals and long-term care settings (Garrigues et al., 2017; Lindhardt et al., 2020; Tan et al., 2020). Reasons could be that first-line nurses had the most frequent contact with patients; had specific skin care knowledge (Tan et al., 2020); and placed positive attitudes and a high value on PIP in their daily work (Lindhardt et al., 2020; Samuriwo, 2010). However, Sving et al. (2012) in their study of PI prevention in Sweden found PIP was a task delegated to assistant nurses who were responsible for assessment and intervention implementation. In our study, nurses also acknowledged the participation of patients, carers and nursing assistants in PIP such as helping to turn the patients and reminding them of any changes in skin condition. However, most of the carers and nursing assistants did not have enough PI knowledge thus their actual engagement was limited.

Leadership appeared to particularly influence nurses' attention to and engagement with PIP. Evidence showed that leaders are crucial to the development and implementation of wound care practice, planning educational training opportunities and making changes happen through collective team efforts and resource investment (Kuhnke et al., 2019). Further, administrative leadership may facilitate a culture that values PIP in the work environment (Hommel et al., 2017). Strong leadership is also recommended as part of an effective quality improvement strategy to reduce PIs in the international guideline (EPUAP et al., 2019).

The findings identified the importance of collaboration across different levels of nurses and wound care experts to facilitate quality PIP. This is not surprising given senior and experienced nurses may be better at identifying and responding to adverse events than junior nurses (Lederman et al., 2013). A descriptive study in the US revealed that senior staff nurses and skin champions act as role models to inexperienced nurse students and reinforced students' attitudes of commitment and passion towards PIP (Garrigues et al., 2017). Collaborating with wound care experts was highlighted in the study as being a predominant source of support to ensure PIP. Similar to a case study conducted in Singapore (Teo et al., 2019), nurses trusted accredited wound ostomy and continence nurses and perceived that the involvement of these experts increased their combined vigilance (Teo et al., 2019). Soban et al. (2016) also identified that wound care specialists staffing represent important leverage in achieving PIP program components by delivering staff education and monitoring nurses' performance. In addition, wound experts are also important resources for RNs in PI treatment and promoting wound healing (de Leon et al., 2016).

A collaborative team approach is consistently reported in other studies (Hommel et al., 2017; Lavallée et al., 2018; Teo et al., 2019). Evidence showed that a multidisciplinary team approach is required to support successful PIP decisions intended to maintain skin integrity (Samuriwo, 2012; Sving et al., 2012). However, in the present study, nurses voiced concerns over the limited engagement of doctors and other health professionals. Doctors only participated

in specific wound treatment rather than prevention; this finding confirms findings from previous studies (Gaspar et al., 2021; Tan et al., 2020). Nurses in our study played a key role in ensuring doctors prescribe-specific PIP strategies in a timely manner. There were occasions when nurses required important insights and support from other health professionals, such as dietitians, physiotherapists and doctors (Samuriwo, 2012). However, the study site did not have a multidisciplinary team approach to PIP. Thus, other strategies may be required for Chinese patients to benefit from the expertise of other health professionals.

We found nurses generally regarded risk assessment to be a top priority when planning and delivering PIP. This finding resonates with the findings of previous studies that risk assessment is the initial step to guide nurses to plan PIP (Hultin et al., 2021; Li et al., 2021). In our study, in addition to the use of a structured tool, nurses also consider their 'clinical judgment' during risk assessment. The limitation of relying on risk assessment tools alone when determining patients' PI risk was also identified by previous research (Gaspar et al., 2021; Moore & Patton, 2019). Thus, clinical judgement is imperative when screening risk and the result of structured risk assessment should always be interpreted in combination with individualized condition and specific clinical context.

Nurses emphasized that they had developed routine work processes to augment PIP for high-risk patients. This could be related to a change in mindset from a reactive mindset focused on treating PI to a proactive one emphasizing prevention (Sving et al., 2017). PIP is a high priority in all areas of healthcare in the Chinese hospital context and nurses described prevention as something well known to them. For example, the 'Tertiary General Hospital Accreditation Criteria' issued by the National Health Commission (equivalent to Ministry of Health) specifies a set of clear quality indicators being used for assessing the performance and accreditation for hospitals (Ministry of Health, 2011). PIs are listed as one of the important nurse-sensitive quality indicators, thus, nurse managers have strived to achieve a 'never event' level of PIs in hospitals, and all nurses were motivated to do PIP as a priority in their daily work (Long et al., 2011).

We have identified the enablers and obstacles to enacting quality PIP care. While some may be unique to the particular setting, others may be common to other contexts. Understanding the context including barriers and facilitators to practice improvement and the update of new evidence-based interventions is well known to be an important step in quality improvement (Michie et al., 2005; O'Cathain et al., 2019). In quality improvement and knowledge translation research, both interventions and their implementation strategies need to be adapted to the context to support practice change (Cane et al., 2012; May et al., 2018).

Perceived enablers ranged from intrinsic nurses' characteristics, that is, self-perceived responsibility to macro-level factors that is, strict organizational PI management. Most nurses unanimously identified PIP as a nursing responsibility. Strong perceived responsibility may increase compliance with hospital protocols and clinical practice guidelines (Tan et al., 2020). The influence of context could

not be overlooked (Hommel et al., 2017). Nurses immersed in this strict organizational culture that prioritized PIP tended to place a high value on PIP.

Major obstacles included understaffing, poor provision of preventive resources, poor compliance of patients and complex reporting system. First, shortage of staffing in Chinese hospitals has long been a serious problem (Zhang & Wang, 2016). With nurses' already heavy workload, implementing some PIP strategies such as repositioning can be difficult without enough personals. Second, nurses desired sufficient provision of support surfaces and prophylactic dressings as these devices are critical to effective prevention. However, this might require future policy adjustments to the current Chinese insurance reimbursement policy to allow easy availability of dressings and other equipment. Third, the poor compliance of patients in PIP resulted in poor cooperation. Evidence has shown that patients' participation had a major impact on the adoption of PIP activities (Latimer et al., 2021; Roberts et al., 2017). Thus, PIP patient education to facilitate better patient involvement should be performed in the future. Finally, the complex reporting system itself may hindered PI reporting. This was also found in studies examining barriers to reporting medical errors (Lederman et al., 2013; Schelbred & Nord, 2007; Yung et al., 2016). Nurses' knowledge of reporting was lacking, so they were confused and often needed to redo several times during the reporting process; which added time pressure to their busy practice. In addition, submitting the reporting results to their superiors may add fear of being judged by colleagues (Yung et al., 2016). Education about how to report to increase nurses' knowledge in this regard should be strengthened.

We had designed some interview questions to elicit data about PIP work outcomes. However, nurses did not refer to patient and organizational outcomes during their interviews. One professional outcome was identified as nurses evaluated their current PIP practice. Nurses strived to deliver PIP and felt they had done a good job albeit with limited resources. Nurses worried that PIs had negative impacts on the team collective honour. Others have found wariness of entrenched power structures in the hospital might lead to unexpected behaviours, like concealment (Yung et al., 2016). Nurses play a vital role in guarding patient safety in hospitals but only by reducing nurses' the worry about PI, can we improve the quality of PIP and honestly reporting of adverse events.

6 | LIMITATIONS

This study has several limitations. First, it was conducted in a single setting, thus the findings may not be applicable to other settings. However, we sampled nurses with varying experiences, from different nursing roles, and working in wards that admitted patients at increased risk of PI. This provided a depth of understanding in the PIP practices. Second, while we used purposive sampling; other insights may have emerged as we interviewed other nurses. However, there are substantial variations in the participants' age and years of clinical experience. In addition, triangulating data from a variety of sources,

such as direct observations, may help to determine if nurses' reports are consistent with their behaviours.

7 | CONCLUSIONS

The findings of this study provide important insight into Chinese nurses' delivery of PIP care. Nurses play a leading role in the current PIP work system but require other healthcare personnel to support them. The prevention of PIs is a high priority and cooperation among various groups of nurses facilitates nurses' delivery of PIP. Although nurses strived to achieve better prevention, our findings revealed the need for both adequate resources and organizational support to ensure that quality PIP is delivered.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

All authors conceived the study and were responsible for designing the study, acquisition of data and analysis of data. Z.L., wrote the first draft of the paper. Z.L., A.P.M., F.L., Y.M. and W.C., critically revised successive drafts of the paper for important intellectual content and have agreed on the final version to be published.

ETHICAL CONSIDERATION

Ethics approval for this research was granted by the participating hospital (IRB.No.2020/003) and Griffith University (GU Ref No. 2020/466). The study objectives and voluntary nature of the study were explained to nurses, and written consent was obtained before each interview. Confidentiality was assured by using numbers instead of names (e.g. Nurse #1, Nurse #2) and deidentify information from the transcripts.

PEER REVIEW

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DATA AVAILABILITY STATEMENT

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

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