ASSESSING NURSES' KNOWLEDGE, ATTITUDES, AND PRACTICES FOR PRESSURE INJURY PREVENTION

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ABSTRACT

Background: Pressure injuries are a widespread healthcare concern that significantly burdens patients, family members, and caregivers. Knowledge, attitude, and practice regarding preventing pressure injuries among nurses are three crucial factors that may reduce the incidence of pressure injuries.

Purpose: This study aims to determine the knowledge, attitude, and practice level regarding preventing pressure injuries among nurses in the medical and surgical wards at a university Hospital in Malaysia.

Methodology: A total of 109 nurses participated in this cross-sectional study.

Results: The nurses demonstrated a high mean ±sd percentage for knowledge (84.9% ± 11.05), a positive attitude (95.7% ± 5.73), and effective pressure injury prevention practices (72.1% ± 7.30). The result also indicates a significant weak correlation between the nurses' level of knowledge and practice regarding pressure injury prevention.

Conclusion: This study showed that nurses understand pressure injury prevention, have positive attitudes, and follow recommended practices. However, knowledge alone may not strongly influence pressure injury prevention attitudes and practices. Hence, future research should identify ways to close the gap, such as educational programs, interdisciplinary collaborations, and quality improvement initiatives, so that translation of pressure injury prevention knowledge into practice can improve patient outcomes and ensure a high standard of care.

Keywords: Knowledge, Attitude, Practice, Nurse, Pressure Injury

INTRODUCTION

The European Pressure Injury Advisory Panel and National Pressure Injury Advisory Panel defines pressure injuries as localised injuries to the skin and underlying tissues, commonly over a bony prominence, caused by pressure or pressure combined with shear and friction (Haesler et al., 2017). According to the Malaysia Ministry of Health, pressure injuries are areas of injured skin and underlying tissue (Ministry of Health of Malaysia, 2022). They are usually caused by prolonged immobility characterised by sitting or lying in one position too long, reducing the blood supply to the skin and tissue, resulting in damage and ulceration. Pressure injuries are common among hospitalised patients, and the presence of pressure injuries has been shown to burden patients and caregivers substantially.

Previous literature suggests that about sixty thousand people died because of complications of pressure injury worldwide (Muhammad & Naseem Khan, 2017). Considerable variability in pressure injury incidence between developed and developing countries exists, with an estimated incidence rate of pressure injuries of 8.3 % to 25.1 % in developed countries and 2.1 % to 31.3 % in developing countries (Kaddourah et al., 2016). Pressure injury prevalence has become a widely recognised quality indicator in a hospital setting since it improves

patients' quality of life, increases hospital expenses, and harms fulfilling care goals to the point where their occurrence reflects the quality of care. Nurses are the front line healthcare workers caring for bedridden and critically ill patients most vulnerable to developing pressure injuries; thus, preventing ulcers should be considered a priority (Muhammad & Naseem Khan, 2017).

Although evidence-based guidelines for preventing pressure injuries have been listed and are widely accepted worldwide, the problem persists in healthcare facilities worldwide. The researcher believes in assessing the knowledge, attitudes, and practices to provide good health care (Alshahrani et al., 2021). Some studies demonstrate that the overall knowledge about pressure injury among nurses is appropriate, while others show that the knowledge about pressure injury is inadequate. Moreover, despite the positive approach toward pressure injury prevention, a gap between theory and practice has been discovered in some research. While better knowledge, attitudes, and practice lead to better health care, all disciplines must be aware of, well-informed about, and proficient in clinical practice guidelines to reduce pressure injury. Hence, this study aimed to assess nurses' knowledge, attitude and practice related to pressure injury prevention.

Methodology

The study was conducted using a cross-sectional approach. This study was conducted in the medical and surgical ward at a university hospital in Malaysia located in Kuantan, Pahang. The sample of this study was recruited through the universal sampling method, which yielded 107 nurses from the medical and surgical wards. The instrument for data collection was an adapted and validated questionnaire. The questionnaires are adapted from a research paper entitled "Knowledge, Attitude and Practice of Nurses toward Pressure Injury Prevention in the University of Maiduguri Teaching Hospital, Borno State, north-eastern Nigeria" by Uba MN et al. (2015). The questionnaires were divided into four main parts, including sociodemographic background, knowledge towards pressure injury prevention, attitude towards pressure injury prevention, and practice towards pressure injury prevention. The researcher seeks approval for this research study from the Institutional Review Board (IRB) and the hospital for data collection. The researcher's information, the research study's aims, the respondents' confidentiality, and the right to refuse or withdraw from the study were included in the questionnaire. The respondents were ensured that their personal information was kept private.

Result

The results that will present the sociodemographic data, the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical ward at a university hospital in Malaysia, as well as the relationships between the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical wards.

Sociodemographic background

Sixty-five nurses from medical and surgical wards participated in this study. Table 1 presents the sociodemographic data of nurses in the medical and surgical wards. The mean and standard deviation (sd) for age was 27.11 years old and 3.16, respectively. Most respondents are female (90.8%) compared to males (9.2%). Most respondents were married (58.5%), and others were single (41.5%). One of the respondents has a Bachelor of Nursing (1.5%), while other respondents have a diploma in nursing (98.5%). Most respondents who answered the questionnaires were from the medical ward (78.5%) and others from the surgical ward

(21.5%). Meanwhile, the mean (sd) for employment as a permanent staff member at the university hospital was 30.89 months (16.70). Most respondents (72.3%) have received formal training on pressure injury prevention.

Table 1: Sociodemographic data of nurses working in the medical and surgical ward

(n=65)

Variable	Mean	Standard deviation (sd)	Frequency	Percentage (%)
Age (years)	27.11	3.16		
Gender				
Male			6	9.2
Female			59	90.8
Marital status				
Single			27	41.5
Married			38	58.5
Divorced			0	0
Widowed			0	0
The level of education				
Diploma in Nursing			64	98.5
Bachelor of Nursing			1	1.5
Master of Nursing			0	0
PhD of Nursing			0	0
What area of practice do you work in?				
Medical			51	78.5
Surgical			14	21.5
How long have you been employed as a permanent staff nurse in your hospital?	30.89	16.70		
Have you received any formal training on pressure injury prevention since you qualified as a nurse?				
Yes			18	27.7
No			47	72.3

Nurses' Knowledge of Pressure Injury Prevention

Table 2 presents the level of knowledge of pressure injury prevention among nurses in the medical and surgical wards. It can be concluded that most nurses responded correctly to the questions with a mean score of 84.90 %, demonstrating their high level of knowledge towards pressure injury prevention.

Table 2: Level of knowledge of pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variables	Correct N (%)	Incorrect N (%)
What factors contribute to pressure injury formation in a hospital?	49 (75.4)	16 (24.6)
What assessment procedure do you select for a patient with spinal cord injury at high risk for pressure injury development?	65 (100)	0 (0)
Which one of the risk assessment scales for pressure injury development do you use?	57 (87.7)	8 (12.3)
What are the early signs for pressure injury development?	60 (92.3)	5 (7.7)
Which one is the proper method of skin care for pressure injury preventions?	61 (93.8)	4 (6.1)
What nurses' actions are significant for prevention of pressure injury?	64 (98.5)	1 (1.5)
How can moisture be reduced under elderly patients?	57 (87.7)	8 (12.3)
What do you do to prevent heel ulcer?	63 (96.9)	2 (3.1)
What kind of vitamin is important to maintain healthy skin?	48 (73.8)	17 (26.2)
Which answer is the best educational activity that enhances competency ofstaff nurses in preventing pressure injuries?	22 (33.8)	43 (66.1)
What teaching do patient need to comply with pressure injurys prevention?	64 (98.5)	1 (1.5)
Total score for knowledge towards pressure injury prevention (mean±sd)	84.90	11.05

Nurses' Attitude Towards Pressure Injury Prevention

Table 3 presents the attitude toward pressure injury prevention among nurses in the medical and surgical wards. The majority of the respondents provided an agreed answer. Agree means the respondents have a positive attitude, while disagree means the respondents have a negative attitude. Most nurses agree that most pressure injury risk factors can be avoided (100%), patients should be cleaned immediately after soiling (100%), and nurses' awareness to turn patients at risk for pressure injury every 2 hours. Based on the total score of the level of attitude towards pressure injury, it can be concluded that the nurses have a positive attitude (95.74%).

Table 3: Level of attitude towards pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variables	Agree (positive) F (%)	Disagree (negative) F (%)
Most risk factors of pressure injury can be avoided.	65 (100)	0
Prevention of risk factors for pressure injury is time-consuming for me to carry out.	55 (84.6)	10 (15.4)
I am less interested in pressure injury prevention than other aspects of nursing care.	61 (93.8)	4 (6.2)

I am aware of an appropriate assessment procedure for pressure injury formation.	62 (95.4)	3 (4.6)
My clinical judgement is better than any pressure injury risk assessment tool available to me.	35 (53.8)	30 (46.2)
Patient who is at risk for pressure injury development should be assessed at the first day of admission.	61 (93.8)	4 (6.2)
Pressure injury risk assessment should not be regularly carried out on all patients during their stay in hospital.	54 (83.1)	11 (16.9)
All data about pressure injury should be documented at the time of assessment and reassessment.	64 (98.5)	1 (1.5)
Pressure injury is an important indicator for quality of nursing care.	62 (95.4)	3 (4.6)
Patient's relative should not be advised to assess patient's skin during bathing a patient.	61 (93.8)	4 (6.2)
Patient should be cleaned immediately after soiled.	65 (100)	0 (0)
Patient should be massaged at the bony prominences after turning position.	58 (89.2)	7 (10.8)
I think that nutritional status of a patient is not a problem for pressure injury development	.60 (92.3)	5 (7.7)
I am aware to turn my patient who is at risk for pressure injury every 2 hours.	65 (100)	0 (0)
I value that joining educational activities on pressure injury prevention is important for my practice.	64 (98.5)	1 (1.5)
Total score for attitude towards pressure injury prevention (Mean ± sd)	95.74	5.73

Nurses Practice of Pressure Injury Prevention

Table 4 presents the level of practice towards pressure injury prevention among nurses in the medical and surgical wards. The majority of the nurses identify common contributing factors for pressure injury development by periodical assessment of the patient's skin (92.3%), document all the data related to pressure injury development (92.3%), use the special mattress to prevent pressure loadings (90.8%) and turn a patient position every two hourly (96.9%). The interpretations of Table 6 showed that the mean (sd) of the nurse's practice towards preventing pressure injury was 72.10% (7.30). This indicates that the nurses have good practice towards preventing pressure injury.

Table 4: Level of practice towards pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variables	Always N (%)	Sometimes N (%)	Never N (%)
I identify common contributing factors for pressure injury development by periodical assessment of patient's skin.	60 (92.3)	5 (7.7)	0 (0)
I do skin assessment that guided by a standard nursing care available in my ward or in my hospital.	61 (93.8)	4 (6.2)	0 (0)
I use risk assessment scale to assess pressure injury.	53 (81.5)	11 (16.9)	1 (1.5)

I document all data related to pressure injury development.	60 (92.3)	5 (7.7)	0 (0)
I place the pillow under the patient's leg to prevent heel ulcer.	57 (87.7)	8 (12.3)	0 (0)
I advice caregiver to use creams or oils on patient's skin in order to protect from urine, stool or wound drainage.	14 (21.5)	35 (53.8)	16 (24.6)
I perform lab test for assessing nutritional status followed by physicians' order.	4 (6.2)	53 (81.5)	8 (12.3)
I provide vitamins and food for patients who are malnourish.	7 (10.8)	53 (81.5)	5 (7.7)
I monitor a protein and calories diet in patient who is bedridden.	11 (16.9)	49 (75.4)	5 (7.7)
I always use a special mattress to prevent pressure loadings, such as foam, air, and water bed mattresses.	59 (90.8)	6 (9.2)	0 (0)
I avoid using donut-shape (ring) cushion at bony prominences to prevent pressure injury formation.	26 (40.0)	26 (40.0)	13 (20.0)
I do turn a patient position every two hourly.	63 (96.9)	2 (3.1)	0 (0)
I pressure injuryt pillow under patients' leg from mid-calf to ankle in order to keep heels off the bed.	62 (95.4)	3 (4.6)	0 (0)
I always attend seminars for pressure injury prevention.	36 (55.4)	20 (30.8)	9 (13.8)
I give advice to patients or caregivers regarding pressure injury preventive care before discharge the patient from hospital.	59 (90.8)	6 (9.2)	0 (0)
Total score for practice towards pressure injury prevention (mean ± sd)	72.10		7.30

Relationship Between The Level of Knowledge, Attitude and Practice Towards

Pearson's correlation test is used to identify relationships between the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical ward. The findings showed a significantly weak relationship between the level of knowledge and the level of practice towards pressure injury prevention, r= 0.300 and the p-value, p= 0.015. Meanwhile, the correlation between the level of attitude and practice, r= 0.163 and the p-value, p= 0.194 (see Table 5) was insignificant.

Table 5: The relationship between the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variable	The level of practice	
	r	**P-value**
Level of knowledge	0.300	0.015
Level of attitude	0.163	0.194

Note: Pearson correlation $p < 0.05$ significant

Implications to Nursing

Previous studies suggested that the knowledge and attitude towards pressure injury prevention are linked to their practice (Muhammad & Naseem Khan, 2017; Uba MN et al., 2015). In this study, the participants' knowledge was tested, and the results indicate that they understand various aspects of pressure injury prevention, where 75% of nurses correctly identified the factors contributing to pressure injury formation. Aside from that, most nurses correctly identified the early signs of pressure injury development and the proper skin care methods for prevention. This is a positive finding because early detection and proper skin care practices are critical for timely intervention and prevention of pressure injuries. It is worth noting that 26% of nurses may benefit from educational interventions to improve their understanding of the role of vitamins in skin health and pressure injury prevention. Aside from that, only 33.8% of the nurses correctly identified the best educational activity to improve staff nurses' competency in preventing pressure injuries. This finding suggests that there may be a knowledge gap regarding the educational strategies for improving nurses' competence in this area. According to Seton et al., the lack of staff time and limited resources dedicated to education on pressure injury may have contributed to learning and retention barriers, which can negatively impact the nurse's knowledge of pressure injury management (Seton et al., 2022). Hence, more research and exploration of effective educational interventions can help bridge this gap and ensure evidence-based practices are implemented.

While most nurses have positive attitudes toward pressure injury prevention, some areas have differing opinions or knowledge gaps. According to the findings of this study, most nurses acknowledge that pressure injury risk factors can be avoided. This positive attitude is critical because it indicates that nurses understand the preventable nature of pressure injuries and are likely to be motivated to implement preventive measures. Nevertheless, most nurses (84.6%) agreed that preventing risk factors for pressure injury takes time. The time constraints to focus on the preventive strategies for pressure injury have been mentioned in various studies (Barakat-Johnson et al., 2019; Teo et al., 2019). Thus, it is critical to address time constraints and provide adequate resources and support to ensure that nurses can effectively carry out prevention efforts without jeopardising other care aspects.

The total score for practice towards pressure injury prevention indicates a mean score of 72.10, with a standard deviation of 7.30. This mean score suggests that nurses adhere to recommended practices on pressure injury prevention, and the slight standard deviation may indicate a relatively low variation in their practices. Hence, future studies should consider determining the incidence of pressure injury in the ward setting to observe if adherence to the practice on the prevention of pressure injury is beneficial in preventing the occurrences of pressure injury. In addition to identifying early pressure-related skin damage using traditional methods such as observation of blisters, redness, and open wounds of the skin, the use of technology may also assist the nurse in identifying the incidence of pressure injury before clinical manifestations. Technology such as ultrasound, thermography, subepidermal moisture measurement (SEM), reflectance spectrometry, and laser Doppler flowmetry may be helpful (Scafide et al., 2020). This study also found that the nurses often include placing a pillow under the patient's leg, using a special mattress, turning every two hours, and providing health education on pressure injury prevention before discharge as preventive interventions. The findings are similar to another study by Edsberg et al., who found that based on the Braden scale of 296,014 patients hospitalised in 1801 acute care facilities in the United States, the most compliant preventive intervention for pressure injury was skin assessment and pressure redistribution (Edsberg et al., 2022). However, this study found that

the nurses may need to pay more attention to the importance of educating the patients about using the cream on their skin to protect against urination, drainage, friction, and shear. Many products are shown to be clinically effective in preventing the development of pressure injury. For instance, a clinical trial conducted by Baghdadi et al. found that using *Aloe vera* gel and *Calendula officinalis* ointment as prophylactic dressing twice a day can effectively prevent pressure injury (Baghdadi et al., 2020). Aside from that, only a small percentage of nurses focus on nutrition, which includes providing vitamins and food to malnourished patients and monitoring the diet of bedridden patients. Indirectly, the findings suggested that there is room for improvement in upgrading the knowledge gap of the nurses on the preventive measures of pressure injury. Targeted interventions to close practice gaps, improve adherence to evidence-based guidelines, and improve patient outcomes in pressure injury prevention.

The relationship between knowledge level and attitude toward the level of practice in pressure injury prevention was investigated. This study shows that nurses with more knowledge adhere to pressure injury prevention practices more closely. Although the correlation is weak, increasing knowledge is associated with a tendency to implement prevention measures better. The findings parallel the knowledge, attitude and practice or behaviour model that assumes knowledge will influence the attitudes, shaping behaviour or practices. Nonetheless, the extremely weak correlation between knowledge and practice emphasises the limited influence of attitude on preventive practice implementation. Hence, it may suggest that, even if nurses have the necessary knowledge, their attitudes may translate into something other than consistent adherence to pressure injury prevention practices. In contrast, the level of attitude toward pressure injury prevention among nurses does not significantly influence the actual implementation of preventive practices. The findings are similar to another study by Lotfi et al., where no significant relationship was found between attitude and behaviour on skin care, prevention, and management of pressure injuries (Lotfi et al., 2019).

Recommendations

Consequently, the findings of this study emphasise the importance of improving knowledge translation into practice among nurses in the medical and surgical wards. Seton et al., in their study, recommend routine delivery of innovative, interactive pressure injury education, including games, to frontline nursing staff at least quarterly (Seton et al., 2022). While knowledge is an essential foundation, additional factors other than attitude may contribute to the knowledge-practice gap. Such factors include organisational barriers, resource constraints, and competing priorities. Future research should investigate potential mediators of the knowledge-practice relationship. Investigating organisational factors such as leadership support, resource availability, and clinical protocols and guidelines could be part of this.

Furthermore, qualitative research and in-depth interviews may provide valuable insights into the barriers and facilitators influencing the implementation of pressure injury prevention practices in this setting. Considering the identified barriers and context-specific challenges, interventions should be developed to bridge the gap between knowledge and practice. Educational programmes, regular updates on evidence-based practises, interdisciplinary collaborations, and quality improvement initiatives can help to improve knowledge-practice alignment.

Conclusion

Finally, this study provides valuable insights into nurses' knowledge, attitudes, and practises in pressure injury prevention in the medical and surgical wards at a university hospital in

Malaysia. The findings show that nurses have a good understanding of pressure injury prevention, positive attitudes, and a relatively high level of adherence to recommended practices. The study also discovered a weak significant correlation between knowledge level and adherence to pressure injury prevention practises, indicating that knowledge alone may not strongly influence practice. Other factors, such as organisational barriers, resource constraints, and competing priorities, may contribute to the implementation gap between knowledge and practice. Future research should investigate these factors and identify potential interventions to bridge the gap, such as educational programmes, interdisciplinary collaborations, and quality improvement initiatives. This study highlighted the importance of continuously improving knowledge translation into practice in pressure injury prevention. Healthcare organisations can improve patient outcomes and ensure a high standard of care in pressure injury prevention by filling knowledge gaps, promoting evidence-based practices, and identifying and overcoming implementation barriers.

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