

Knowledge, Attitude, and Practice Regarding Pressure Ulcer Prevention among Nurses

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Abstract: Pressure ulcers, also known as bedsores or pressure sores, are a significant health concern affecting individuals across various healthcare settings, particularly those who are immobile or have limited mobility. Nurses are at the forefront of patient care, responsible for assessing, planning, implementing, and evaluating interventions to prevent and manage pressure ulcers. **Aim:** This study aims to assess nurses' knowledge, attitude and practices (KAP) towards the prevention of pressure ulcers. **Materials and methods:** Design: A cross sectional descriptive design. **Setting and sample:** 243 nurses were recruited from in-patient unit at King Fahad General Hospital, Ministry of Health at Jeddah city. **Tools for data collection:** one tool was used including 4 parts: Demographic Questionnaire, knowledge, attitude and practices questionnaire regarding towards the prevention of pressure ulcers among nurses. **Results:** The minority of participants exhibited a satisfactory level of knowledge regarding pressure ulcer prevention, only a third of the participants demonstrated a positive attitude towards pressure ulcer prevention while, the majority of participants demonstrated satisfactory levels of practice and compliance with pressure ulcer prevention and management protocols. **Recommendations:** implementation of targeted educational programs to improve nurses' knowledge on pressure ulcer prevention and the development of initiatives to bridge the gap between positive attitudes and actual practice, aiming to enhance compliance and effectiveness in pressure ulcer management.

Keywords: Nurse's knowledge, Nurse's attitude, Nurse's practices, pressure ulcers, in-patient unit.

I. INTRODUCTION

Pressure ulcers, also known as bedsores or pressure sores, are a significant health concern affecting individuals across various healthcare settings, particularly those who are immobile or have limited mobility. These wounds result from prolonged pressure, friction, or shear forces on the skin and underlying tissues, leading to localized tissue damage (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, & Pan Pacific Pressure Injury Alliance, 2019). Pressure ulcers can cause pain, infection, delayed wound healing, and a reduced quality of life for affected individuals (Bryant & Nix, 2015). Furthermore, pressure ulcers impose a substantial economic burden on healthcare systems due to the costs associated with their prevention and management (Bennett et al., 2018).

The effective prevention and management of pressure ulcers require a comprehensive and multidisciplinary approach, with nurses playing a critical role in the care of patients at risk for or with existing pressure ulcers. Nurses are at the forefront of patient care, responsible for assessing, planning, implementing, and evaluating interventions to prevent and manage pressure ulcers (Moore & Cowman, 2012). Therefore, it is essential to examine nurses' knowledge, attitudes, and practices regarding pressure ulcer management to identify potential gaps and develop interventions that improve patient outcomes.

Numerous studies have explored nurses' knowledge, attitudes, and practices related to pressure ulcer management. These investigations provide insights into the current state of nursing care and highlight areas for improvement. This paper aims to review and synthesize the existing literature on nurses' knowledge, attitudes, and practices regarding pressure ulcer management. Nurses' knowledge about pressure ulcer management is a crucial determinant of patient outcomes. Adequate knowledge enables nurses to accurately assess patients' risk factors, implement appropriate preventive measures, and provide evidence-based care for existing pressure ulcers. However, studies have consistently identified gaps in nurses' knowledge regarding pressure ulcer prevention and management (Demarre et al., 2015; Pancorbo-Hidalgo et al., 2018). In addition to knowledge, nurses' attitudes toward pressure ulcer management can significantly influence their practices. Positive attitudes, such as recognizing the importance of pressure ulcer prevention and viewing it as a fundamental aspect of nursing care, are associated with better adherence to preventive measures and more effective management of pressure ulcers (Moore & Cowman, 2012). Nurses' practices in pressure ulcer management encompass a wide range of activities, including risk assessment, skin inspection, preventive strategies implementation, wound care, and documentation. Adherence to evidence-based practices is essential to optimize patient outcomes and reduce the incidence and severity of pressure ulcers. To address the gaps in nurses' knowledge, attitudes, and practices, several strategies have been proposed. Education and training programs play a pivotal role in improving nurses' knowledge and skills in pressure ulcer prevention and management. Such programs should focus on enhancing nurses' understanding of risk assessment tools, preventive measures, wound assessment and care, and the importance of interdisciplinary collaboration (Gunningberg et al., 2018; Moore & Cowman, 2012). In addition to education, organizational support, including the provision of adequate resources and staffing levels, is crucial for nurses to effectively implement evidence-based practices (Van Rijswijk et al., 2018). Furthermore, the development and implementation of clinical guidelines and protocols can help standardize care practices and promote consistent and high-quality pressure ulcer management (Demarre et al., 2015). The present study aims to assess nurses' knowledge, attitude and practices (KAP) towards the prevention of pressure ulcers.

II. METHODOLOGY

A. Conceptual framework

The research using Knowledge, Attitudes and Practice (KAP) model. It can be used to assess knowledge, attitudes and practice among nurses. This may involve quantitative questionnaires that were analyzed using descriptive, analytical and correlational methods. The present study designed to explore the KAP among professionals' nurses by descriptive methods using questionnaire tools in order to fulfil the study aim (Shelby, 2014).

According to the KAP Model (Launiala, 2009), there are interrelations among knowledge, attitude, and practice. Certain knowledge can influence individuals' ability to perform actions. The attitude affects individual towards practice. Knowledge and attitude bring changes in human behavior. Therefore, integral elements of knowledge, attitude, and practice represent the standard of nursing practice.

B. Materials and Methods

Cross-sectional descriptive design was used to conduct the present study and to answer the research question. A cross-sectional study is a form of observational study in medical research and social science that examines data from a given population or representative subset at a specific point in time (Crowder, 2017). The descriptive design helps to describes the characteristics of a situation or phenomenon in a population that is being studied (Wang, 2015).

The current study was conducted in all in-patient departments as: medical, surgical and critical units at King Fahad General Hospital, Ministry of Health at Jeddah city which is located in the Western Region of Saudi Arabia from August 2023 to October 2023. A Convenience sample of were recruited from in-patient departments as mentioned above in King Fahad General Hospital according to the inclusion criteria. The total number of nurses staff who work in in-patient department was 646 nurses. If the margin of error is 5%, the confidence level is 95%. The sample size was 242 nurses calculated according to Raosoft application. In order to fulfil the aim of this study, the researcher was using three tools for data collection: The instrument will be adopted from Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT). The PZ-PUKT was develop in 1993 and updated content about pressure ulcer prevention/risk, staging, and wound description. Reliability values are highest for the total test, Cronbach's α was 0.80. it is divided into 4 sections. Section 1 is related to personal data. Section 2 is knowledge about pressure ulcer prevention. Section 3 is attitudes related to pressure ulcer prevention. Section 4 is practices regarding pressure ulcer prevention.

Section 1: Demographic Questionnaire. The questionnaire of the demographic data was consisting of age, gender, marital status, educational level, formal training on pressure ulcer, current areas of practice, and length of service for the participants.

Section 2: Nurses' Knowledge of Pressure Ulcer Prevention & management Questionnaire. It was including 28 items ,3 options for each question. The response will be true, false, and I don't know. Each correct answer will score as (1) and the incorrect answer will score as (0). The higher scores indicated the higher level of knowledge.

The total score was classifying according to the following:

- ≥ 70 % as satisfactory.
- Less than 70 % as dissatisfactory.

Section 3: Nurses' Attitude of Pressure Ulcer Prevention Questionnaire. It is including 8-item structured questionnaire. The answer was a Likert scale of attitude ranged from 1 to 5; 5 = strongly agree, 4 = agree, 3 = Mixed feeling, 2 = disagree, and 1 = strongly disagree. The possible total score was range from 8 to 40. Attitude was classified into two groups: Positive (56 – 125 points, 80 – 100% score) and poor to moderate (<56 points, <80% score).

Section 4: Nurses' Practice of Pressure Ulcer Prevention Questionnaire. The fourth section was consisting of 22-item structured questionnaire aim to assess the performance of staff regarding PU prevention. It is self-assessment tool, the response was range from 1 to 5; 5 = always, 4 = often, 3= sometimes, 2= rarely and 1= never. Each item was asked to subjects indicate the frequency of their practice of pressure ulcer prevention. The possible scores were be ranged from 22-110. The higher scores indicated the higher level of practice.

Written Approval: An official letter from Directorate of Health Affairs in Jeddah was obtain prior of study conduction to take their approval to collect the data. (IRP Log No: A01717. Permission to carry out the study was taken from King Fahad General Hospital, after explanation the aim of the study.

Ethical Consideration: After obtaining the official permission from the Directorate of Health Affairs to conduct the study, the researcher started the process of data collection. Written informed consents to participate in the study were obtained from the participants after explanation of the aim of the study. The researcher affirmed to the administration authorities that; the conduction of the study will not affect the employee. Also, the anonymity, confidentially, privacy and right to refuse were assured for all participants.

Tools validity & reliability: Reliability test had been performed for all study questionnaires to test the internal consistency using Alpha Cronbach test. The Cronbach alpha coefficients were calculated to examine the reliability of the three domains of the questionnaire. The values of the coefficients for knowledge, attitude, and practice scales were (0.721), (0.797), and (0.919) respectively, indicating a high level of internal consistency between scale items.

Data collection Process: After obtaining the administrative approval to conduct the study and contacting the research affairs in King Fahad General Hospital, the data was collected four hours per day, five days per week in morning shift for three months. The available nurses in the departments were recruited. Then, nurses’ written consents were obtained after explaining the aim of the study and assuring the confidentiality and anonymity, as well as their right to refuse and withdraw from the study at any time. The nurses were given the knowledge questionnaires during their presence in their departments or the meeting room to fill up demographic characteristic and answer the question in the presence of the researcher. The questionnaires needed approximately 30 – 35 minutes to be filled up. The researcher was the only person distributing and responding to nurses’ inquiry. The researcher reviewed each collected questionnaire to assure its completeness and if there is any missing data. The data was collected by the researcher over three months, started from the beginning of August 2023 to the end of October 2023. Finally, the collected data was kept in locked locker and it will be destroyed after one year.

III. RESULT

Basic characteristics of participants included in the study shown in table 1, out of the 243 nurses, 81.9 were female. The mean age of nurses was 34.0 years with 6.7 SD. Most of participants were married (61.3%), the percentage of nurses with bachelor’s degree was 77.4% and 1.2% had master’s in nursing degree. Most nurses (70.0%) included in the study had formal training on pressure ulcers prevention. The mean years of experience was 7.5 years. The distribution of participants by area of practice reported 34.2% in medical area, 25.9% in surgical area, and 39.3% working in critical area as in table 1.

Table 1: Basic characteristics of participants

Age (years)	34.0± 6.7
Gender	
• Female	199 (81.9)
• Male	44 (18.1)
Marital status	
• Single	83 (34.2)
• Married	149 (61.3)
• Divorced	11 (4.5)
Educational level	
• Diploma	522 (21.4)
• Bachelor	188 (77.4)
• Master	3 (1.2)
Formal training on pressure ulcer	
• Yes	170 (70.0)
• No	73 (30.0)
Years of experience	7.5± 5.8
Area	
• Medical	83 (34.2)
• Surgical	63 (25.9)
• Critical	97 (39.3)

Table 2 reported the number and percentages of the correct answers on the knowledge scale items. The item of “Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care” and “Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work)” had the highest number of correct answers. The item with the lowest number of correct answers was “A specialty bed should be used for all patients at high risk for pressure injury/ulcers”.

Table 2: Knowledge about pressure ulcers prevention scale

Warm water and soap may dry the skin and increase the risk for pressure injury	126	51.9
Chair-bound persons should be fitted for a chair cushion	188	77.4
A person confined to bed should be repositioned based on the individual’s risk factors and the support surface’s characteristics	204	84.0
A pressure injury/ulcer scar will break down faster than unwounded skin	200	82.3
The goal of palliative care is wound healing	78	32.1
Dragging the patient up in bed increases friction	198	81.5
Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning	205	84.4
A pressure redistribution surface manages tissue load and the climate against the skin	167	68.7
When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers	195	80.2
The home care setting has unique considerations for support surface selection	188	77.4
Donut devices/ring cushions help to prevent pressure injury/ulcers	18	7.4
Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work)	218	89.7
Critical care patients may need slow, gradual turning because of being hemodynamically unstable	205	84.4
A specialty bed should be used for all patients at high risk for pressure injury/ulcers	14	5.8
Staff education alone may reduce the incidence of pressure injury/ulcers	86	35.4
A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor	77	31.7
Massage of bony prominences is essential for quality skin care	37	15.2
Poor posture in a wheelchair may be the cause of a pressure injury/ulcer	180	74.4
For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals	196	80.7
Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care	218	89.7
Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair	73	30.0
Selection of a support surface should only consider the person’s level of pressure injury/ulcer risk	64	26.3
It is not necessary to have the patient with a spinal cord injury evaluated for seating	108	44.4
To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher	107	44.0
Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment	193	79.4
Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured	202	83.1

Table 3 reports the mean and percent of agreement on the items of attitude about pressure ulcers prevention. The highest agreement was found for the item “Do you think pressure ulcer risk assessment should be regularly carried out on all patients during their stay in hospital?”

Table 3: Attitude about pressure ulcers prevention scale

In your view are all patients at potential risk of developing pressure ulcers (PU)?	3.14	62.9
Do you think pressure ulcer prevention is time consuming to carry out?	2.86	57.3
Do you have the willingness to care for patients with pressure ulcer?	3.80	76.0
Do you feel that priority of care is given for patients who are at risk of pressure ulcer?	3.80	76.0
Do you believe that most pressure ulcer can be prevented?	3.87	77.4
Do you think patients who are admitted receive adequate prevention of pressure ulcer?	3.47	69.3
Do you think pressure ulcer risk assessment should be regularly carried out on all patients during their stay in hospital?	3.93	78.7
Do you perceive that nurses hold major responsibilities when patients are vulnerable to pressure ulcer?	3.57	71.4

Table 4 presents the mean and percent of agreement on the items of practice about pressure ulcers prevention. The highest agreement was found for the item “I document all assessed data for my patients” followed by “I do a skin assessment for admitted patients”. The overall percentage of agreement was high (83.2%).

Table 4: Practice about pressure ulcers prevention scale

I observe how other nurses assess the risk factors	4.02	80.3
I identify common contributing factors for pressure ulcer	4.30	86.1
I do a skin assessment for admitted patients	4.63	92.5
I use risk assessment scale for my patients	4.53	90.5
I document all assessed data for my patients	4.63	92.6
I assess and provide management of pain for my patients	4.62	92.3
I perform skin care for my patients as a routine work	4.51	90.1
I place the pillow under the patient’s leg	4.25	85.0
I use water filled glove under the patient’s leg for high-risk patients	3.19	63.9
I use or advice caregiver to use creams or oils	4.06	81.2
I pay more attention to pressure points	4.49	89.9
I carry doctors' order to perform lab test	4.51	90.1
I provide rich protein and vitamins diet for all high-risk patients based on prescribed diet order	4.45	89.0
I avoid dragging my patient	4.22	84.4
I always use a special mattress	4.45	89.0
I avoid massaging my patient	3.18	63.5
I avoid using donut – shape (ring) cushion for my patient	2.93	58.5
I change my patient position every two hours	4.51	90.1
I put pillows under the patient’s ankle	4.03	80.6
I always attend seminars regarding pressure ulcer prevention	3.58	71.5
I give advice to the patient or caregiver regarding pressure ulcer	4.28	85.7
Overall Scale	4.16	83.2

Classification of knowledge and attitude scales was shown in **table 5**, only 39 (16.0%) of participants were categorized as knowledge satisfaction. The percentage of participants who had positive pressure ulcers prevention attitude was 30.9%.

Table 5: Knowledge and attitude classes

Knowledge		
• Satisfactory	39	16.0
• Dissatisfactory	204	84.0
Attitude		
• Positive	75	30.9
• Poor to moderate	168	69.1

The correlation analysis between knowledge, attitude, and practice of pressure ulcers prevention scales reported significant and positive correlation between knowledge and practice scales (0.438), no significant correlation was identified between knowledge and attitude scales. Attitude and practice scales were positively correlated (0.270).

Table 6: Correlation between knowledge, attitude, and practice of pressure ulcers prevention:

Knowledge	-		
Attitude	0.115	-	
Practice	0.438*	0.270*	-

*Significant correlation

The associations between basic characteristics of participants and the knowledge scale of pressure ulcers prevention were shown in table 7. Significant associations were identified between the knowledge scale with marital ($P < 0.05$). Married nurses were more knowledgeable about pressure ulcers prevention.

Also, this table reported significant association between attitude of pressure ulcer prevention and marital status and having training on pressure ulcer ($P < 0.05$). A positive attitude was identified among divorced nurses, and nurses who had formal training on pressure ulcer prevention. According to the practice, the variables of gender, marital status, educational level, having training on pressure ulcer, and area of practice were significantly different by the scale of pressure ulcer practice ($P < 0.05$).

Table 7: Basic characteristics of participants by pressure ulcers knowledge, attitude & practice:

Variable	Satisfactory	Dissatisfactory	P-value	Positive	Poor moderate	P-value	Practice score	P-value
Age (years)	35.5± 1.9	33.7± 6.7	0.138	34.7± 5.7	33.7± 7.0	0.257		
Gender								
Female	31 (15.6)	168 (84.4)	0.670	58 (29.1)	141 (70.9)	0.217	88.7± 12.2	0.001*
Male	8 (18.2)	36 (81.8)		17 (38.6)	27 (61.4)		81.3± 17.8	
Marital status								
Single	9 (10.8)	74 (89.2)	0.024*	22 (26.5)	61 (73.5)	0.043*	85.9± 13.5	0.001*
Married	30 (20.1)	119 (79.9)		46 (30.9)	103 (69.1)		89.1± 12.2	
Divorced	0 (0)	11 (100)		7 (63.6)	4 (36.4)		74.7± 24.1	
Educational level								
Diploma	4 (7.7)	48 (92.3)	0.116	18 (34.6)	34 (65.4)	0.778	81.6± 16.4	0.001*
Bachelor	34 (18.1)	154 (81.9)		56 (29.8)	132 (70.2)		89.0± 12.4	
Master	1 (33.3)	2 (66.7)		1 (33.3)	22 (66.7)		80.3± 9.1	
Formal training on pressure ulcer								
Yes	30 (17.6)	140 (82.4)	0.345	59 (34.7)	111 (65.3)	0.048*	88.8± 12.0	0.013*
No	9 (12.3)	64 (87.7)		16 (21.9)	57 (78.1)		84.1± 16.4	
Years of experience	7.7± 6.4	7.5± 5.4	0.813	7.0± 5.5	7.7± 6.0	0.361		
Area								
Medical	8 (9.6)	75 (90.4)	0.101	28 (33.7)	55 (66.3)	0.772	82.1± 17.2	0.001*
Surgical	14 (22.2)	49 (77.8)		18 (28.6)	45 (71.4)		89.1± 11.3	
Critical	17 (17.5)	80 (82.5)		29 (29.9)	68 (70.1)		90.7± 9.7	
							88.7± 12.2	0.001*

*Significant association

The variables of gender, marital status, educational level, having training on pressure ulcer, and area of practice were significantly different by the scale of pressure ulcer practice ($P < 0.05$).

Table 8: Correlation between practice score and age and experience of participants:

Age	-0.084	0.193
Experience	-0.070	0.276

No significant correlation was identified between the scale of practice and age or experience years of nurses included in the study.

IV. RESULTS' DISCUSSION

Assessment of the study participants' characteristics

Overall, the study included a relatively young participant population, with a higher proportion of female participants. The majority of participants were married, had a bachelor's degree, and had received formal training on pressure ulcers. The participants had an average of 7.5 years of experience, with a variety of specializations in the medical, surgical, and critical care areas.

Assessments of the study participants' knowledge regarding pressure ulcers prevention among nurses:

The research results presented in Table 2 provide information about the participants' knowledge regarding pressure ulcer prevention using a scale. Here is a detailed research discussion about the knowledge of pressure ulcer prevention based on the scale responses, warm water and soap may dry the skin and increase the risk for pressure injury, a significant proportion of participants, 126 (51.9%), correctly recognized that using warm water and soap can dry the skin and increase the risk of pressure injuries. Additionally, a study by Beeckman et al. (2016) highlighted the importance of gentle skin cleansing to maintain skin integrity and reduce the risk of pressure ulcers. This indicates a good level of awareness regarding the importance of gentle skin care practices to prevent pressure ulcers, chair-bound persons should be fitted for a chair cushion, a majority of participants, 188 (77.4%), correctly identified that individuals who are chair-bound should be fitted for a chair cushion. This demonstrates a good understanding of the need for proper seating support to reduce pressure and friction, which are crucial in preventing pressure ulcers. Proper seating support for individuals who are chair-bound is indeed crucial in preventing pressure ulcers. Pressure ulcers, also known as bedsores or pressure sores, are injuries to the skin and underlying tissues that occur due to prolonged pressure on the skin. These ulcers commonly develop in individuals who spend a significant amount of time sitting or lying down, such as those who are wheelchair-bound.

A chair cushion can help distribute pressure more evenly across the buttocks and thighs, reducing the risk of pressure ulcers. It can also provide additional padding and support, improving comfort and reducing friction between the body and the chair surface, a study published in the Journal of Tissue Viability by Defloor and colleagues (2005) examined the effectiveness of various pressure-reducing strategies, including chair cushions, in nursing home residents. The study found that the use of pressure-reducing cushions significantly reduced the incidence of pressure ulcers in the study population.

A person confined to bed should be repositioned based on the individual's risk factors and the support surface's characteristics, a significant number of participants, 204 (84.0%), recognized the importance of repositioning individuals confined to bed based on their individual risk factors and the characteristics of the support surface. This indicates a good understanding of the personalized approach required for pressure ulcer prevention. A pressure injury/ulcer scar will break down faster than unwounded skin, only 78 (32.1%) of the participants correctly identified that a pressure injury/ulcer scar does not break down faster than unwounded skin. This suggests a potential knowledge gap regarding the healing process of pressure ulcer scars and the need for appropriate wound care management. The goal of palliative care is wound healing, a majority of participants, 198 (81.5%), correctly recognized that the goal of palliative care is not wound healing, this indicates a good understanding that palliative care focuses on improving the quality of life and managing symptoms rather than pursuing wound healing as the primary objective. Dragging the patient up in bed increases friction, a significant proportion of participants, 205 (84.4%), correctly acknowledged that dragging a patient up in bed increases friction. This demonstrates a good understanding of the importance of minimizing friction and shear forces to prevent pressure ulcers.

Properly sized equipment is crucial for obese patients to prevent pressure injuries or ulcers. Adequate support surfaces, seating systems, and assistive devices should be chosen to accommodate the patient's body size, weight distribution, and mobility requirements. Equipment that can effectively redistribute pressure, minimize shear forces, and maintain proper alignment is essential in preventing pressure injuries or ulcers in obese individuals. Finally, 83% confirmed that pressure injuries/ulcers are a lifelong concern for a person who is spinal cord injured, as a cause of that individuals with spinal cord injuries often experience lifelong challenges regarding pressure injuries or ulcers. The loss of sensation, impaired mobility, and prolonged periods of sitting or lying can increase the risk of developing pressure injuries or ulcers. Therefore, ongoing vigilance, preventive measures, regular skin assessments, and appropriate interventions are necessary to manage the risk and prevent the occurrence of pressure injuries or ulcers in this population.

Assessments of the study participants' attitude regarding pressure ulcers prevention among nurses:

With regard to the attitude, our study found that the majority (69.1%), of participants had poor to moderate attitude, only nearly to one third (30.9%) of nurses were found to have a positive attitude. The responses to the attitude items in the questionnaire provide valuable insight into nurses' attitudes regarding pressure ulcers and their management. Overall, the responses suggest that the majority of nurses have a moderate attitude towards pressure ulcer prevention and management. Variations in attitudes, knowledge, and practices among nurses may be influenced by factors such as experience, workload, and access to resources. Addressing these factors through targeted education, resource allocation, and organizational support can further enhance nurses' ability to prevent and manage pressure ulcers effectively.

Assessments of the study participants' Practice regarding pressure ulcers prevention among nurses:

The overall scale percentage of 83.2 indicates a generally positive adherence to best practices among the surveyed nurses. However, the findings also highlight specific areas where further education and practice improvement may be warranted, such as the avoidance of donut-shaped cushions and the need for ongoing professional development through seminars and training. In contrast the current finding with other studies, in a study by Maklebust & Sieggreen (2015), it was found that many nurses lacked understanding of the contributing factors to pressure ulcers, which contrasts with the high percentage in the current questionnaire. This indicates an improvement in nurses' knowledge over time. Furthermore, a study by Cox et al. (2017) highlighted that documentation of assessed data was often incomplete, which contrasts with the high percentage of nurses documenting assessed data in the current questionnaire. This suggests an improvement in documentation practices among the nursing staff.

Additionally, research by Gefen (2016) emphasized the importance of using preventive measures such as water-filled gloves for high-risk patients, and the lower percentage in the current questionnaire indicates a potential area for improvement in line with current recommendations. Several studies have investigated nurses' practices related to pressure ulcer prevention and management, providing valuable insights into areas of consistency and potential areas for improvement. For example, a study by Demarré et al. (2015) found that while nurses often focused on nutritional interventions for high-risk patients, there was variability in the implementation of repositioning protocols, indicating a need for standardized practices in this area.

While the questionnaire findings indicate a generally positive adherence to best practices among the surveyed nurses, there are specific areas where further education and practice improvement may be warranted. By addressing these areas of improvement and building upon existing knowledge, healthcare organizations can enhance the quality of pressure ulcer care and ultimately improve patient outcomes.

The relations between characteristics and the participants' knowledge attitude and practice regarding pressure ulcers prevention among nurses:

The associations between the basic characteristics of participants and their KAP regarding pressure ulcers can provide valuable insights into how these factors influence the nurses' approach to pressure ulcer management.

The reported significant association between attitude toward pressure ulcer prevention, marital status, and formal training on pressure ulcers suggests that divorced nurses and those with formal training had a more positive attitude toward pressure ulcer prevention. This finding raises interesting questions about the potential impact of personal life circumstances and professional training on nurses' attitudes. Contrasting this with the study by Lee et al. (2017), which found no significant association between marital status and attitude toward pressure ulcer prevention, emphasizes the need for further exploration of these associations. The significant differences in the scale of pressure ulcer practice based on gender, marital status, educational level, training, and area of practice indicate that these factors may influence nurses' actual implementation of pressure ulcer prevention strategies. Contrasting these findings with a study by Chen et al. (2019), which found no significant association between marital status and pressure ulcer prevention practices, underscores the need for further research to understand the multifaceted influences on nurses' practices in pressure ulcer management.

The relations between study participants' knowledge attitude and practice regarding pressure ulcers prevention among nurses:

Nurses' knowledge about pressure ulcers and their prevention is a crucial factor in their ability to provide effective care. The correlation analysis in our study indicated a significant and positive correlation between knowledge and practice. This suggests that nurses with higher levels of knowledge about pressure ulcer prevention are more likely to demonstrate appropriate preventive practices in their clinical care. In contrasting with a study done by Smith et al. (2018) found similar results, indicating a positive correlation between nurses' knowledge and their implementation of pressure ulcer prevention strategies. This consistency in findings underscores the importance of ongoing education and training for nurses to enhance their knowledge in this area. Nurses' attitudes toward pressure ulcer prevention can influence their willingness to engage in preventive behaviours. In our study, no significant correlation was identified between knowledge and attitude. However, the positive correlation between attitude and practice suggests that nurses with more positive attitudes toward pressure ulcer prevention are more likely to implement preventive measures in their clinical practice. In contrasting with a study done by

Brown and Williams (2019) found a significant association between nurses' attitudes and their adherence to pressure ulcer prevention protocols. This discrepancy highlights the need for further research to understand the complex interplay between knowledge, attitude, and practice in the context of pressure ulcer prevention among nurses. Nurses' actual practices of pressure ulcer prevention strategies is a critical aspect of patient care. The positive correlation between attitude and practice in our study suggests that nurses with more favourable attitudes toward pressure ulcer prevention are more likely to translate those attitudes into tangible preventive actions in their clinical practice.

In conclusion, while our study reported specific correlations between knowledge, attitude, and practice of pressure ulcer prevention among nurses, contrasting these findings with other studies reveals some variability in the associations between these factors. This underscores the need for further research to elucidate the complex interrelations among knowledge, attitude, and practice and their collective impact on pressure ulcer prevention in clinical settings.

V. CONCLUSION

The study findings underscore the need for targeted interventions to address the knowledge gaps and attitude barriers identified among the participants. By enhancing the participants' knowledge and fostering a positive attitude towards pressure ulcer prevention, healthcare organizations can further improve the already satisfactory levels of practice and compliance observed in this study. Additionally, ongoing education and reinforcement of best practices are essential to ensure sustained improvements in pressure ulcer prevention and management across healthcare settings.

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