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Original research article

A CROSS-SECTIONAL ANALYSIS OF KNOWLEDGE AND ATTITUDES OF NURSES TOWARDS THE PREVENTION OF PRESSURE INJURIES

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Abstract: *Pressure injuries (PIs) are a significant concern in healthcare settings, often leading to severe complications for patients. Effective prevention relies heavily on the knowledge and attitudes of nursing staff. Understanding these factors can help formulate strategies to improve patient care and outcomes.* **Objective:** *To evaluate the knowledge and attitudes of nurses toward preventing pressure injuries and identify the factors influencing these parameters.* **Methods:** *A cross-sectional study was conducted in the Nursing Department of a Tertiary Care Hospital from May 2023 to May 2024. A total of 300 nurses working in the hospital for more than a year and without supervisory roles were selected using consecutive sampling. Data were collected through an anonymous questionnaire divided into demographic information, knowledge assessment using Pieper's Pressure Ulcer Knowledge Test, and attitudes evaluation using the Attitude Towards Pressure Ulcer Prevention Instrument. Statistical analysis was performed using descriptive statistics and appropriate tests to assess the relationships between variables.* **Results:** *The average knowledge score among nurses was 32.88 ± 2.49, with a score of 6.10 ± 1.12 for PI evaluation and 26.83 ± 2.20 for prevention and grading. 59% of participants demonstrated good knowledge. The average attitude score was 39.90 ± 3.81, with the highest score in the personal role subgroup (7.91 ± 0.99) and the lowest in personal efficacy (9.84 ± 1.09). 54% of participants exhibited a favourable attitude towards PI prevention.* **Conclusion:** *Nurses displayed satisfactory knowledge and attitudes toward preventing pressure injuries. Enhancing these parameters through exemplary leadership, quality education, and regular training programs can improve healthcare outcomes and patient safety.*

Keywords: Knowledge, Nurse, Nursing, Pressure Injury.

Introduction

A pressure injury is defined as skin injury due to prolonged pressure and friction on the skin, which presents as open sores. (1). These ulcers are common in elderly, bedridden, and immobile patients who have no bodily movements. About 12.8% of admitted adults develop PIs. (2)Pressure injuries are preventable and progress in stages from 1 to 4, while some injuries are unstageable or have spread to the deep tissue. Although PIs are called 'never events,' the negligence of the healthcare staff can allow the injuries to progress rapidly. Nurses are designated to prevent pressure injuries and assess patient condition daily. The prevalence of PIs reflects the quality of nursing care and patient care in the institute.

Preventing pressure injuries is essential as it can prolong hospitalisation, affect quality of life, and increase the burden on healthcare professionals. (3). Globally, PIs are considered a serious health hazard due to their health and financial consequences.(4). In the U.S., over 2 million people suffer from pressure injuries annually, for which treatment costs can be up to $70K(5). Similarly, in Europe, the treatment cost for PIs can be 100 euros per patient. (6).

In Pakistan, the incidence of PIs is significantly higher than in the global literature. A recently reported 74.8% prevalence in adults and the elderly (7)Since no established system of error reporting is available in Pakistani hospitals, this rate might be underestimated. Despite published guidelines, research, and protocols, the role of nursing care in the development and prevention of PIs is unclear. Understanding the involvement of nurses regarding PIs is crucial to preventing this health hazard and improving patient care.

This study was conducted to evaluate nurses' knowledge and attitudes toward the prevention of pressure injuries and the factors influencing them.

Methodology

A cross-sectional study was conducted in the Nursing Department of Tertiary Care Hospital from May 2023 to May 2024. A total of 300 nurses working in the hospital for more than a year without a supervisor were selected for the study by consecutive sampling. The sample size was calculated by keeping a 2% margin of error, 95% CI, 5% population proportion, and 10% estimated non-response rate. The nurses who were not involved with patients at high risk of developing PIs in the last six months, liaison nurses, enterostomal therapy nurses, and wound therapists were excluded. All participants provided their consent to become a part of the study. The ethical board of the hospital approved the study.

Data was collected through an anonymous questionnaire presented to the nurses and translated into English and Urdu. The questionnaire was divided into three parts. The first part contained questions about demographics, including age, qualification, duration of employment, number and type of

PI training received, and nurse-to-patient ratio in each shift. The second part assesses nurses' knowledge regarding PI prevention using Pieper's Pressure Ulcer Knowledge Test. The 41-item test included PI evaluation and prevention and grading of PIs. The minimum score obtained was 0, and the maximum score was 41. A high score indicated a high level of knowledge.

The third section evaluated nurses' attitudes towards preventing PIs by the Attitude towards Pressure Ulcer Prevention Instrument. The 13-item tool inquired regarding personal efficacy to prevent the development of PUs, priority in prevention of PUs, consequences of PUs, personal role in preventing PUs, and reliance on PU prevention. Participants could answer the questions on a Likert scale from 1 to 4, with 1 indicating disagree and 4 indicating agree. The minimum score obtained was 13, and the maximum score was 52, with a high score implying a favourable attitude. The validity and reliability of the questionnaire were pre-tested with a Cronbach alpha of 0.680 and 0.689 for Pieper's test and Attitude instrument, respectively. A mean cut-off value of 80% knowledge and attitude was set for both questionnaires for sound knowledge and positive attitude.

All data was analysed using SPSS version 24. Mean ± SD was used to present continuous variables like age, duration of employment, number of PI training, and nurse-to-bed ratio per shift. Percentage was used to present categorical variables, including qualification, type of PI training, and knowledge and attitudes toward prevention. The correlation coefficients between independent parameters were <0.90, so multicollinearity was disregarded. Logistic regression was used to assess the association between predictive factors (age, qualification, duration of employment, PI training, and nurse-to-bed ratio) and outcomes (knowledge and attitudes) with a 95% CI and odds ratio. A simple logistic analysis was performed to assess the impact of dependent parameters on independent parameters. Multi-regression was conducted to determine the effects of all parameters on dependent parameters. A p-value of 0.05 or less was taken significantly.

Results

A total of 300 responses from nurses were included for analysis with a 100% response rate. The average age of nurses was 30.18 ± 4.01 years. Most nurses (85%) had a degree, and 95% attended a PI theoretical training. Half of the nurses managed 6-10 patients in one shift. The demographics of nurses are shown in Table I.

The average knowledge score was 32.88 ± 2.49, with a score regarding PI evaluation was 6.10 ± 1.12, and regarding prevention and grading was 26.83 ± 2.20. 59% of participants had good knowledge scores. Only 10% were aware that immobile patients must be moved after every 2 hours. The average attitude score was 39.90 ± 3.81. The best attitude score was noted in the subgroup personal role (7.91 ± 0.99), and the lowest score for personal efficacy (9.84 ± 1.09). Almost all nurses (99%) agreed they have an essential role in preventing pressure injuries, and 30% objected that PI prevention receives too much attention. 54% of participants had a favourable attitude (Table II).

Nurses with good knowledge scores were older than 36 years, served for more than 11 years, had a professional degree, attended six or more training programs, and managed less than 11 patients every shift, among which a professional degree (65% good knowledge) was significantly associated with good knowledge ($p<0.001$). Nurses with favourable attitudes were 36 years or older, served for 11 years or more, had a professional degree, attended six or more training programs, and treated 1-5 patients in every shift, among which only the number of training programs attended was significant (Table III).

Table I: Nurses' demographics

Variables	N (%)
Age	
Average age	30.18 ± 4.01
25 years and younger	60 (20%)
26-35 years	210 (70%)
36 years and older	30 (10%)
Duration of employment	
Average duration	8.81 ± 4.93
Five years or less	129 (43%)
6-10 years	111 (37%)
11 years or more	60 (20%)
Qualification	
Diploma	45 (15%)
Bachelor's degree or higher	255 (85%)
Type of training	
Theoretical	285 (95%)
Practical or combined theoretical and practical	15 (5%)
Number of trainings	
The average number of training	5.22 ± 2.82
Two or less	90 (30%)
3-5	150 (50%)
Six or more	60 (20%)
Patients attended per shift.	
Average patients per shift	10 ± 3.67

1-5	60 (20%)
6-10	150 (50%)
11 or more	90 (30%)

Table II: Mean Knowledge and Attitude Scores in Nurses Towards Pressure Injury Prevention

Parameters	Mean total score	Min-Max
Knowledge		
Total score	32.88 ± 2.49	16-38
PI evaluation	6.10 ± 1.12	2-8
PI grading and prevention	26.83 ± 2.20	10-31
Attitudes		
Total score	39.90 ± 3.81	25-51
Personal efficacy	9.84 ± 1.09	6-11
Priority	10.12 ± 1.26	5-12
Consequences	10.62 ± 1.55	5-12
Role	7.91 ± 0.99	5-7
Reliance	7.66 ± 0.99	5-7

Table III: Simple Logistic and Multiple Logistic Analysis of Knowledge and Attitudes and Predictive Factors

Variables	Good Knowledge	OR	aOR	Good attitude	OR	aOR
Age						
25 years and younger	36 (60%)	1	1	33 (55%)	1	
26-35 years	123 (58.6%)	1.10 (0.819-1.311)	0.88 (0.750-1.189)	119 (56.7%)	0.89 (0.761-1.185)	
36 years and older	20 (67%)	1.36 (0.977-2.09)	1.40 (0.942-1.928)	18 (60%)	1.28 (0.942-1.910)	
Duration of employment						
Five years or less	76 (58.9%)	1		69 (53.5%)	1	
6-10 years	66 (59.5%)	1.0 (0.789-1.207)		60 (54.1%)	1.11 (0.853-1.295)	
11 years or more	38 (63.4%)	1.18 (0.952-1.571)		34 (56.6%)	1.20 (0.908-1.487)	
Qualification						
Diploma	22 (49%)	1	1	24 (53.4%)	1	
Bachelor's degree or higher	153 (60%)	1.62 (1.208-2.020) ***	1.56 (1.245-2.088) ***	141 (55.3%)	1.06 (0.849-1.421)	
Type of training						
Theoretical	167 (58.6%)	1		154 (54%)	1	
Practical or combined theoretical and practical	10 (67%)	1.51 (0.911-2.258)		9 (60%)	1.32 (0.833-2.0)	
Number of trainings						
Two or less	51 (56.7%)	1		44 (48.9%)	1	1
3-5	87 (58%)	1.12 (0.883-1.337)		81 (54%)	1.32 (1.020-1.563) *	1.32 (1.025-1.558) *
Six or more	38 (63.4%)	1.27 (0.989-1.722)		37 (61.8%)	1.83 (1.363-2.334) ***	1.81 (1.360-2.330) ***
Patients attended per shift.						
1-5	36 (60%)	1		34 (56.8%)	1	1
6-10	90 (60%)	1 (0.773-1.313)		83 (55.3%)	0.98 (0.718-1.219)	0.98 (0.718-1.222)
11 or more	52 (57.8%)	0.92 (0.671-1.160)		45 (50%)	0.80 (0.590-1.020)	0.80 (0.590-1.020)
*p<0.05, ***p<0.001						

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Discussion

This study was conducted to evaluate nurses' knowledge and attitudes toward pressure injuries. The results revealed a good knowledge score in 59% of nurses, with an average total score of 32.88 ± 2.49, which showed an unsatisfactory level of knowledge. A favourable attitude was seen in 54% of nurses, with an average total score of 39.90 ± 3.81, indicating an unsatisfactory attitude score. Professional degree and number of training programs were significantly associated with good knowledge and scores, respectively.

Findings revealed that 41% of the nurses had unsatisfactory knowledge about pressure injuries. Nurses were more knowledgeable about PI prevention than about evaluating and grading PI. Only 10% could answer the essential practice of repositioning immobile patients correctly. This exact finding was reported in both certified and non-certified nurses in Iran, the U.S., and Australia. (8-10)This may be due to the recent and frequent changes in PI guidelines, which could have created gaps in healthcare staff's clinical knowledge.

Similar to knowledge in nurses, 46% of the participants had an unfavourable attitude toward PI prevention. The highest score was obtained in personal role, and the lowest was obtained in personal efficacy, indicating that nurses recognise their role in prevention but do not have confidence in their competence. These findings are comparable to other studies. (11-13). Recognising role and responsibility is a positive attribute of good nurses and an indicator of improved patient outcomes. The low confidence in competence may be because most nurses in our study were young and dealt with minimum patients daily, so a lack of sufficient experience may lead to self-doubt. As 70% of nurses agreed that PI prevention receives too much attention, it may be related to hospital punishment culture, so nurses do not wish to draw much attention to the errors associated with pressure injuries. However, studies suggest that support from supervisors can boost nurses' self-esteem and confidence in their skills, and the attitude of the head nurse reflects on his staff(14)Clinical leadership must be practiced in Pakistani hospitals to establish a healthy work environment and improve patient safety.

A high level of knowledge was significantly associated with professional education, where nurses with a bachelor's degree or higher were 1.5% more likely to have good knowledge than diploma holders. This finding is consistent with other studies. (15, 16)However, despite 85% of the nurses being degree holders, only 59% had good knowledge scores. This may reflect the unsatisfactory quality of the education and training system at the bachelor's level. Therefore, more research is required to assess the association between knowledge and a professional degree. A high cut-off value may also have contributed to a lower number of nurses having good knowledge scores.

A favourable attitude was significantly associated with the number of training programs attended, a high number indicating a 1.9% likelihood of a positive attitude. (17). As repetition of course content increases knowledge, more training can increase learners' confidence and mitigate anxiety. Therefore, nurses attending more training sessions can sharpen their skills and improve their attitude with more confidence in their competence. More training can induce a financial burden on the hospital but can contribute to preventing high costs as a result of the high prevalence of PIs. In our study, nurses with six or more training certifications are likely to have a favourable attitude, as backed by the literature.

Our study has some limitations. We used a higher cut-off value than previously reported, which may impact the comparison of our analysis with other studies. Additionally, the study was single-centred and conducted in a tertiary care hospital, so our results may not represent lower levels of healthcare.

Conclusion

Nurses' knowledge and attitudes toward preventing pressure injuries were satisfactory. Good supervisory leadership, quality education, and frequent training programs can improve these parameters and enhance healthcare.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate.

It is approved by the department concerned. (IRB-NMCU-12-12-3-23)

Consent for publication

Approved

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Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

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Drafting & Concept & Design of Study

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