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ASSESSMENT OF NURSES KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING PREVENTION OF DECUBITES ULCER (PRESSURE ULCER) IN MAYO HOSPITAL LAHORE ESPECIALLY IN ICUS AND MEDICAL WARDS

Original Research (ID: 1706)

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ABSTRACT

Background: Pressure ulcers are preventable yet remain a frequent complication among hospitalized and immobilized patients, particularly in intensive care units and medical wards. Their prevention depends on timely risk assessment, regular skin inspection, repositioning, nutritional support, pressure redistribution, documentation, and patient education. Nurses remain central to these preventive measures because of their continuous bedside role. Assessing their knowledge, attitude, and practices can identify gaps in care and guide targeted quality improvement strategies.

Objective: To assess nurses' knowledge, attitude, and preventive practices regarding decubitus ulcer prevention in ICUs and medical wards of Mayo Hospital Lahore.

Methods: A descriptive cross-sectional study was conducted among 154 registered nurses working in ICUs and medical wards of Mayo Hospital Lahore. Participants were selected through a convenience sampling technique according to predefined inclusion and exclusion criteria. Data were collected using an adopted structured self-administered questionnaire that assessed sociodemographic characteristics, knowledge, attitude, and preventive practices regarding pressure ulcer prevention. Completed questionnaires were checked for completeness and entered into SPSS version 25. Descriptive statistics were used to present frequencies, percentages, mean, standard deviation, and overall category levels of knowledge, attitude, and practice.

Results: Among 154 nurses, 136 (88.3%) were female and 18 (11.7%) were male. Most participants were aged 18–29 years, 72 (46.8%), followed by 30–44 years, 61 (39.6%). The mean professional experience was 12.51 ± 7.37 years. Overall, 140 (90.9%) nurses had poor knowledge, 14 (9.1%) had average knowledge, and none had good knowledge. Regarding attitude, 10 (6.5%) had poor attitude, 88 (57.1%) had average attitude, and 56 (36.4%) had good attitude. For preventive practices, 14 (9.1%) had poor practice, 82 (53.2%) had average practice, and 58 (37.7%) had good practice.

Conclusion: Nurses showed inadequate knowledge but generally acceptable attitudes and moderate preventive practices regarding pressure ulcer prevention. Regular training, standardized protocols, risk assessment tools, and clinical supervision are needed to improve evidence-based nursing care.

Keywords: Attitude of Health Personnel; Cross-Sectional Studies; Knowledge; Nurses; Nursing Care; Pressure Ulcer; Preventive Health Services

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INTRODUCTION

Pressure ulcers, also known as decubitus ulcers, bed sores, or pressure injuries, remain one of the most preventable yet persistent complications of hospital care. They develop when prolonged pressure, friction, or shear compromises blood supply to the skin and underlying tissues, particularly over bony prominences such as the sacrum, heels, hips, elbows, and occipital region. Patients who are immobile, critically ill, elderly, malnourished, incontinent, or affected by chronic illnesses are especially vulnerable. In hospital settings, pressure ulcers are not only clinical wounds; they reflect the quality of routine patient care, nursing vigilance, institutional preparedness, and the timely application of preventive measures. Their development is associated with pain, infection, delayed recovery, prolonged hospital stay, increased healthcare cost, and reduced quality of life (1, 2). The pathophysiology of pressure ulcer formation is strongly linked to sustained tissue compression, which reduces capillary perfusion and leads to ischemia, cellular injury, tissue necrosis, and ulcer formation. Several patient-related and care-related factors increase this risk, including poor sensory perception, impaired mobility, poor circulation, diabetes mellitus, cardiovascular disease, renal failure, stroke, spinal cord injury, and nutritional deficiency. Patients admitted to intensive care units are at particularly high risk because sedation, mechanical ventilation, vasopressor therapy, invasive monitoring, hemodynamic instability, and limited mobility often prevent spontaneous repositioning. Similarly, patients admitted to medical wards may remain bedridden for extended periods due to chronic medical conditions, neurological impairment, frailty, or generalized weakness. These clinical realities make pressure ulcer prevention a shared responsibility, but nurses remain central to early identification, prevention, and continuous monitoring of high-risk patients (2-4).

Globally, pressure ulcers are recognized as a major public health and patient safety concern. Their prevalence varies across healthcare systems, but higher rates are consistently reported among hospitalized and critically ill patients. In acute care settings, prevalence has been reported between 10% and 18%, while ICU-based rates may be considerably higher depending on disease severity, length of stay, and availability of preventive resources. Beyond the visible wound, pressure ulcers may lead to serious complications such as cellulitis, wound infection, osteomyelitis, septicemia, and even death in severe cases. They also increase the burden on healthcare systems through longer admissions, repeated dressings, antibiotics, surgical interventions, pressure-relieving equipment, and greater nursing workload. For patients and families, the condition may cause distress, pain, sleep disturbance, unpleasant wound odor, immobility, social isolation, anxiety, and loss of confidence in healthcare services (5-7). Nurses play a decisive role in pressure ulcer prevention because they remain in close and continuous contact with patients. Their responsibilities include regular skin inspection, repositioning, hygiene care, moisture control, nutritional support, documentation, use of pressure-relieving devices, patient and family education, and timely reporting of early skin changes. Standardized risk assessment tools, such as the Braden Scale, support nurses in identifying vulnerable patients before tissue damage occurs. However, the effectiveness of these interventions depends greatly on nurses' knowledge, attitude, clinical judgment, and actual bedside practice. Even when prevention guidelines exist, pressure ulcers may still occur if nurses are overburdened, inadequately trained, unaware of updated evidence, or unable to implement preventive measures due to limited equipment and poor nurse-patient ratios (2, 8,9).

International guidelines emphasize a multifactorial approach to pressure ulcer prevention. These include systematic risk assessment, frequent repositioning, use of pressure redistribution surfaces, skin care, moisture management, nutritional assessment, mobilization where possible, and patient education. Evidence-based recommendations from international pressure injury advisory bodies have strengthened prevention protocols and clarified the role of healthcare teams in reducing hospital-acquired pressure ulcers. Despite this, compliance with prevention standards remains inconsistent in many low- and middle-income countries due to resource limitations, insufficient training opportunities, high workload, and absence of uniform institutional protocols. Therefore, assessment of nurses' knowledge, attitude, and practices is essential for identifying practical gaps between recommended care and actual clinical performance (10,11). In Pakistan, pressure ulcers are an important but often under-reported problem in tertiary care hospitals, especially in ICUs and medical wards where high-risk patients are frequently managed. Local healthcare settings face several challenges, including overcrowding, shortage of nursing staff, limited availability of pressure-relieving mattresses, inconsistent documentation, and variable access to continuing professional education. Previous studies from Lahore and other cities have reported that many nurses demonstrate average or inadequate knowledge regarding pressure ulcer risk assessment, staging, prevention, and evidence-based management. A study conducted at Jinnah Hospital Lahore identified important deficiencies in nurses' knowledge and preventive practices, particularly in the use of formal risk assessment and application of evidence-based interventions (4). Similarly, findings from Mayo Hospital Lahore suggested that although nurses may be familiar with basic prevention principles, practical implementation may remain inadequate due to workload pressure, limited resources, and lack of structured clinical training (5,12).

Evidence from other tertiary care hospitals in Lahore also reflects similar concerns. A study at Shalamar Hospital Lahore reported that most nurses had only average knowledge regarding pressure ulcer prevention, while a smaller proportion demonstrated good knowledge of evidence-based preventive strategies. Nurses working in ICUs appeared to have comparatively better knowledge than those in general wards, possibly because of greater exposure to critically ill patients and more frequent encounters with pressure ulcer risk (6). Studies from Karachi and other regions of Pakistan have also shown moderate to poor knowledge among ICU nurses regarding prevention and management of pressure ulcers, supporting the need for regular training, institutional monitoring, and practical bedside reinforcement (7,13,14). Educational preparation, clinical experience, and continuing professional education are important determinants of nursing competence in pressure ulcer prevention. Nurses who attend workshops, seminars, and structured training sessions are more likely to

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understand risk assessment tools, recognize early signs of tissue damage, classify pressure ulcers correctly, and apply preventive strategies in a timely manner. Experience in specialized units such as ICUs may also improve practical awareness; however, experience alone is not always sufficient if nurses are not updated according to current evidence-based guidelines. In busy hospital environments, knowledge may not translate into practice when nurses lack time, support, equipment, or clear institutional protocols. This gap between knowledge and action makes it important to assess not only what nurses know, but also how they feel about prevention and what they actually do during routine patient care (11,15,16).

The issue is particularly relevant for Mayo Hospital Lahore, one of the largest tertiary care hospitals in Pakistan, where ICUs and medical wards receive a high number of critically ill, immobilized, elderly, and chronically diseased patients. These patients often require prolonged bed rest, repeated monitoring, and continuous nursing care, making them highly vulnerable to pressure ulcer development. In such settings, prevention depends on early risk identification, timely repositioning, appropriate skin care, availability of preventive resources, and a positive professional attitude among nurses. If gaps exist in nurses' knowledge, attitude, or practice, preventable pressure ulcers may continue to occur despite being recognized as avoidable indicators of compromised care quality (17-19). The present study is therefore guided by the research question: what is the level of nurses' knowledge, attitude, and practices regarding prevention of decubitus ulcers among nurses working in ICUs and medical wards of Mayo Hospital Lahore? It is expected that nurses may have variable levels of knowledge and attitude, while actual preventive practices may be influenced by clinical workload, training exposure, ward setting, and availability of resources. Assessing these dimensions is necessary because pressure ulcer prevention is more effective, less costly, and less harmful than treatment after ulcer formation. The objective of this study is to assess nurses' knowledge, attitude, and practices regarding prevention of decubitus ulcers in ICUs and medical wards of Mayo Hospital Lahore, so that existing gaps can be identified and evidence-based recommendations can be developed for nursing education, clinical protocols, patient safety, and quality improvement.

METHODOLOGY

The present study was conducted using a descriptive cross-sectional design to assess nurses' knowledge, attitude, and practices regarding the prevention of decubitus ulcers, also known as pressure ulcers, among nurses working in the Intensive Care Units and medical wards of Mayo Hospital, Lahore. This design was considered appropriate because the study aimed to measure the existing level of knowledge, attitude, and preventive practices at a single point in time without introducing any intervention. The total duration of the study was six months after approval of the synopsis. The study population consisted of registered nurses working in the Intensive Care Units and medical wards of Mayo Hospital, Lahore. Nurses were included if they were employed in the selected units of Mayo Hospital, Lahore, were between 18 and 60 years of age, had more than one year of clinical experience, and were willing to participate after providing informed consent. Nurses who were on long-term leave, had been rotated to departments other than ICUs or medical wards during the data collection period, or refused to participate were excluded from the study.

The sample size was calculated by using Slovin's formula, which is commonly applied in exploratory studies involving a defined and limited study population. The formula used was $n = N / 1 + N(e^2)$, where "n" represented the required sample size, "N" represented the total population, and "e" represented the margin of error. Assuming an estimated population of 250 nurses working in the ICUs and medical wards of Mayo Hospital, Lahore, with a margin of error of 0.05, the calculated sample size was approximately 154 nurses. A non-probability convenience sampling technique was used, and eligible nurses were selected according to their availability and willingness to participate during the study period. Data were collected after obtaining formal permission from the relevant hospital authorities and approval from the institutional ethical review committee. Before data collection, all eligible participants were informed about the purpose, nature, and procedure of the study. Written informed consent was obtained from each participant. Confidentiality and anonymity were maintained throughout the research process, and participants were assured that their responses would be used only for academic and research purposes. Participation was voluntary, and nurses had the right to withdraw from the study at any stage without any penalty or effect on their professional duties.

A structured questionnaire was used as the data collection tool. The questionnaire was adopted from the study titled "Nurses' Knowledge, Attitudes and Practices regarding Pressure Ulcer Prevention in the Umgungundlovu District, South Africa," developed by Sanelisiwe Malinga from the University of KwaZulu-Natal, School of Nursing and Public Health, South Africa. The original authors were contacted through email to obtain permission for use of the questionnaire (20). The questionnaire assessed nurses' knowledge, attitude, and practices regarding pressure ulcer prevention. Responses were recorded using a five-point Likert scale where applicable, allowing quantification of participants' responses and assessment of the level of knowledge, attitude, and preventive practices. The questionnaire was distributed to eligible nurses during working hours in the ICUs and medical wards of Mayo Hospital, Lahore. Participants were given sufficient time and a suitable environment to complete the questionnaire without pressure or interference. Completed questionnaires were checked for completeness and accuracy before data entry. Incomplete forms, if any, were excluded from the final analysis according to the study protocol.

The collected data were entered and analyzed using the Statistical Package for Social Sciences version 25. Descriptive statistics were used to summarize the demographic and professional characteristics of the participants, including age, gender, qualification, years of clinical experience, department, and previous training related to pressure ulcer prevention. Frequencies and percentages were calculated

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for categorical variables, while mean and standard deviation were calculated for continuous variables. Inferential statistics were applied where appropriate to determine associations between nurses' knowledge, attitude, and practice scores and selected demographic or professional variables. The chi-square test was used for categorical variables, while an independent sample t-test or one-way analysis of variance was applied for comparison of mean scores where applicable. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 154 nurses were included in the study. The largest proportion of participants belonged to the age group of 18–29 years, comprising 72 nurses (46.8%), followed by 61 nurses (39.6%) in the 30–44 years age group and 21 nurses (13.6%) in the 45–59 years age group. Most participants were female, with 136 female nurses (88.3%) and 18 male nurses (11.7%). Regarding marital status, 80 participants (51.9%) were married, 61 (39.6%) were single, 8 (5.2%) were widowed, and 5 (3.2%) were divorced. In relation to professional designation, 85 participants (55.2%) were professional nurses, 58 (37.7%) were staff nurses, and 11 (7.1%) were nursing assistants. With respect to workplace characteristics, 100 nurses (64.9%) were working in medical wards and 54 nurses (35.1%) were working in ICUs. Most participants were working night shifts, including 89 nurses (57.8%), whereas 65 nurses (42.2%) were working day shifts. The most frequently reported source of learning regarding pressure ulcer prevention was external courses, reported by 57 nurses (37.0%), followed by in-service training among 36 nurses (23.4%), internet-based learning among 34 nurses (22.1%), and university education among 27 nurses (17.5%). The mean professional experience of the participants was 12.51 ± 7.37 years, with a minimum experience of 1 year and a maximum experience of 25 years.

Assessment of knowledge-related responses showed variation across different domains of pressure ulcer prevention. The most frequently selected contributing factor for pressure ulcer development was chronic wound, reported by 101 nurses (65.6%). Urinary incontinence was selected by 110 nurses (71.4%) as a major factor contributing to pressure ulcer development among bedridden patients with fractured hip. Anaemia was selected by 101 nurses (65.6%) as a factor favoring bacterial growth on the skin, while high haematocrit was selected by 104 nurses (67.5%) as a nutritional factor contributing to pressure ulcer development. Respiratory assessment was selected by 101 nurses (65.6%) as an examination for high-risk patients, while 103 nurses (66.9%) selected a risk assessment scale as an appropriate method for assessing high-risk patients. The Glasgow Coma Scale was selected by 93 nurses (60.4%) as a pressure ulcer risk assessment tool. Regarding knowledge of pressure ulcer staging and early identification, 112 nurses (72.7%) selected partial skin loss with blister as the description of grade 2 pressure ulcer. Redness or blue-grey discoloration was identified by 104 nurses (67.5%) as the first sign of pressure ulcer development. In relation to skin care, 109 nurses (70.8%) selected application of cream as an appropriate method, and 105 nurses (68.2%) selected cleaning the skin after soiling as a method of protection from skin maceration. Turning the patient every two hours was selected by 99 nurses (64.3%) as a method for prevention of skin damage, while 97 nurses (63.0%) selected use of a cushion as a method to maintain skin integrity. Use of cotton pads to prevent heel ulcers was selected by 98 nurses (63.6%). For nutritional care, vitamins C and E were selected by 95 nurses (61.7%) as important for healthy skin, while a high-protein and high-calorie diet was selected by 91 nurses (59.1%) for bedridden patients with low body mass index. Serum electrolytes were selected by 101 nurses (65.6%) as a laboratory test for nutritional assessment.

Knowledge responses related to pressure management showed that 114 nurses (74.0%) selected cleansing after soiling as a strategy to manage mechanical load, while 108 nurses (70.1%) selected lifting the patient without dragging as a method to reduce friction. Elevating the head of the bed to 60 degrees was selected by 96 nurses (62.3%) as a strategy to reduce shearing force. For educational measures, 99 nurses (64.3%) selected lifting the end of the bed as important information related to prevention, and 98 nurses (63.6%) selected drafting a prevention protocol as a strategy to improve nursing competency. Attitude-related findings showed that 66 nurses (42.9%) agreed that all patients were at risk of developing pressure ulcers, and 74 nurses (48.1%) agreed that most pressure ulcer risk factors could be managed. Seventy-two nurses (46.8%) agreed that pressure ulcer prevention was time-consuming, while 68 nurses (44.2%) agreed that there should be 0% pressure ulcers in their wards. Sixty-five nurses (42.2%) agreed that nurses could independently implement preventive measures. However, 63 nurses (40.9%) agreed with the statement that they were less interested in pressure ulcer prevention.

Regarding assessment-related attitudes, 60 nurses (39.0%) agreed that they were aware of appropriate pressure ulcer assessment, while 68 nurses (44.2%) agreed that clinical judgment was better than a formal risk assessment tool. Sixty-five nurses (42.2%) agreed that at-risk patients should be assessed on the first day of admission, while 63 nurses (40.9%) agreed that risk assessment should not be carried out routinely during hospitalization. Documentation-related responses showed that 68 nurses (44.2%) agreed that pressure ulcer information should be documented, and 70 nurses (45.5%) agreed that pressure ulcers were an indicator of nursing care quality. In relation to patient and family education, 71 nurses (46.1%) agreed that relatives should not be advised about skin assessment, while 75 nurses (48.7%) agreed that at-risk patients required standard nursing care. Skin care attitude responses showed that 63 nurses (40.9%) strongly agreed that skin care was important to prevent skin damage. Sixty-six nurses (42.9%) agreed that patients should be cleaned immediately after soiling, and 72 nurses (46.8%) agreed that applying lotion to the skin was important in pressure ulcer prevention. Sixty-eight nurses (44.2%) agreed that patients should be massaged over bony prominences. In relation to nutrition, 63 nurses (40.9%) agreed that assessment of food intake was important, 68 nurses (44.2%) agreed that nurses should monitor nutritional status, and 80 nurses (51.9%) agreed that nutritional status was not an important risk factor. Sixty-nine nurses (44.8%) agreed that patients at risk

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should receive less fluid. For mobility and education, 66 nurses (42.9%) agreed that turning patients every two hours was important, 71 nurses (46.1%) agreed that they were less interested in lifting patients out of bed, and 72 nurses (46.8%) agreed that education about pressure ulcer prevention was important in nursing practice.

Practice-related responses showed that "Never" was the most frequently selected response for several preventive activities. Ninety-four nurses (61.0%) reported that they never observed how other nurses assessed pressure ulcer risk, and 102 nurses (66.2%) reported that they never identified common pressure ulcer risk factors. Routine skin assessment was never performed by 108 nurses (70.1%), while 96 nurses (62.3%) reported that they never performed assessments using nursing standards. Use of pressure ulcer risk assessment scales was never reported by 108 nurses (70.1%). Documentation of pressure ulcer-related information was never reported by 94 nurses (61.0%), and assessment and management of pain in patients with pressure ulcers was never reported by 98 nurses (63.6%). In relation to skin protection practices, 102 nurses (66.2%) reported that they never placed pillows under the legs to prevent heel ulcers, while 89 nurses (57.8%) never advised caregivers to use moisturizers. Attention to pressure points after soiling was never reported by 104 nurses (67.5%). Nutritional care practices also showed low reported implementation, as 101 nurses (65.6%) never reviewed laboratory results for nutritional assessment, 98 nurses (63.6%) never ensured nutritional supplementation for deficient patients, and 105 nurses (68.2%) never monitored high-protein and carbohydrate diets.

Mobility and pressure-relief practices showed similar patterns. Ninety-seven nurses (63.0%) reported that they never avoided dragging patients during repositioning, and 104 nurses (67.5%) reported that they never repositioned patients every two hours. Use of pillows from mid-calf to ankle was never reported by 114 nurses (74.0%), while 101 nurses (65.6%) never used special mattresses for high-risk patients. Ninety-seven nurses (63.0%) never used air beds for high-risk patients. Avoidance of massage over bony prominences was never reported by 90 nurses (58.4%), and avoidance of ring-shaped cushions at bony prominences was never reported by 96 nurses (62.3%). In relation to education and professional development, 96 nurses (62.3%) reported that they never attended seminars or courses on pressure ulcer prevention, and 101 nurses (65.6%) never educated patients and caregivers about pressure ulcer prevention at discharge. Overall knowledge assessment showed that 140 nurses (90.9%) had poor knowledge regarding pressure ulcer prevention, 14 nurses (9.1%) had average knowledge, and no participant had good knowledge. Overall attitude assessment showed that 10 nurses (6.5%) had poor attitude, 88 nurses (57.1%) had average attitude, and 56 nurses (36.4%) had good attitude. Overall practice assessment showed that 14 nurses (9.1%) had poor practice, 82 nurses (53.2%) had average practice, and 58 nurses (37.7%) had good practice regarding pressure ulcer prevention.

Table 1. Sociodemographic and Professional Characteristics of Participants

Variable	Category / Statistic	Frequency / Value
Age group	18–29 years	72 (46.8%)
	30–44 years	61 (39.6%)
	45–59 years	21 (13.6%)
Gender	Male	18 (11.7%)
	Female	136 (88.3%)
Marital status	Single	61 (39.6%)
	Married	80 (51.9%)
	Divorced	5 (3.2%)
	Widowed	8 (5.2%)
Nursing rank	Professional nurse	85 (55.2%)
	Staff nurse	58 (37.7%)
	Nursing assistant	11 (7.1%)
Current working area	Medical ward	100 (64.9%)
	ICU	54 (35.1%)
Working shift	Day shift	65 (42.2%)
	Night shift	89 (57.8%)
Source of learning about pressure ulcer prevention	University	27 (17.5%)

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	In-service training	36 (23.4%)
	External course	57 (37.0%)
	Internet	34 (22.1%)
Professional experience	Mean ± SD	12.51 ± 7.37 years
	Range	1–25 years

Table 2. Overall Knowledge, Attitude, and Practice Levels Regarding Pressure Ulcer Prevention

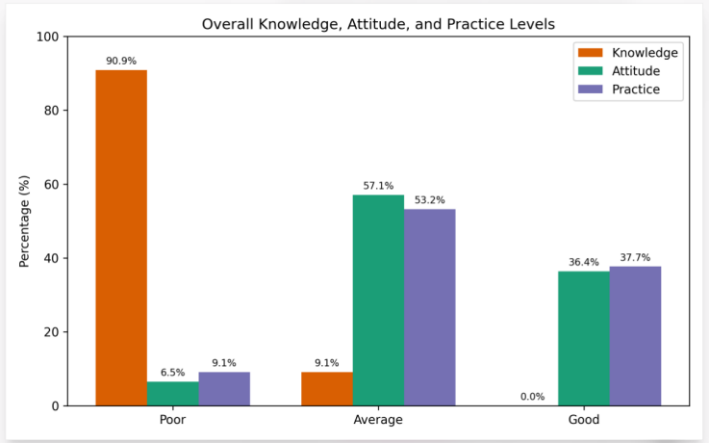
Domain	Poor n (%)	Average n (%)	Good n (%)	Total
Knowledge	140 (90.9%)	14 (9.1%)	0 (0.0%)	154 (100.0%)
Attitude	10 (6.5%)	88 (57.1%)	56 (36.4%)	154 (100.0%)
Practice	14 (9.1%)	82 (53.2%)	58 (37.7%)	154 (100.0%)

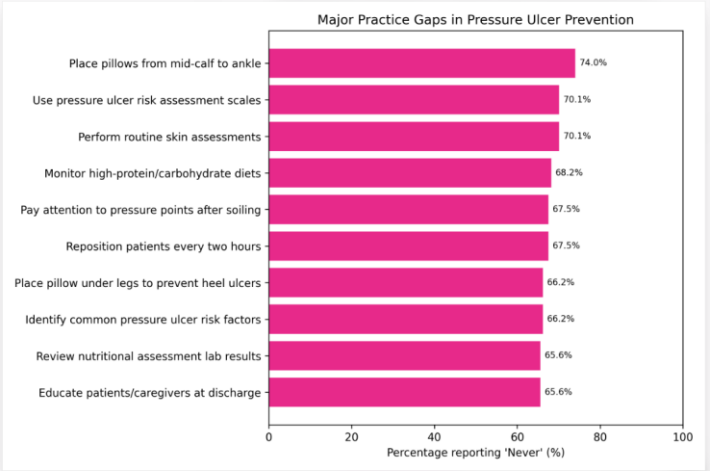
Table 3. Key Knowledge, Attitude, and Practice Responses Regarding Pressure Ulcer Prevention

Domain	Variable / Statement	Most Selected Response	Frequency n (%)
Knowledge	Major factor in bedridden fractured hip patient	Urinary incontinence	110 (71.4%)
	Correct description of grade 2 pressure ulcer	Partial skin loss with blister	112 (72.7%)
	First sign of pressure ulcer	Redness or blue-grey discoloration	104 (67.5%)
	Appropriate method for skin care	Apply cream	109 (70.8%)
	Protection from skin maceration	Cleaning skin after soiling	105 (68.2%)
	Prevention of skin damage	Turning every two hours	99 (64.3%)
	Best way to reduce friction	Lift patient without dragging	108 (70.1%)
	Educational strategy to improve competency	Drafting prevention protocol	98 (63.6%)
Attitude	Most risk factors can be managed	Agree	74 (48.1%)
	Prevention of pressure ulcers is time consuming	Agree	72 (46.8%)
	There should be 0% pressure ulcers in ward	Agree	68 (44.2%)
	Nurses can independently implement prevention	Agree	65 (42.2%)
	Pressure ulcer information should be documented	Agree	68 (44.2%)
	Pressure ulcers indicate quality of nursing care	Agree	70 (45.5%)
	Education about pressure ulcer prevention is important	Agree	72 (46.8%)
Practice	Perform routine skin assessments	Never	108 (70.1%)
	Use pressure ulcer risk assessment scales	Never	108 (70.1%)
	Document pressure ulcer information	Never	94 (61.0%)
	Assess and manage pain in pressure ulcer patients	Never	98 (63.6%)
	Review nutritional assessment laboratory results	Never	101 (65.6%)
	Reposition patients every two hours	Never	104 (67.5%)
	Use special mattresses for high-risk patients	Never	101 (65.6%)
	Educate patients and caregivers at discharge	Never	101 (65.6%)

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DISCUSSION

The present study assessed nurses' knowledge, attitudes, and practices regarding pressure ulcer prevention among nurses working in ICUs and medical wards of Mayo Hospital, Lahore. Pressure ulcers remain an important patient safety concern because they are largely preventable through early risk identification, regular skin assessment, repositioning, pressure redistribution, nutritional support, proper documentation, and patient or caregiver education. The findings of this study showed a marked gap between nurses' overall knowledge and their reported attitudes and practices. Although most participants had poor knowledge regarding pressure ulcer prevention, their attitudes were mostly average to good, and their overall practices were reported as average in more than half of the sample. This pattern suggested that nurses may have been performing some preventive activities through routine ward experience, but their theoretical understanding of evidence-based prevention remained limited. The demographic profile showed that most participants were young adults, with the highest proportion in the 18–29-year age group, followed by those aged 30–44 years. This indicated that a large proportion of the nursing workforce involved in bedside patient care was relatively young and actively engaged in routine clinical duties. Similar findings were reported in previous studies where most nurses involved in pressure ulcer prevention belonged to younger age groups and were directly involved in patient monitoring and daily nursing care (21-23). Younger nurses often remain more involved in direct patient handling, repositioning, hygiene care, and routine ward observations; however, clinical activity alone does not ensure adequate evidence-based knowledge unless supported by structured training and supervision.

The gender distribution showed a clear female predominance, with females forming 88.3% of the study sample. This finding was consistent with the traditional gender distribution of the nursing profession in many healthcare settings, where female nurses constitute the majority of the hospital nursing workforce. Similar patterns have been observed in previous studies conducted in tertiary care hospitals, where female nurses were more frequently represented in pressure ulcer prevention-related research (24-26. The mean professional experience of participants was 12.51 ± 7.37 years, showing that the sample included both relatively junior and experienced nurses. Clinical experience may improve practical judgment, patient observation, wound care skills, and familiarity with routine preventive measures, but it may not always reflect updated knowledge of formal guidelines or validated risk assessment tools (27). The most important finding of this study was the poor overall knowledge regarding pressure ulcer prevention. A total of 90.9% of nurses had poor knowledge, 9.1% had average knowledge, and none had good knowledge. This finding indicated substantial deficiencies in understanding risk factors, assessment tools, nutritional indicators, staging, and evidence-based preventive strategies. Similar findings have been reported in earlier studies where nurses demonstrated inadequate knowledge regarding pressure ulcer risk assessment and prevention (28-30). A systematic review also reported that fewer than half of nurses had good knowledge about pressure ulcer prevention, supporting the concern that knowledge gaps remain common across healthcare settings (31). These findings highlighted the need for continuous professional education, particularly in high-risk clinical areas such as ICUs and medical wards.

Several item-level knowledge responses suggested confusion regarding pressure ulcer risk factors and assessment methods. Some participants selected the Glasgow Coma Scale as a pressure ulcer risk assessment tool, while others selected high haematocrit, anaemia, urinary incontinence, or chronic wound in ways that reflected incomplete understanding of evidence-based pressure ulcer prevention concepts. Although these factors may be clinically relevant in selected contexts, formal pressure ulcer risk assessment requires validated tools and a broader assessment of mobility, sensory perception, moisture, nutrition, activity, and friction or shear. Similar misconceptions have been reported among healthcare professionals, particularly regarding the appropriate use of risk assessment scales and prevention protocols (32). These findings suggested that nurses required not only general awareness sessions but also practical training on validated tools such as the Braden Scale and on how to translate risk scores into bedside preventive actions. Despite the poor overall knowledge level, some specific areas of knowledge were comparatively better. Many nurses correctly identified partial skin loss with blister as a feature of grade II pressure ulcer, and several participants recognized redness or blue-grey discoloration as an early sign of pressure

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ulcer development. These responses suggested that nurses had some practical familiarity with visible skin changes and ulcer staging. Previous studies have also reported moderate knowledge among critical care nurses regarding pressure ulcer staging and early recognition (33). Early recognition is clinically important because timely intervention at the stage of non-blanchable redness or early tissue change may prevent progression to deeper injury, infection, prolonged hospitalization, and additional treatment burden.

Nutritional knowledge appeared inconsistent. Although many nurses selected high-protein and high-calorie diets as nutritional support for bedridden patients, there was limited indication of strong awareness regarding nutritional assessment and laboratory-based monitoring. Nutrition plays a major role in tissue integrity, immune response, collagen synthesis, and wound healing, particularly among immobilized, elderly, critically ill, and chronically ill patients. Previous research has similarly emphasized that inadequate understanding of nutritional risk among nurses may weaken pressure ulcer prevention and delay wound healing (34). These findings indicated the need to integrate nutrition screening, dietician referral pathways, and monitoring of nutritional risk into nursing education and ward protocols. The attitude findings were more favorable than the knowledge findings. Most participants had average attitude, while more than one-third had good attitude toward pressure ulcer prevention. This showed that nurses generally recognized pressure ulcer prevention as an important part of nursing care and patient safety. Similar results have been reported in previous studies where nurses showed positive attitudes despite gaps in knowledge and practice (35). A positive attitude is important because nurses who value prevention are more likely to support risk assessment, repositioning, documentation, and skin care when proper resources and training are available. However, attitude alone cannot ensure safe practice unless it is supported by adequate knowledge, staffing, equipment, and institutional accountability.

Some attitude-related findings also reflected important misconceptions. A considerable proportion of nurses agreed that clinical judgment was better than a formal risk assessment tool, and some agreed that routine pressure ulcer risk assessment should not be conducted during hospitalization. These views may reduce adherence to standardized assessment systems and increase variability in patient care. Earlier studies have also reported uncertainty among healthcare professionals regarding the routine use of evidence-based risk assessment tools (36). Clinical judgment remains valuable, but it should complement rather than replace validated assessment tools. Standardized tools help ensure that risk is assessed consistently, documented properly, and reassessed when the patient's condition changes. Family and caregiver education also appeared to be an area of concern. A substantial proportion of nurses agreed that relatives should not be advised about skin assessment during bathing. This finding indicated limited emphasis on family-centered prevention, despite the fact that many patients remain at risk after discharge or during prolonged hospitalization when family members may assist in hygiene and positioning. Previous literature has also reported inadequate patient and caregiver education practices in pressure ulcer prevention (37). Educating caregivers about skin inspection, moisture control, nutrition, repositioning, and early warning signs may reduce preventable complications, especially in settings where nurse-patient ratios are high and family involvement in bedside care is common.

The practice findings showed that several evidence-based preventive measures were not consistently implemented. Many nurses reported that they never performed routine skin assessments, never used pressure ulcer risk assessment scales, never repositioned patients every two hours, never reviewed nutritional laboratory findings, never used special mattresses for high-risk patients, and never educated patients or caregivers at discharge. These findings were consistent with previous studies showing that preventive practices may remain inadequate even when nurses have acceptable attitudes toward pressure ulcer prevention (38,39). The gap between attitude and practice may be explained by high workload, insufficient staffing, lack of pressure-relieving equipment, absence of standardized protocols, limited supervision, and inadequate practical training. Routine skin assessment and use of pressure ulcer risk assessment scales were particularly weak areas, with 70.1% of nurses reporting that they never performed routine skin assessment and 70.1% reporting that they never used risk assessment scales. This was clinically important because early identification of high-risk patients is the foundation of prevention. Similar findings have been reported in tertiary care settings where evidence-based assessment tools were underused in routine nursing care (40). Without regular assessment, early skin changes may be missed, high-risk patients may not receive timely pressure redistribution, and hospital-acquired pressure ulcers may increase.

Repositioning and use of supportive devices were also inadequate. A large proportion of nurses reported that they never repositioned patients every two hours and never used pillows, air beds, or special mattresses for high-risk patients. Previous research has similarly reported inadequate repositioning practices and limited use of pressure-relieving measures in tertiary care hospitals (12). These findings suggested that pressure ulcer prevention was not only a knowledge issue but also a systems issue. Even well-informed nurses may be unable to implement prevention effectively when staffing is insufficient, patient turnover is high, or pressure-relieving devices are unavailable. Poor nutritional monitoring and limited discharge education further reflected gaps in comprehensive pressure ulcer prevention. Many nurses reported that they did not review nutritional assessment results, ensure supplementation, or educate patients and caregivers before discharge. Similar observations have been reported in studies emphasizing the need for educational interventions and continuous training programs to improve nursing practice (41). These findings showed that prevention should be approached as a complete care pathway rather than as isolated bedside tasks. Risk assessment, nutrition, skin care, repositioning, documentation, caregiver education, and follow-up instructions need to be linked within a standardized nursing protocol.

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An important finding of the present study was the apparent mismatch between poor knowledge and relatively average overall practice. This may indicate that some nurses were performing preventive activities based on experience, ward routine, or instructions from senior staff rather than on strong theoretical understanding. Similar patterns have been described in previous studies, where practical experience sometimes compensated for weak formal knowledge in nursing practice (42,43). However, reliance on routine practice without evidence-based understanding may lead to inconsistent care and may limit nurses' ability to manage complex high-risk patients. Therefore, clinical experience should be strengthened with structured education, competency-based training, and regular monitoring of compliance with guidelines. The findings of this study had important implications for nursing education, clinical governance, and patient safety. Mayo Hospital Lahore manages a large number of critically ill, immobilized, and chronically ill patients in ICUs and medical wards, making pressure ulcer prevention a practical priority. The results supported the need for regular in-service training, competency-based workshops, use of standardized assessment tools, implementation of written pressure ulcer prevention protocols, regular nursing audits, and improved access to pressure-relieving devices. Hospital administrators and nurse managers should also focus on adequate staffing, documentation systems, and supervision so that evidence-based care can be translated into routine practice.

The study had several strengths. It addressed an important and preventable hospital-acquired condition in a large tertiary care setting. It included nurses working in high-risk clinical areas where pressure ulcer prevention is particularly relevant. The study also assessed all three major components of nursing performance, including knowledge, attitude, and practice, which provided a broader understanding of the existing gaps. The use of an adopted questionnaire also added structure to data collection and allowed assessment across multiple domains of pressure ulcer prevention. The findings should be interpreted in light of some limitations. The study was conducted in a single hospital, which may limit the generalizability of findings to other public or private hospitals. The cross-sectional design assessed nurses at one point in time and could not establish causal relationships between knowledge, attitudes, training, and practices. Convenience sampling may have introduced selection bias, as nurses who were available and willing to participate may differ from those who were not included. The use of self-reported practices may also have introduced social desirability bias or recall bias. In addition, the scoring criteria, reverse coding of negatively worded items, and reliability statistics should be clearly reported to strengthen the interpretation of overall KAP levels.

Future studies should include larger multicenter samples from public and private hospitals to improve generalizability. Observational audits of actual nursing practice should be added alongside self-reported questionnaires to provide a more accurate picture of bedside prevention. Further research should also examine the relationship between nurses' training, workload, nurse-patient ratio, availability of pressure-relieving equipment, and actual incidence of hospital-acquired pressure ulcers. Interventional studies should be conducted to evaluate whether structured training programs, reminder checklists, electronic documentation, and ward-based pressure ulcer prevention bundles can improve nurses' knowledge, attitudes, practices, and patient outcomes. Overall, the present study showed that nurses working in ICUs and medical wards had poor knowledge but mostly average to good attitudes and moderate overall practices regarding pressure ulcer prevention. The findings suggested that pressure ulcer prevention required more than individual nursing effort; it required continuous education, clear protocols, adequate resources, practical supervision, and institutional commitment to patient safety. Strengthening these areas may help reduce preventable pressure ulcers and improve the quality of nursing care in high-risk hospital settings.

CONCLUSION

This study concluded that nurses working in ICUs and medical wards had inadequate knowledge regarding pressure ulcer prevention, particularly in relation to risk assessment, nutritional care, repositioning, skin inspection, and evidence-based preventive measures. Although their attitude toward prevention was generally positive and some preventive practices were being followed, important gaps remained in the consistent use of standardized assessment tools, routine skin care, nutritional monitoring, repositioning protocols, documentation, and patient or caregiver education. These findings highlight the need for regular training, clear clinical protocols, supportive supervision, and adequate hospital resources to strengthen nursing practice and reduce preventable pressure ulcers among high-risk hospitalized patients.

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