
**Assessment of Knowledge Level Regarding Pressure Ulcer
Prevention Among Undergraduate Nursing Students in DHQ
Hospital Kohat**

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Abstract

Introduction: Pressure ulcers remain one of the leading preventable complications in healthcare and are strongly associated with immobility, critical illness, and prolonged hospitalization. Nurses and nursing students play a central role in prevention through risk assessment, skin care, repositioning, and evidence-based interventions; gaps in student knowledge may place patients at risk.

Objective: To assess the knowledge level of undergraduate nursing students regarding pressure ulcer prevention at DHQ Hospital Kohat.

Methods: A descriptive cross-sectional study was conducted among 150 undergraduate nursing students, selected by proportionate sampling from a population of 245. Data were collected using a structured questionnaire based on the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0, Cronbach's alpha 0.77), covering etiology, risk factors, staging, prevention, and clinical management.

Data were analyzed in SPSS version 26 using descriptive statistics. Knowledge was classified as good ($\geq 75\%$), fair (50–74%), or poor ($< 50\%$).

Results: Overall, 59.3% of participants demonstrated poor knowledge, 33.3% fair knowledge, and only 7.3% good knowledge. Item-level analysis revealed marked deficits in understanding of etiology (30.7% correct), shear force (28.0%), staging (28.0%), risk assessment tools (28.0%), and preventive interventions such as repositioning (28.0%). Only 25.3% of students had received formal training in pressure ulcer prevention.

Conclusion: Undergraduate nursing students at DHQ Hospital Kohat possess inadequate knowledge of pressure ulcer prevention. Strengthening curricular content, clinical training, and simulation-based education is recommended to close this gap and improve future patient safety outcomes.

1. INTRODUCTION

Pressure ulcers — also termed pressure injuries, pressure sores, or bedsores — remain a preventable yet persistent global health problem. They result from tissue damage caused by sustained pressure, shear, or friction, most commonly over the sacrum, heels, elbows, hips, ankles, and occiput. Contributing risk factors include immobility, critical illness, malnutrition, advanced age, unconsciousness, and chronic disease, and their consequences include pain, infection, delayed healing, prolonged hospital stay, elevated cost of care, and reduced quality of life.

Because registered nurses continuously monitor patients and implement preventive actions — repositioning, pressure-relieving devices, skin hygiene, nutritional support, and standardized risk assessment using tools such as the Braden or Norton scale — nursing knowledge is central to prevention. Hospital-acquired pressure ulcers remain common across acute, long-term, and intensive care settings, with an even higher expected burden in low- and middle-income countries due to staff shortages, limited resources, inadequate training, and overcrowding. Pressure ulcers are a well-documented nursing-sensitive complication in Pakistani tertiary and district hospitals.

Nursing students undertake clinical training involving direct patient contact — positioning, hygiene, skin assessment, and reporting — making their knowledge base directly relevant to care quality. Prior literature consistently reports unsatisfactory knowledge and attitudes among nursing students internationally, with deficits spanning risk factors, classification, and preventive practice. Determinants of knowledge include

year of study, clinical exposure, curriculum content, teaching methods, and access to simulation-based or e-learning resources; senior students and those exposed to targeted educational interventions tend to perform better.

Nursing education in Pakistan has expanded considerably, yet many institutions face faculty shortages, limited clinical exposure, overcrowded wards, and inconsistent curriculum delivery. DHQ Hospital Kohat serves as a key clinical training site for undergraduate nursing students in the region, who care for medical, surgical, emergency, and intensive care patients vulnerable to pressure ulcer development. Local evidence on this topic from Khyber Pakhtunkhwa, and Kohat specifically, is scarce, despite an extensive international literature base — a gap this study addresses given the region's distinct sociocultural, educational, and resource context.

This study therefore aimed to assess the knowledge level of undergraduate nursing students at DHQ Hospital Kohat regarding pressure ulcer prevention, in order to identify specific knowledge gaps that can inform curriculum design, clinical training, and educational interventions.

1.1 Research Objective

To assess the knowledge level regarding pressure ulcer prevention among undergraduate nursing students at DHQ Hospital Kohat.

1.2 Research Question

What is the level of knowledge regarding pressure ulcer prevention among undergraduate nursing students at DHQ Hospital Kohat?

2. LITERATURE REVIEW

Multiple systematic reviews and meta-analyses report that pressure ulcer prevention knowledge among nurses and nursing students consistently falls below required standards, despite generally positive attitudes toward prevention (7,8,13,14). Reviews focused specifically on nursing students identify moderate-to-low knowledge scores, with senior students and those with greater clinical exposure outperforming juniors, and curriculum design emerging as a key determinant (9,15,16).

Educational interventions have shown measurable benefit: structured teaching programs, three-year longitudinal interventions among first-year students, and mobile-application-based learning have each been associated with significant gains in knowledge and attitudes relative to conventional teaching alone (10,11,17,18,19). Country-specific studies from Turkey, India, Nigeria, Egypt, Ghana, and Iran report recurring weaknesses in staging, risk-assessment tools, shear/friction mechanisms, repositioning schedules, and nutritional aspects of prevention (20,26,30,32,34,38,40,42), while studies from the UK, Canada, Sweden, Malaysia, Germany, and the United States — settings with more structured wound-care curricula, simulation training, or clinical mentoring — report comparatively higher knowledge levels (31,33,35,37,39,41,43).

Studies of practicing nurses reinforce these findings: knowledge and practice levels are frequently inconsistent even where attitudes are favorable, and adequate knowledge alone does not guarantee implementation when institutional resources, staffing, or equipment are limited (23,24,25,26). Simulation-based education has been shown to strengthen critical thinking, confidence, and retention of prevention-related skills such as risk assessment, positioning, and wound observation among novice nurses (27). Collectively, the literature indicates that undergraduate nursing students' knowledge of pressure ulcer prevention is generally moderate-to-poor worldwide, with the most persistent gaps in staging, risk-assessment tools, repositioning frequency, nutrition, and support-surface selection, and that structured training, simulation, and clinical mentoring are associated with better outcomes.

3. METHODOLOGY

3.1 Research Design

A descriptive cross-sectional design was used.

3.2 Study Setting

The study was conducted in the clinical setting of DHQ Hospital, Kohat.

3.3 Population and Sampling

The total population was 245 undergraduate nursing students. Sample size was calculated using Raosoft with a 95% confidence interval and 5% margin of error, yielding a sample of 150, selected through proportionate sampling.

3.4 Inclusion and Exclusion Criteria

Inclusion criteria: undergraduate nursing students currently enrolled in Kohat, from 2nd, 3rd, or 4th year of study, who had attended at least one clinical rotation and were willing to participate. Exclusion criteria: students on leave or not actively attending classes during data collection, those who declined or withdrew consent, and those submitting incomplete questionnaires.

3.5 Data Collection Procedure

Data were collected using a self-administered structured questionnaire based on the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0; Cronbach's alpha 0.77), a validated instrument for measuring pressure ulcer prevention knowledge among nursing students and health professionals (Beeckman et al., 2019). The tool assessed etiology and pathogenesis, risk factors, classification, prevention, nutrition, and clinical management through single-answer multiple-choice items; correct answers scored one point, incorrect and “don't know” responses scored zero. Total scores were converted to percentages and categorized as good ($\geq 75\%$), moderate (50–74%), or poor ($< 50\%$). A demographic section captured age, gender, academic year, and clinical exposure.

3.6 Ethical Considerations

Ethical approval was obtained from the relevant institutional review committee prior to data collection. Written informed consent was obtained from all participants, who were assured of confidentiality, anonymity, and the right to withdraw at any time without penalty. Data were coded and stored securely.

3.7 Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics — frequencies, percentages, means, and standard deviations — were used to summarize demographic characteristics and knowledge scores, which were categorized as good, moderate, or poor knowledge based on predefined cut-offs.

4. RESULTS

4.1 Sociodemographic Characteristics

Characteristic	n (%) / Mean $\pm$ SD
Age (years), Mean $\pm$ SD	31.35 $\pm$ 3.963 (range 26–40)
Male	103 (68.7%)
Female	47 (31.3%)
2nd year	44 (29.3%)
3rd year	94 (62.7%)
4th year	12 (8.0%)
Received training on PU prevention – Yes	38 (25.3%)
Received training on PU prevention – No	112 (74.7%)

A total of 150 students were analyzed (valid N = 150). The mean age was 31.35 $\pm$ 3.963 years (range 26–40). Most participants were male (68.7%) and in their 3rd year of study (62.7%). Only 25.3% of students reported having received formal training on pressure ulcer prevention (Table 1).

Table 1. Sociodemographic and Training Characteristics of Participants (N = 150)

4.2 Item-Level Knowledge Analysis

Knowledge scores were consistently low across nearly all domains assessed. Only 30.7% of students correctly identified prolonged pressure over bony prominences as the primary cause of pressure ulcers. Understanding of shear force (28.0%), high-risk patient identification (28.0%), and staging (Stage I and Stage IV, both 28.0%) was similarly poor. Only 28.0% of respondents correctly identified the Braden Scale as the standard risk-assessment tool. Knowledge of preventive interventions — repositioning every two hours (28.0%) and turning to reduce pressure duration (28.0%) — was equally limited. Knowledge of support surfaces and skin care was marginally better (32.0%), as was understanding of anatomical risk areas, moisture, and friction (34.7%), though these still reflected inadequate overall performance (Table 2).

Knowledge Item	Correct n (%)	Incorrect n (%)
Pressure ulcers are primarily caused by	46 (30.7%)	104 (69.3%)
Shear force occurs when	42 (28.0%)	108 (72.0%)
Which patient is at highest risk?	42 (28.0%)	108 (72.0%)
Stage I pressure ulcer presents as	42 (28.0%)	108 (72.0%)
Stage IV pressure ulcer involves	42 (28.0%)	108 (72.0%)
Most commonly used risk assessment tool	42 (28.0%)	108 (72.0%)
Immobility increases risk because	42 (28.0%)	108 (72.0%)
Poor nutrition leads to	42 (28.0%)	108 (72.0%)
Protein is important because	42 (28.0%)	108 (72.0%)
Repositioning should be done every	42 (28.0%)	108 (72.0%)
The best surface for prevention is	48 (32.0%)	102 (68.0%)
Skin should be kept	48 (32.0%)	102 (68.0%)
Pressure duration should be	42 (28.0%)	108 (72.0%)
Turning patients helps by	42 (28.0%)	108 (72.0%)
Area most at risk in supine position	52 (34.7%)	98 (65.3%)
Moisture increases risk because	52 (34.7%)	98 (65.3%)

Knowledge Item	Correct n (%)	Incorrect n (%)
Friction causes	52 (34.7%)	98 (65.3%)

Table 2. Item-wise Knowledge of Undergraduate Nursing Students Regarding Pressure Ulcer Prevention (N = 150)

4.3 Overall Knowledge Level

Based on total PUKAT 2.0 scores, 89 participants (59.3%) demonstrated poor knowledge, 50 (33.3%) demonstrated fair knowledge, and only 11 (7.3%) demonstrated good knowledge (Table 3). These findings indicate that more than half of the sample lacked adequate knowledge of pressure ulcer prevention, with particular deficits in risk assessment, staging, and preventive interventions.

Knowledge Category	n	%
Poor (<50%)	89	59.3%
Fair (50–74%)	50	33.3%
Good (≥75%)	11	7.3%
Total	150	100.0%

Table 3. Overall Knowledge Level Regarding Pressure Ulcer Prevention (N = 150)

5. DISCUSSION

This study found that undergraduate nursing students at DHQ Hospital Kohat had largely inadequate knowledge of pressure ulcer prevention, with 59.3% scoring in the poor range, 33.3% fair, and only 7.3% good. This pattern is consistent with several international reports of low knowledge among nursing students, though it contrasts with studies from settings with more structured wound-care curricula — such as Turkey, the UK, Canada, Sweden, Malaysia, Germany, and the United States — where average-to-good knowledge levels have been reported, generally attributed to earlier integration of evidence-based practice, simulation training, and structured clinical mentoring.

Only 30.7% of participants correctly identified the underlying cause of pressure ulcers, a finding comparable to reports from Ethiopia and consistent with broader evidence of weak understanding of pathophysiology among students in resource-limited settings. Similarly low recognition of shear force (28.0%) paralleled findings from Nigeria, while staging knowledge (28.0%) matched patterns observed in India; by contrast, students in Australia and Canada, where structured wound-care and laboratory-based teaching are more established, demonstrated stronger performance in these same domains.

Knowledge of the Braden Scale as a standardized risk-assessment tool was similarly limited (28.0%), aligning with prior Pakistani findings and reinforcing that risk-assessment training is not consistently embedded in local curricula, in contrast to Sweden's early introduction of evidence-based assessment tools. Preventive knowledge — repositioning schedules (28.0%) and nutritional aspects of wound healing (28.0%) — also lagged behind findings from Malaysia and Germany, where clinical supervision and interdisciplinary education appear to support stronger retention.

Taken together, these comparisons suggest that curriculum design, teaching methodology, and the extent of clinical or simulation-based exposure are key determinants of knowledge outcomes, and that nursing programs emphasizing structured, evidence-based, and simulation-supported teaching consistently produce better-prepared students. The consistently low scores observed here — with only 25.3% of students reporting any formal training in pressure ulcer prevention — point to a specific, addressable gap in the local nursing curriculum at DHQ Hospital Kohat rather

than a generalized learning deficit.

6. CONCLUSION

Undergraduate nursing students at DHQ Hospital Kohat demonstrated inadequate knowledge of pressure ulcer prevention, with the majority scoring in the poor range and only a small proportion achieving good knowledge. Item-level analysis confirmed consistent deficits across etiology, risk factors, staging, risk-assessment tools, and preventive interventions such as repositioning and use of pressure-relieving devices. These findings underscore a clear need to strengthen the nursing curriculum and incorporate evidence-based, simulation-supported teaching methods to prepare students adequately for clinical practice.

6.1 Implications

These findings support the integration of simulation exercises, case-based learning, workshops, and structured clinical demonstrations into undergraduate nursing curricula to bridge the gap between theoretical knowledge and clinical application. Strengthened knowledge is expected to support earlier identification of at-risk patients, timely preventive intervention, and reduced pressure ulcer incidence. Healthcare facilities hosting clinical placements should also provide regular, structured training on pressure ulcer prevention.

6.2 Strengths and Limitations

This study addresses a clinically important and previously under-researched topic in the Kohat region, uses a well-validated instrument (PUKAT 2.0), and includes an adequately powered sample of 150 undergraduate students. However, the single-institution design limits generalizability, the cross-sectional design captures only a single time point, the self-administered questionnaire is susceptible to response bias (e.g., guessing), and the study assessed knowledge only, without corresponding attitude, practice, or outcome data. No follow-up or interventional phase was included.

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