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LEVEL OF KNOWLEDGE AND ATTITUDES REGARDING PRESSURE INJURY PREVENTION AMONG UNDERGRADUATE NURSING STUDENTS AT PRIVATE NURSING COLLEGES, PESHAWAR

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Abstract

Background: Pressure injuries (PIs) remain a significant health problem worldwide and they result in augmented patient morbidity, longer hospital stays, and excessive associated healthcare costs. It has been observed that prevention is the most desirable method of the three and it is quite dependent on the attitude, knowledge, and practice of the healthcare provider, mostly so when it comes to the nursing students as they are the future of the nursing profession.

Objective: The research was aimed to assess the knowledge and perceptions with regard to pressure injury prevention among undergraduate nursing students of the private nursing colleges in Peshawar, Pakistan. Methodology: The research had a descriptive cross-sectional study design and the sample was 300 undergraduate nursing students selected purposively across four most known private institutions: Farkhanda Institute of Nursing, KPIMS, Rufaida College of Nursing, and Ahmed Institute. A self-administered questionnaire validated and used to collect data measured both knowledge and attitudes towards PI prevention. The frequencies and percentages were determined using descriptive statistics and the importance of the results was contextualized by comparing them to similar literature.

Results: Among 300 respondents' 34 percent were KPIMS, 24.7 percent were Rufaida College of Nursing, 23.3 percent were Ahmed Institute and 19 percent were Farkhanda Institute of Nursing. In general, the attitude to PI prevention appeared to be generally positive, whereas the level of knowledge was somewhere between moderate and decent, allowing to observe certain weaknesses in the practical implementation of preventive measures. These findings were in agreement with the past research studies that have shown that students in nursing programs always meant to have skills in theoretical knowledge than practice knowledge.

Conclusion: The research highlights the need to improve the norms of PI prevention in curriculum performance, include more applied clinical experience, and use the approach of competency-based learning. These gaps may be considered to lower the possibility of students being ready to deliver high-quality patient care and mitigating the instances of pressure injuries in practice settings.

Introduction: Pressure injuries (PIs) are localized damage to the skin and underlying tissues, usually occurring over bony prominences due to prolonged pressure or shear forces. Although largely preventable, they remain a significant healthcare challenge worldwide and are associated with increased pain, morbidity, mortality, prolonged hospitalization, and higher healthcare costs (Xiaoli Jia, 2022; Fernandes, Lima, & Santos, 2021). In Pakistan, pressure injuries continue to be a concern, with studies reporting a considerable prevalence among hospitalized patients despite many being classified as low risk (Ayesha & Fatima, 2023).

Nurses play a vital role in pressure injury prevention through early risk assessment, implementation of preventive interventions, and patient education (Arzu Bahar, 2024). Effective prevention requires adequate knowledge and positive attitudes toward evidence-based practices. However, previous studies have identified gaps in knowledge and attitudes among nursing students and practicing nurses, which may compromise the quality of patient care and prevention efforts (Carey Mather, 2022; Sadiye Balan, 2020; Beáta Grešš Halász, 2021).

As future healthcare professionals, undergraduate nursing students must be equipped with the necessary competencies to prevent pressure injuries effectively. Therefore, assessing their knowledge and attitudes is essential for identifying educational needs, improving clinical preparedness, and enhancing patient safety. This study aims to evaluate the knowledge and attitudes of undergraduate nursing students regarding pressure injury prevention in private nursing schools in Peshawar.

Methodology:

A descriptive cross-sectional study was conducted among undergraduate nursing students from four private nursing schools in Peshawar: Rufaidah Nursing College, Khyber Pakhtunkhwa Institute of Health Sciences, Farkhanda Institute of Nursing and Public Health, and Ahmad Medical Institute. The study was completed over a period of 4–6 months during 2025, including data collection, analysis, and report writing.

A sample of 300 undergraduate nursing students was determined using the RaoSoft sample size calculator with a 95% confidence level, 5% margin of error, and a population size of 1,350 students. Convenience sampling was used to recruit participants. Students enrolled in the 5th, 6th, 7th, and 8th semesters who were actively involved in clinical practice and provided informed consent were included. Students from other institutions, those on academic leave, those who had completed their coursework, and those unwilling to participate were excluded.

Data were collected using a demographic questionnaire, the Pressure Injury Prevention Knowledge Questionnaire (PIPK), and the Attitudes Toward Pressure Ulcer Prevention (APUP) Scale. Both instruments demonstrated acceptable reliability, with Cronbach's alpha values exceeding 0.70 (Franco et al., 2020; Beeckman et al., 2010). Questionnaires were self-administered during routine academic sessions. Data were analyzed using descriptive statistics and presented in tables and graphs to summarize participants' demographic characteristics, knowledge levels, and attitudes toward pressure injury prevention.

Results

Table-1: Age of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-30	300	100.0	100.0	100.0

In this study, all participants were 25-30 years old and their numbers were 300. The frequency and percentage distribution depicting; 100% was representative at this age group, we observe no discrepancies in respondent's ages. This homogeneity ensures consistency at the expense of generalizability to other age grades.

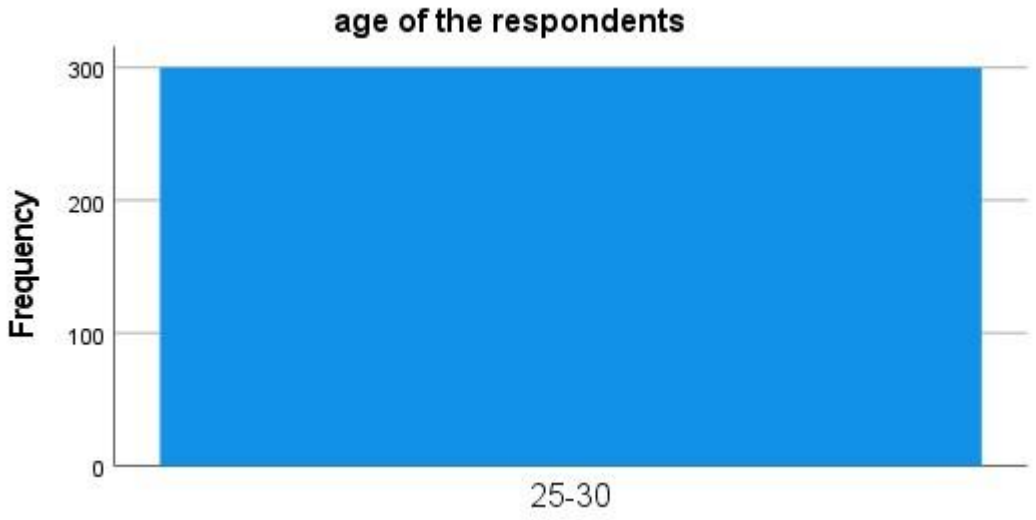

Figure 1: Age of the respondents

Table 2: Gender of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	228	76.0	76.0	76.0
	female	72	24.0	24.0	100.0
	Total	300	100.0	100.0	

The researchers studied 300 respondents. In this, 228 subjects (76 per cent) were men and 72 subjects (24 per cent) were women. This shows that genders of the respondents were not evenly distributed since most of them are male and there is serious gender gap in the study sample.

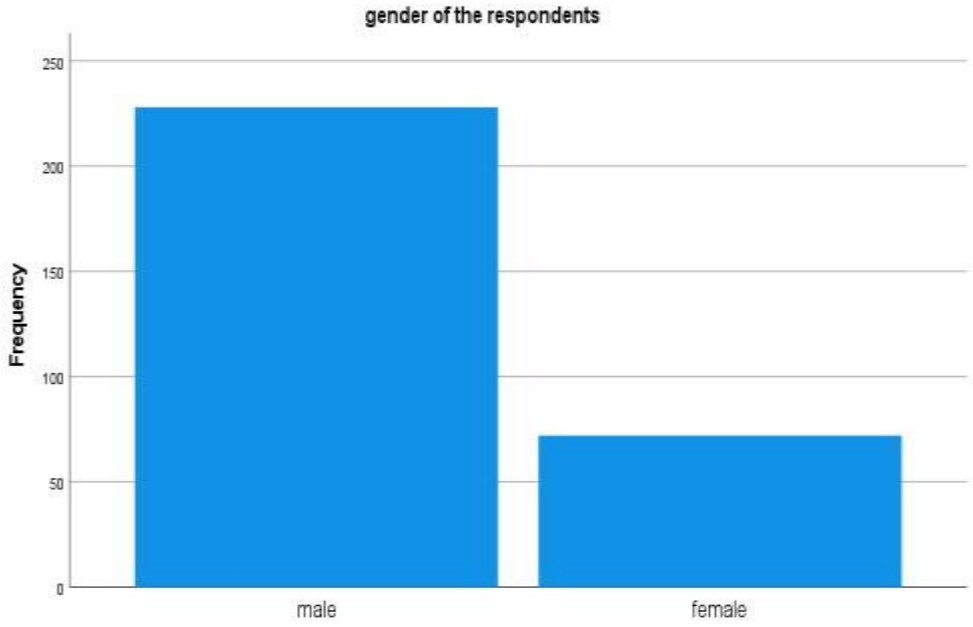

Figure 2: Gender of the respondents

Table 3: Semester in which the participants are studying

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5t semester	51	17.0	17.0	17.0
	6th semester	117	39.0	39.0	56.0
	7th semester	94	31.3	31.3	87.3
	8th semester	38	12.7	12.7	100.0
	Total	300	100.0	100.0	

As the data indicates, the largest percentage of participants belong to the 6th semester (39 percent) and the 7th semester (31.3 percent) of respondents. The sample consisted of 12.7 and 17 percent of students in the 5th and 8th semester. This means that most of the participants were in the mid-semesters of their study.

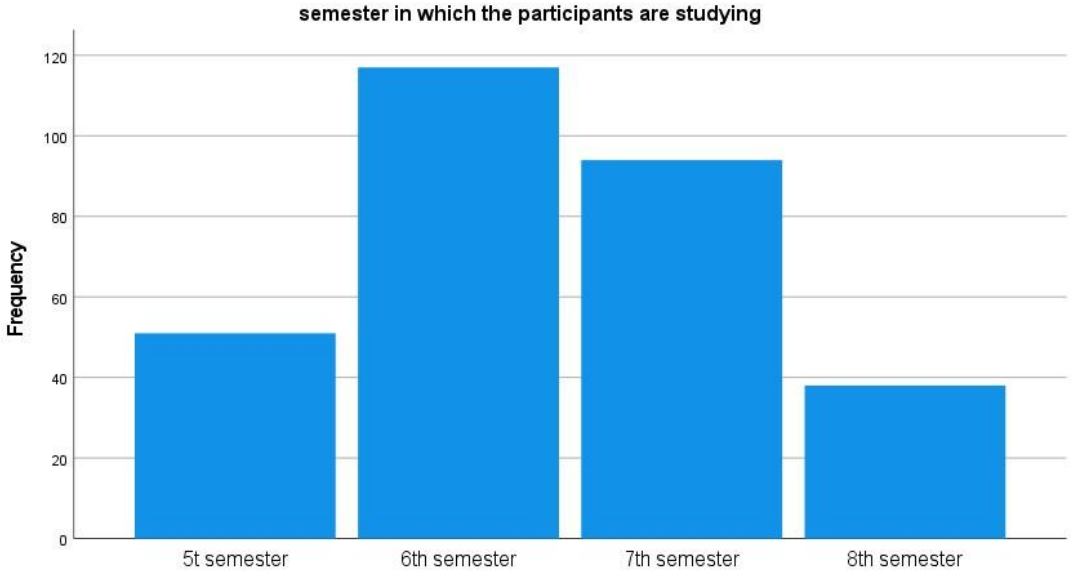

Figure 3: Semester in which the participants are studying

Table 4: Received pressure ulcer training in curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	243	81.0	81.0	81.0
	no	54	18.0	18.0	99.0
	3	2	.7	.7	99.7
	4	1	.3	.3	100.0
	Total	300	100.0	100.0	

The statistics demonstrate that the curriculum contains training on pressure ulcer by 81.0 percent of the 300 respondents or 243 individuals, reflecting that there has been much emphasis on this area. Conversely, 18.0 percent (54 participants) failed to get the training and a tiny 0.7 percent (2 participants) had selected option 3, which may be an outlier or a mistake. The general

findings indicated that there was high prevalence of training and the minor categories need to be further defined.

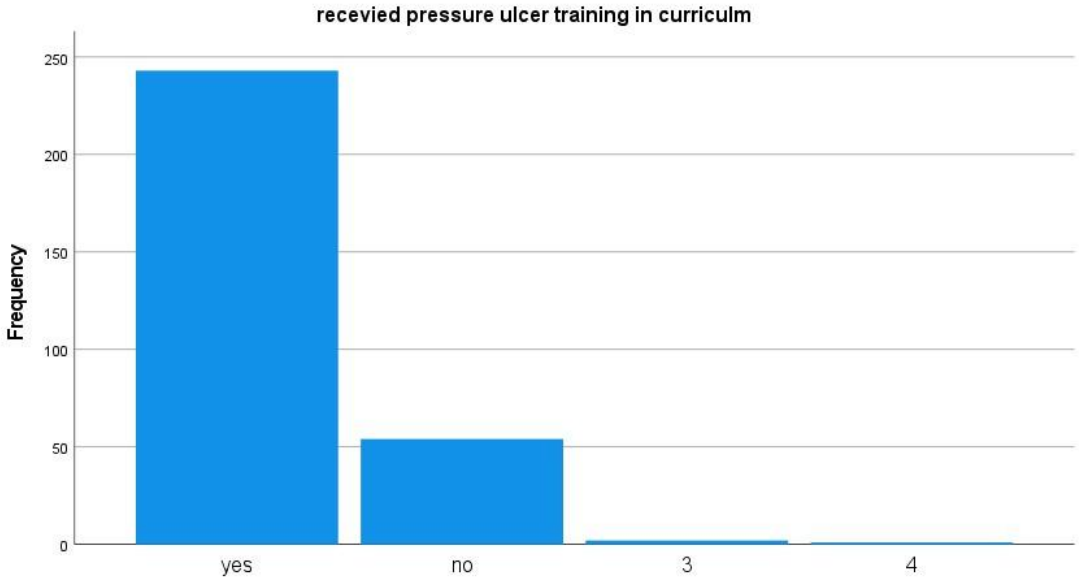

Figure 4: Received pressure ulcer training in curriculum

Table 5: Self Assessed competence in pressure ulcer prevention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	168	56.0	56.0	56.0
	No	33	11.0	11.0	67.0
	partially	98	32.7	32.7	99.7
	4	1	.3	.3	100.0
	Total	300	100.0	100.0	

This information reveals that among 300 respondents, 168 of them were considered to be competent in the prevention of pressure ulcers versus themselves, significantly high confidence figure. On the contrary, 11.0% (33 participants) found them not competent, and 32.7% (98 participants) were slightly competent; hence, a large middle ground. The one response of 0.3 percent in the case of option is might be showing an outlier or as an error

other cumulative distributions that depict are that each member of the group can have different self-perceived competency.

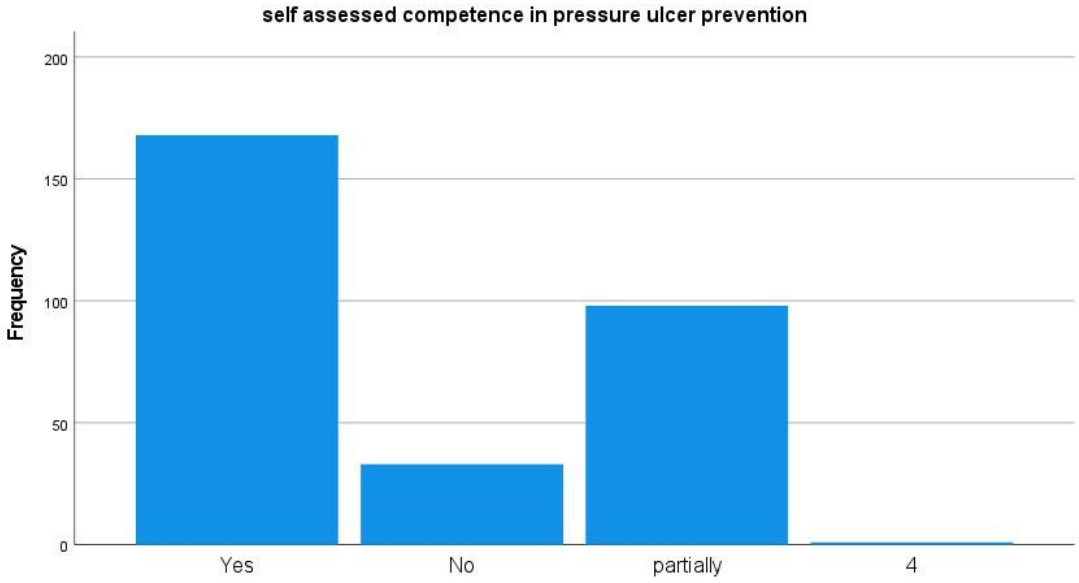

Figure 5: Self Assessed competence in pressure ulcer prevention

Table 6: Insuff_A_insuff_B, Insuff_c,insuff_D,Insuff_E,insuff_F

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	USE TO RISK ASSESMENT SCALE	51	17.0	17.0	17.0
	POISITION CHANG, FREQUENCY AND TECHNIQUES	111	37.0	37.0	54.0
	USE OF SURACES SUCH AS AIR MATTTRESSES,FOAM MATRESSES HEEL SUPPORTS	49	16.3	16.3	70.3
	USE OF CLEAN AND TIGHT BED LINENS	49	16.3	16.3	86.7
	PROTECTIVE SKIN CARE	23	7.7	7.7	94.3
	NUTRITIONAL SUPPORTS	17	5.7	5.7	100.0
	Total	300	100.0	100.0	

Analysis of the data indicates position changing frequency and techniques to be the most widespread practice since the percentage of the 300 participants who use it is 37.0, which corresponds to 111 individuals. Moreover, 17.0 percent (51 respondents) exercise risk assessment scales and 16.3 percent (49 respondents) utilize surfaces such as air mattresses and clean / tight bed linens in an even prevented manner. The other lists, such as protective skin care (7.7%, 23 participants) and nutritional supports (5.7%, 17 participants) refer to much less frequent yet still significant strategies of the group.

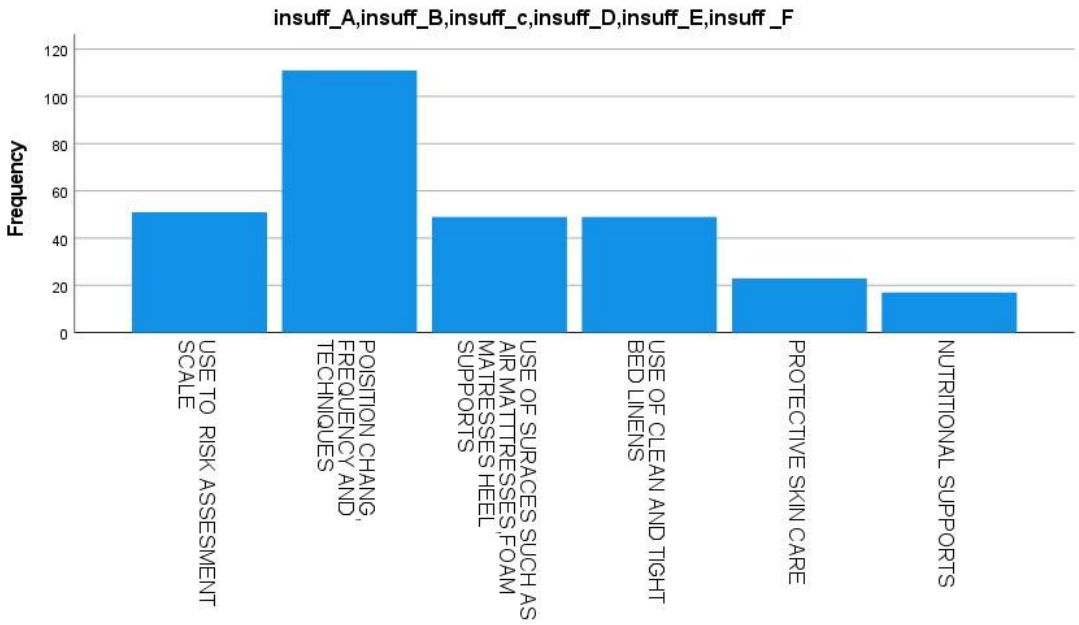

Figure 6: Insuff_A_insuff_B, Insuff_c,insuff_D,Insuff_E,insuff_F

Table-7: Encounter Ulcers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	almost never	72	24.0	24.0	24.0
	sometimes	189	63.0	63.0	87.0
	frequently	23	7.7	7.7	94.7
	almost always	15	5.0	5.0	99.7
	5	1	.3	.3	100.0
	Total	300	100.0	100.0	

The statistics indicate that the percentage of participants experiencing ulcers is 63.0 (189) that includes the 300 participants, which shows a wide spread occurrence. There is also a moderate range of frequency of encountering ulcers with 24.0 percent (72 participants) almost never, and 7.7 percent (23 participants) frequently shows. The rest of the 5.0 percent (15 participants) practically always see ulcers, 0.3 percent (1 participant), selects 5, which might be a mistake or an atypical case.

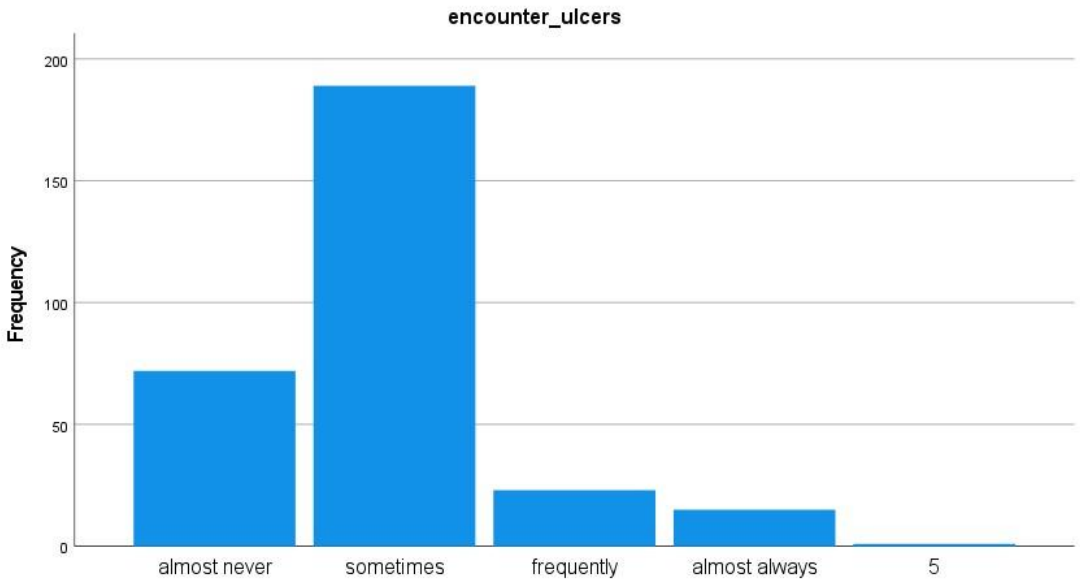

Figure 7: Encounter Ulcers

Table 8: Cared Ulcer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	153	51.0	51.0	51.0
	no	147	49.0	49.0	100.0
	Total	300	100.0	100.0	

The returns reveal that out of 300 people involved in the research a significant number of 51.0 percent or 153 people have a card ulcer. Conversely, 49.0 percent (147 subjects) lack card ulcer, which represents an almost balanced proportion. Such tight proximity implies that a large proportion of the group is exposed, and in that case, further investigation needs to be done.

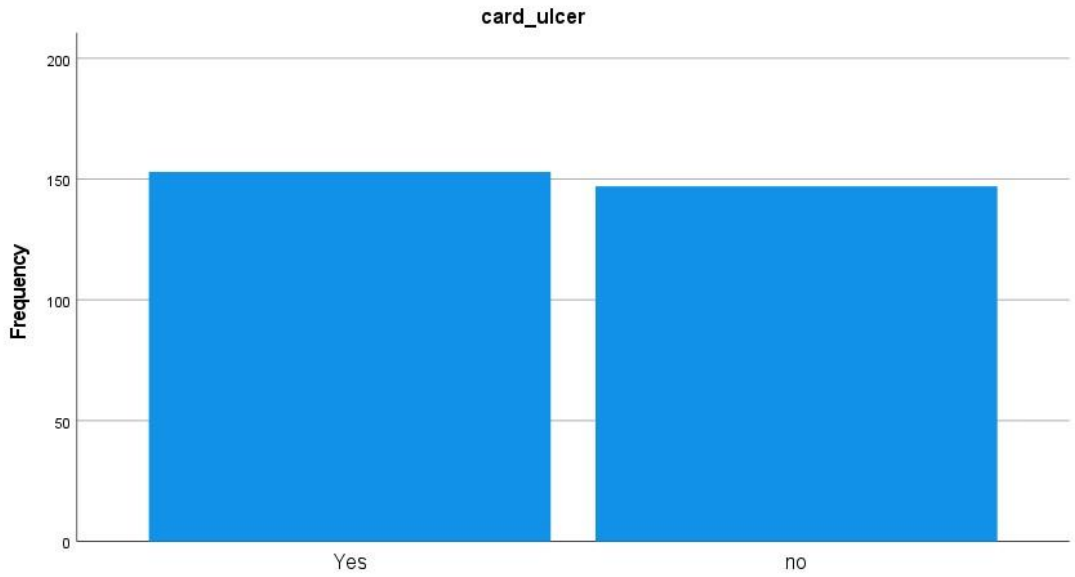

Figure 8: Cared Ulcer

Table 9: Ulcer training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	184	61.3	61.3	61.3
	no	114	38.0	38.0	99.3
	3	1	.3	.3	99.7
	5	1	.3	.3	100.0
	Total	300	100.0	100.0	

The data indicates that 61.3 percent out of the 300 respondents or 184 respondents have been trained in ulcers hence there is a major presence of training. On the contrary, 38.0 percent (114 participants) have not received the training, and single reply of 0.3 percent to each option 3 and 5 (1 participant each) can serve as outliers or mistakes. This has a large majority having training and should be clarified upon the minor categories.

Figure 9: Ulcer training

Table 10: Want Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	220	73.3	73.3	73.3
	no	78	26.0	26.0	99.3
	3	2	.7	.7	100.0
	Total	300	100.0	100.0	

The data indicates that 73.3% of the 300 participants, or 220 individuals, want training, reflecting a strong desire for education. In contrast, 26.0% (78 participants) do not want training, while the two responses of 0.7% for option 3 (2 participants) may indicate outliers or errors. This distribution suggests a clear majority interested in training, with the minor category needing further exploration.

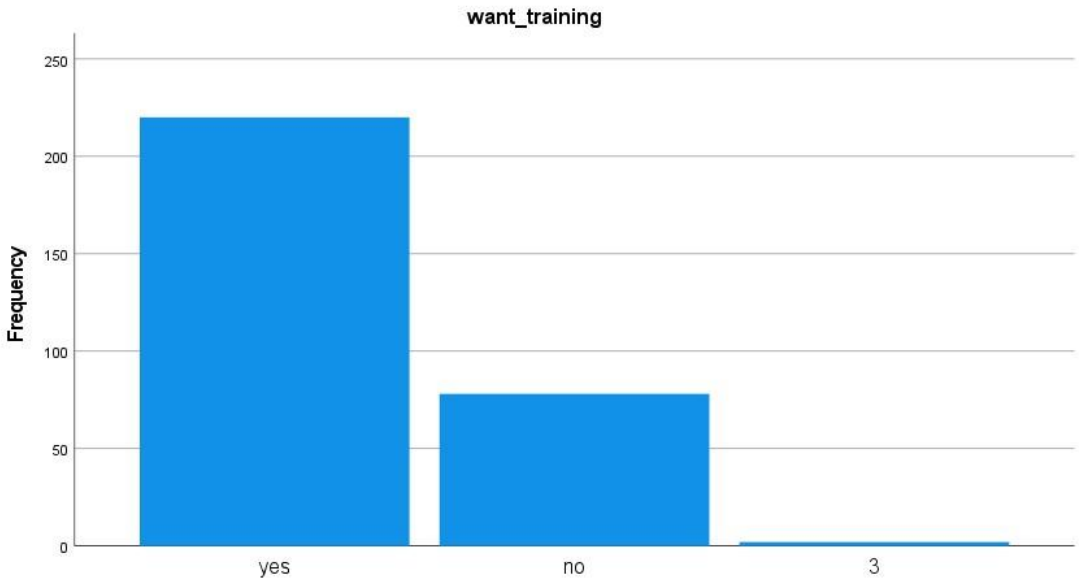

Figure 10: Want Training

Table 11: Practice Sufficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	130	43.3	43.3	43.3
	no	51	17.0	17.0	60.3
	partially	118	39.3	39.3	99.7
	4	1	.3	.3	100.0
	Total	300	100.0	100.0	

The statistics show that 43.3 percent of the total 300 respondents i.e. 130 people think that they are doing well in practice which is a moderate level of trust. In comparison, an impressive majority of 17.0 (51 participants) do not think that their practice is adequate, and 39.3 (118 participants) consider it half-decent. The only answer of 0.3 percent with option 4 (1 respondent) could be interpreted as out of such results or any error, which must be explained further.

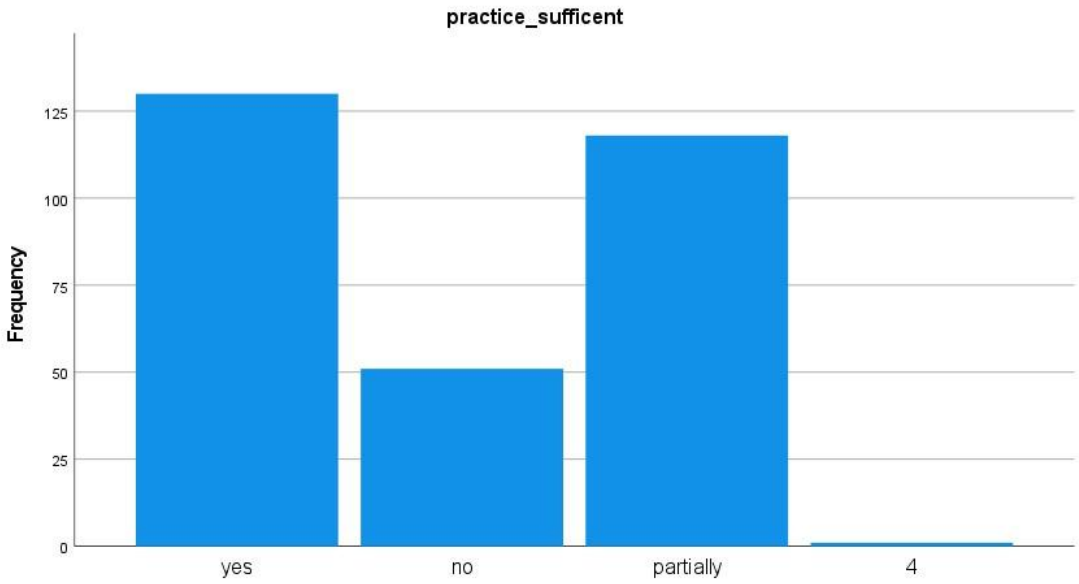

Figure 11: Practice Sufficient

Table 12: Barrier_A, Barrier_B, Barrier_C, Barrier_D, Barrier_E, Barrier_F

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	INSUFFICENT NUMBER OF NURSES/STAFFF	67	22.3	22.3	22.3
	LACK OF INFORMATION	113	37.7	37.7	60.0
	COMMUNICTION PROBLEM(WITH THE PTIENT AND RELATIVES).	36	12.0	12.0	72.0
	THE WORK LOAD OF NURSES IS HIGH	42	14.0	14.0	86.0
	LACK OOF EQUIPMENT AND MATERIAL FOR PRESSURE REDUCTION	29	9.7	9.7	95.7
	LACK OF WRITTEN STANDARD/PROTOCOLS FOR PRESSURE UKCEER PREVENTION	13	4.3	4.3	100.0
	Total	300	100.0	100.0	

According to data, the most reported problem (37.7% of the participants i.e., 113) is that of a lack of information being a barrier. Also, 22.3% (67

participants) refer to the lack of sufficient number of nurses/staff, and 14.0% (42 participants) to the high workload, which means that the problem of staffing is also quite serious. The rest of the groups, such as communication issues (12.0% and 36 participants) and other related issues, such as equipment and protocol issues (4.3-9.7) indicate a diverse barrier to the group.

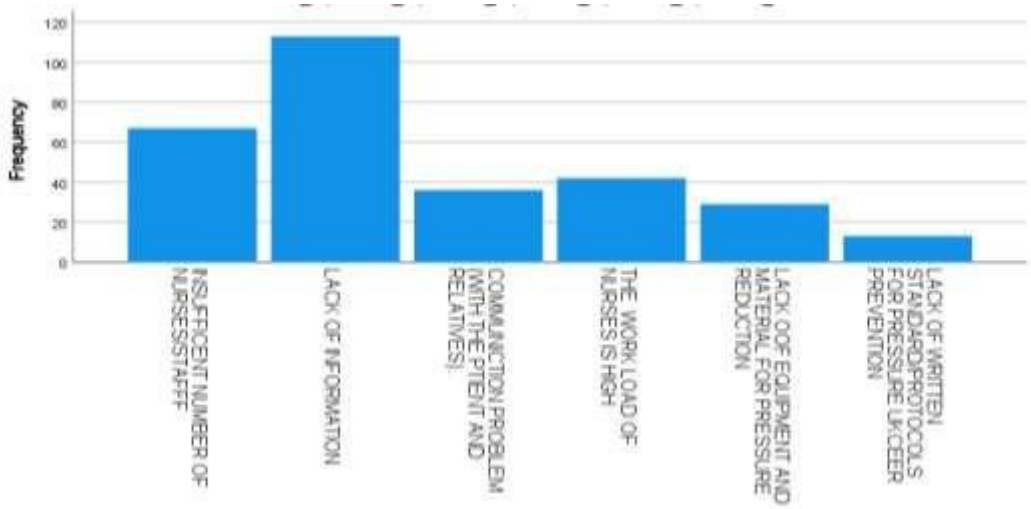

Figure 12: Barrier_A, Barrier_B, Barrier_C, Barrier_D, Barrier_E, Barrier_F

Table13: Frequency and Percentage Distribution of Institutes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Farkhana institute of nursing	57	19.0	19.0	19.0
	kpims	102	34.0	34.0	53.0
	rufaida college of nursing	74	24.7	24.7	77.7
	ahmed institute	67	22.3	22.3	100.0
	Total	300	100.0	100.0	

The samples of the study were 300 undergraduate nursing students in four nursing colleges in Peshawar who followed Islamic faith. Most of the students participated in the research, and the biggest percentage is 34.0%, which equals 102 students coming from the KPIMS, more than a third. The Farkhanda Institute of Nursing produced the least number of participants with 57 students which constitutes 19.0% of the sample size. Rufaida college of nursing had 74, 24.7%, and this constituted the second largest group whereas the Ahmed institute recorded 67 which amounted to 22. 3%. This heterogeneous sample of students in different academic environments

increases the ability of the study to analyze variation in the knowledge and opinion about the prevention of pressure injuries between institutions.

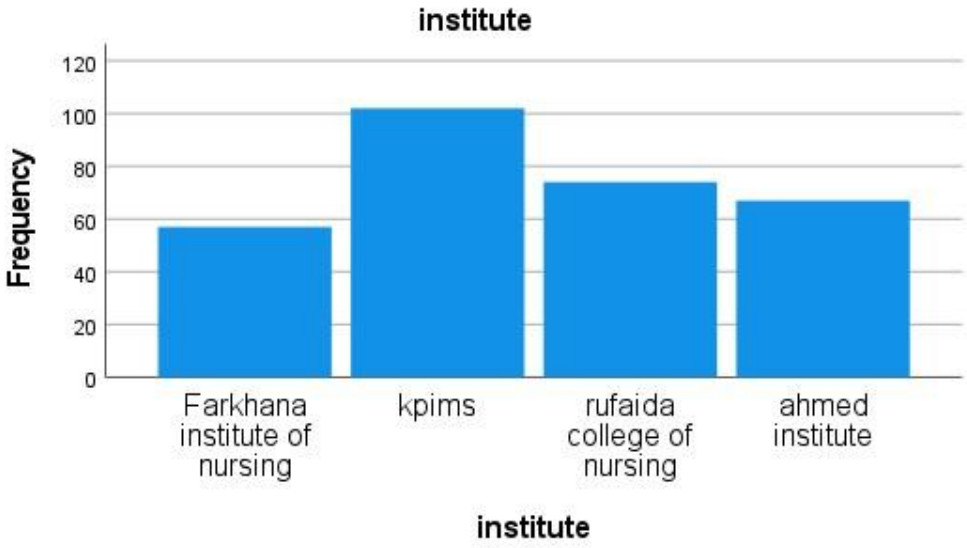

Figure 13: Frequency and Percentage Distribution of Institutes

Table 14: Mean ± SD level of knowledge and attitudes by Demographic Variables with Statistical Test Results (n = 300)

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Descriptive Statistics

	N	Sum	Mean	Std. Deviation
age of the respondents	300	300	1.00	.000
gender of the respondents	300	372	1.24	.428
semester in which the participants are studying	300	719	2.40	.914
recevied pressure ulcer training in curriculm	300	361	1.20	.443
self assessed competence in pressure ulcer prevention	300	532	1.77	.923
insuff_A,insuff_B,insuff_c, insuff_D,insuff_E,insuff _F	300	833	2.78	1.410
encounter_ulcers	300	584	1.95	.739
card_ulcer	300	447	1.49	.501
ulcer_training	300	420	1.40	.536
want_training	300	382	1.27	.461
practice_sufficent	300	590	1.97	.917
barrier_A,barrier_B, barrier_C,barrier_D, barrier_E,barrier_F	300	792	2.64	1.437
Valid N (listwise)	300			

The descriptive statistics was reflected that the average age of the 300 respondents is 1.00, with the standard deviation of 0.00, which implies the same age group. The gender skew is even with a mean of 1.24 and a standard deviation of 0.428 with the semester in which the participants are doing the study also being even with a mean of 2.40 and a standard deviation of 0.914. The rest of the variables that are received pressure ulcer training (mean 1.20, std. dev.0.443) and self-assessed competence (mean 1.77, std. dev. 0.923), exhibit different tendencies of centrality and dispersion within the group.

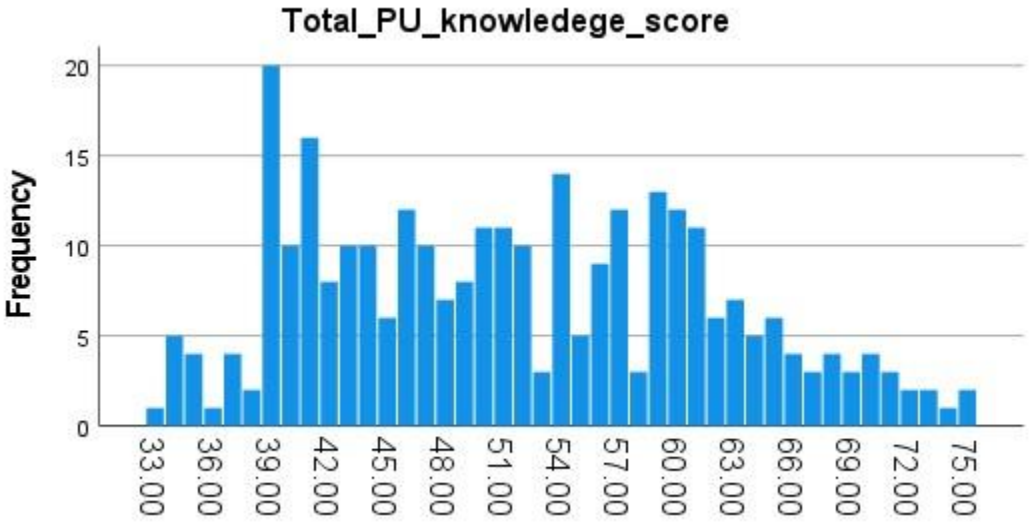

Figure 14: Total PU Knowledge Score

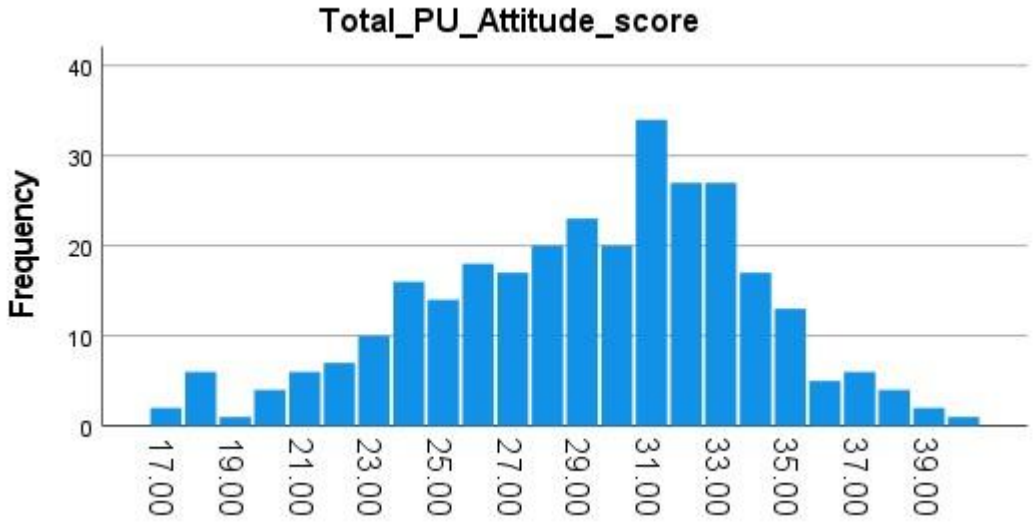

Figure 15: Total PU Attitude Score

Discussion

The sample in this study included 300 nursing students aged between 25–30 years, resulting in a relatively homogeneous age group with no significant variability due to age. However, this also limits the generalizability of findings to other age groups. The gender distribution was highly imbalanced, with 76% male and 24% female participants, which may have influenced perceptions, attitudes, and reported competence in prevention practices. Similar gender disparities have also been reported in South Asian studies (Saleem et al., 2024).

Most participants were in the middle stages of their studies, with 39% in the 6th semester and 31.3% in the 7th semester, suggesting that their knowledge and confidence may reflect partial curricular exposure rather than full professional competence. About 81% reported receiving training on pressure ulcer prevention, while 18% had not, indicating generally good exposure but still some inconsistency in standardized training. Comparable findings from Lahore show that although nurses often possess theoretical knowledge, practical application remains inadequate (Saleem et al., 2024). Self-perceived competence was generally positive, with 56% considering themselves competent, 32.7% slightly competent, and only 11% not competent, which aligns with findings from Ethiopia where awareness was moderate but practices were inconsistent (Jibril et al., 2021; Tesfaye et al., 2019).

In terms of preventive practices, repositioning was the most commonly reported method (37%), followed by risk assessment scales (17%) and surface management such as air mattresses (16.3%). Less frequently used measures included skin protection (7.7%) and nutritional support (5.7%), indicating a more task-oriented rather than holistic approach. Reported barriers included lack of information (37.7%), inadequate staffing (22.3%), workload pressure (14%), and equipment or protocol gaps (4.3–9.7%), findings consistent with studies across Asia and Africa (Jibril et al., 2021; Tesfaye et al., 2019).

Overall knowledge levels were relatively high, with 81% reporting prior training on pressure ulcer prevention, suggesting that most students had basic theoretical exposure. However, 18% had no formal training and 0.7% were unclear, indicating gaps in standardized education. Despite good theoretical exposure, implementation remained uneven, with stronger emphasis on repositioning compared to evidence-based tools like risk assessment scales and specialized support surfaces. Holistic interventions such as skin care and nutritional support were least practiced, reflecting fragmented rather than comprehensive knowledge. This pattern is consistent with findings from Ethiopia and other developing countries, where theoretical awareness does not always translate into practice (Tesfaye et al., 2019; Jibril et al., 2021). Similar trends have also been reported in Pakistan and Iran, where knowledge exists but clinical application remains limited (Hajhosseini et al., 2022), highlighting the need for simulation-based training, mentorship, and competency assessment.

Attitudes toward pressure ulcer prevention were generally positive. A majority (73.3%) expressed willingness to receive additional training, reflecting strong motivation for professional development and awareness of the importance of preventive care. This aligns with studies from developing countries where students recognize the importance of improving competence (Haj Hosseini et al., 2022). However, 26% did not desire further training, which may indicate

overconfidence or perceived adequacy of current knowledge, both of which can hinder skill development (Tesfaye et al., 2019). Despite institutional challenges such as workload and limited resources, the overall positive attitude suggests strong potential for educational interventions. Since attitude influences practice, these findings support the need for simulation-based learning and structured mentorship to strengthen skill development.

The findings are consistent with previous studies showing that nursing students generally possess adequate theoretical knowledge but demonstrate inconsistent preventive practices. Similar gender imbalance has been reported in South Asian contexts (Saleem et al., 2024), and mid-level semester representation suggests partial curriculum exposure influencing competence. Training coverage of 81% aligns with findings from Pakistan and Iran, while gaps in practical application resemble those reported in Ethiopia and other low-resource settings (Tesfaye et al., 2019; Haj Hosseini et al., 2022).

In contrast, some studies report much lower training levels; for example, over 90% of nurses in Ethiopia had not received formal training in pressure ulcer prevention (Tesfaye et al., 2019). Differences are also seen in attitudes, as this study found high willingness for further training (73.3%), whereas other studies report limited interest due to workload and institutional barriers. Although repositioning was the most common practice (37%), the use of standardized risk assessment tools remained moderate (17%) compared to higher adherence in developed countries, where structured protocols are more commonly used (Haj Hosseini et al., 2022). This indicates a gap between theoretical knowledge and evidence-based clinical practice.

Despite relatively good training coverage, gaps in practical implementation, limited use of standardized tools, and systemic barriers such as staffing shortages and workload indicate the need for curriculum strengthening and better integration of evidence-based practice.

To improve outcomes, curriculum developers should enhance gender balance, encourage participation across all semesters, and emphasize evidence-based practices such as formal risk assessment, skin protection, nutritional support, and proper documentation. Systemic issues such as workload, staffing shortages, and lack of equipment must also be addressed to ensure effective translation of knowledge into practice.

This study has several limitations. It was conducted in selected private nursing colleges in Peshawar, limiting generalizability. Self-reported data may introduce social desirability bias, potentially overestimating knowledge and attitudes. Its cross-sectional design limits causal interpretation between training and competence. Additionally, factors such as prior clinical experience,

mentorship, and institutional differences were not considered. The absence of direct observation of clinical skills further limits assessment of actual practice.

In conclusion, the study provides important insight into nursing students' knowledge, attitudes, and practices regarding pressure injury prevention. While attitudes are generally positive and knowledge is moderately high, a clear gap remains between theoretical understanding and clinical application. Strengthening both theoretical instruction and practical training is essential. Standardizing nursing curricula and ensuring consistent training across institutions can help bridge this gap and ultimately improve patient care outcomes.

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