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Patient Safety perception among Undergraduate Nursing Students at Palestine Ahliya University

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Abstract: ***The patient safety has aided in a decrease of negative events linked to healthcare; data shows that nursing education integrate these concerns. This may be an obstacle for students from attaining scientific knowledge and shaping abilities to ensure patient safety. The research aims to identify the perceptions of undergraduate nursing students that they acquired during their training linked to patient safety problems at Palestine Ahliya university. A cross-sectional study was conducted at PAU in Bethlehem, Palestine. The method was a convenience sampling strategy. The data collection used an online questionnaire from March 1 to April 15, 2025. The data analysis done by using the SPSS version 23. The results shows that the nursing students at PAU perceive patient safety more positively in classroom settings in comparison to clinical settings, with higher average across all domains ($p < 0.001$). Gender differences were observed in clinical safety and communication, where male students reported higher. In the other hand, no significant gender differences were found in broader aspects of patient safety ($p = 0.80$). Age also had minimal influence on students' perspectives. The study focuses on the differences between classroom learning and clinical experiences, which emphasizes on the need to fill this gap by improving practical training. While male students reported greater confidence in clinical safety and communication, patient safety concepts were equally known across genders. These data suggests that educational programs should focus on enhancing clinical experiences.***

Keywords: Cross-Sectional Study, Nurse, Patient Safety.

1. Introduction

WHO revealed that adverse events are associated with problems in clinical practice, it's products, procedures, and system [1]. Worldwide, there are an estimated 134 million adverse events in hospitals each year, leading to a high annual mortality rate, these events also cause a huge economic burden [2]. Patient safety is defined as the absence of entirely avoidable injury to a person during the provision of health services and the reduction of the risk of unnecessary threat within an acceptable range [1]. A culture of safety in healthcare institutions has become an indispensable requirement for healthcare providers during the delivery of healthcare [3]. A culture of safety should be a fundamental component of the organizational culture of healthcare services. Establishing it requires an understanding of the collective behavior of the institute. The perceived experience with patient safety will have implications and changes in attitudes towards care specially among health and medical college students who will later become healthcare providers in healthcare institutions [4]. Nurses are the largest healthcare providers and also spend more time with patients and interact more with them than other providers. Most of the procedures are performed by nurses, making them prominent in ensuring patient safety. Nursing students are the nurses of the future who will play this role in patient care and safety [5]

Patient safety is a fundamental element of quality healthcare, yet there is a significant gap in understanding how patient safety knowledge proceeds with nursing students during their educational tour. Because patient safety lowers errors, nursing organizations have been including nursing management skills into their curricula. The World Health Organization (2014) endorsed this intervention, which requires patient safety to be taught in nursing and other healthcare courses. Nursing college students must therefore learn about and become competent in-patient safety since it aids in patients' recuperation, avoids unintended situations, and has been a global issue for academic and healthcare institutions [6].

In short, it is essential for all undergraduate students in any medical specialty to acquire knowledge of patient safety. Beginning with nursing students, patient safety has become an integral part of their curriculum, and they receive motivation-based training to enable them to provide safe care when dealing with real patients [7].

1.1 Problem statement:

The safety of patients remains a fundamental healthcare quality requirement yet most difficulties lie within low- and middle-income countries (LMICs). The safety condition within these healthcare settings poses an alarming threat since adverse events affect approximately 8% of all hospital admissions. The necessity for complete patient safety training must be addressed quickly because healthcare professionals especially nurses need to lead patient care while protecting patients from harm [8].

Recent research found that patient safety competence reduces the number of preventable adverse events which includes medication errors alongside surgical site infections as well as urinary tract infections and ventilator-associated pneumonia [9].

Patient safety competence and education delivered in nursing curricula creates verifiable benefits through better safety culture development and reduced negative events which results in superior treatment results. Research has not provided adequate clarity about how undergraduate nursing students view their patient safety competence and how well their educational system ready them for professional nursing work [10] Limited resources combined with system-level challenges affect the quality of education regarding patient safety that takes place in Palestine. Undergraduate nursing students in Ahliya University need their views on patient safety competence evaluated because nurses function as foundational elements in maintaining patient safety. The assessment results will help discover exact areas for improvement regarding knowledge gaps which will guide nursing education enhancements that produce safer healthcare settings for patients.

1.2 Significance of the Study:

The findings of this study are to clarify the patient safety competency of nursing students, as this assessment aid becomes essential for creating competent healthcare professionals who will face essential tasks in healthcare facilities.

The results of this study will reflect on the culture of patient safety among nursing students (future nurses) to ensure the provision of high-quality healthcare services, and prevent negative effects, including morbidity and mortality.

- Through the research results, the knowledge acquisition processes related to patient safety for undergraduate nursing students will be evaluated, and the good aspects and missing parts within the current framework will be revealed.
- The results of this study will reveal whether there are discrepancies between theoretical knowledge and practical application in clinical settings regarding the principles and fundamentals of patient safety among nursing students.

1.3 Objectives of the study

The main aims of our current study aim to determine the perception of patient safety competence among nursing students at Ahliya university.

- To determine if there are a significance differences between the perception of patient safety competence and sociodemographic characteristics among nursing students at Ahliya university.
- To determine if there are a significance differences between the perception of patient safety competence and academic characteristics among nursing students at Ahliya university.
- To determine if there are significance differences between learning in the classroom and learning in the clinical setting regarding culture of safety and overall specific patient safety content areas.

1.4 Research questions:

- What is the perception of patient safety competence among nursing students at Ahliya university?
- Are there a significance differences between the perception of patient safety competence and sociodemographic characteristics among nursing students at Ahliya university?
- Are there a significance differences between the perception of patient safety competence and academic characteristics among nursing students at Ahliya university?
- Are there significance differences between learning in the classroom and learning in the clinical setting regarding culture of safety and overall specific patient safety content areas?

1.5 Variables of the study:

Independent variables: in this study independent variables are sociodemographic characteristics (age, gender), academic characteristics (academic year, grade point average GPA), and clinical training experiences (students have or do not have experience).

Dependent's variables: perception of patient safety competence among nursing students.

1.6 Research Hypothesis:

- H1: There are significant differences in nursing students' perceptions of PS competence
- between classroom and clinical settings at a significance level of 0.05.
- H1: There are significant differences in PS competence perceptions among students at
- different stages of their education at a significance level of 0.05.
- H1: Prior clinical experience does significantly impact students' perceptions of PS
- competence at a significance level of 0.05.
- H1: Specific patient safety (PS) training in clinical settings has significant effect on the
- competence of nursing students at a significance level of 0.05.

2. Literature Review

In this section, we will present previous studies that addressed the perception of patient safety among nursing students and review the results of these studies. We searched several platforms, including Google Scholar, PubMed, and Academia. We used the keywords 'patient safety,' 'nursing students,' and 'perception patient safety competency.

[11] A research to study how educational patient safety training affected fourth-year nursing students' understanding of safety competencies. A post-test-only nonequivalent group design with quasi-experimental features formed the research methodology. The

training program accrued four hours to teach 127 students separating them as intervention (n=63) and control group (n=64) based on the World Health Organization's patient safety guide. Students from the University of Jordan School of Nursing enrolled in future intensive courses served as participants at the time of recruitment. The results revealed a significant difference in the mean safety perception scores between the intervention group (M=4.6, SD=0.41) and the control group (M=3.7, SD=0.69), with t (118) =8.4, $p<0.001$, indicating the positive impact of the training program. Notably, all participants had attended

leadership and management courses (both theoretical and practical), but none had received prior patient safety training before this study. Additionally, no significant differences were found between patient safety competence scores and demographic factors ($p<0.05$). The authors concluded that patient safety education is important for strengthening healthcare systems. A study aimed to examine the perception of nursing intern students on patient safety competencies [12].

A study carried out a pilot study among undergraduate nursing students in Czech Republic to explore the perception of them toward PS competence using a valid questionnaire [13], the findings of this study showed that among 145 nursing students the confidence about two site (academic and clinical) managing safety risk (M: 3.85) while in academic setting was 77.3% , in clinical setting was 72,40%, about safety culture confidence was 56.2% (M: 3.54). Overall, in this study reported that there is a significant difference between some PS competence and sociodemographic characteristics (managing safety risk p=0.003, recognize and respond to reduce harm P= 0.000, and culture of safety P= 0.040). In United Kingdom a cross-sectional study conducted a to evaluate a perception of PSC among 250 nursing students in nursing schools in London by using a H-PEPSS survey [4],the study revealed that, the respondents had good high score confidence in academic learning at class and at clinical training with mean more than 4/5 in all PS dimension Clinical Safety (Classroom: M = 4.40; Clinical Environment: M = 4.40) and Effective Communication (Classroom: M = 4.33; Clinical Environment: M = 4.30). Overall, students felt they gained greater confidence in almost all dimensions in clinical settings than in classrooms.

For assessing perception PSC among Saudi nursing students, [6] A cross sectional study conducted from six different nursing colleges, data were gathered from 829 students by questionnaire. A total of 61.5% to 76.5% students agreed with the statements in the Health Professional Education in Patient Safety Survey. The dimension "understanding human and environmental factors" received the most positive ratings among participants when measuring competency (76.5%). On the other hand, "working in teams" received the lowest scores (61.5%). Male medical students together with medical interns showed statistically better "working in teams" competence when compared to female medical students who in turn showed higher competence compared to both their third- and fourth-year counterparts. Perceived patient safety competence shows variations through gender and students' academic level and educational institutions as evidenced by the research results which point to a specific need for enhancing team skills and curriculum elements that address these areas.

The research analyzed undergraduate nursing student expertise in patient safety and their self-perception of clinical/teaching environment competence [14]. The research executed a non-experimental descriptive design at two nursing colleges in Bengaluru (India) employing purposive sampling for a total of 369 students. The authors compared perceived competence of students between theoretical and clinical settings by using (H-PEPSS). The study results showed that students evaluated their patient safety competencies higher in classroom environments (83.48% ± 16.21) versus clinical environments (81.36% ± 20.85). A paired t-test ($t367 = 1.54$, $p = .001$) demonstrated these statistically significant differences. Students showed a positive correlation between their knowledge acquisition and their perceptions of competence throughout theoretical and clinical practice components ($r = 0.55$, $p = .01$ and $r = 0.048$, $p = .02$). Students need educational experiences that match clinical situations to develop their patient safety abilities effectively and eliminate current learning deficiencies.

3. Methodology

3.1 Study Design:

Based on the nature of the study and the objectives, The researcher used the descriptive cross-sectional design to assess the perceptions of PSC among undergraduate nursing students at Ahliya University. This design is useful in describing research variables because they occur naturally without the intervention of the researcher and it allows us to describe and document a large amount of data about all factors contributing to the quality of care in a short time, also it cheap and economical.

3.2 Setting of the study:

The study was conducted at faculty of nursing at Ahliya University (Bethlehem).

3.3 Study Population:

The population of the study included undergraduate nursing students at Ahliya University.

3.4 Study Period:

The study was conducted in the second semester of the researchers' fourth academic year, from March 1 to April 15, 2025

3.5 Sample size and sampling Technique

The sample of the study is non-probability, convenience sampling method was applied to select the sample of the study which includes undergraduate nursing students. The target population for this study consisted of nursing students at Palestine Ahliya University. A total of 151 students participated by completing an online questionnaire.

3.6 Eligibility

Inclusion criteria: Nursing students from Palestine Ahliya University from the first year, to the fourth year. Exclusion criteria: Postgraduate students, and incomplete responses.

3.7 Study Tool:

For data collection from respondents to researchers utilized a questionnaire which consist of two sections

First section about sociodemographic and academic characteristics for nursing students (Age, Gender, academic year, GPA, ….), and second one for investigating the perception of nursing student about patient safety competence we used a valid questionnaire Health Professional Education in Patient Safety Survey (H-PEPSS)

The H-PEPSS is a tool uses to measure healthcare

providers or professionals' perceptions of PSC at entry into practice. Ginsburg et al., 2011). This tool consists of three sections:

Section one: Learning about specific PS content areas it asks about 7 areas that have to do with keeping patients safe. It evaluates the extent to which student feel confident about what she learned in each of these areas both in classroom and clinical practice setting experiences.

These seven areas include: clinical safety, culture of safety, working in teams with other health professionals, communicating effectively, managing safety risks, understanding human and environmental factors, recognize, respond to and disclose adverse events and close calls. The score of each item ranges from 1 (strongly disagree) to 5 (strongly agree) in both class room and clinical setting.

Section two: How broader patient safety issues are addressed in health professional education. The score of each item ranges from 1 (strongly disagree) to 5 (strongly agree)

Section three: Comfort speaking up about patient safety. The score of each item ranges from 1 (strongly disagree) to 5 (strongly agree).

3.8 Validity and Reliability:

3.8.1 Validity:

The questionnaire was distributed to a group of experts in research methodology to examine the validity, clarity, and appropriateness of its contents, to determine whether the items in the questionnaire were relevant and appropriate to the purpose of the study, and whether their comments were taken into consideration.

3.8.2 Reliability:

For identify the degree of consistency for tolls that used for data collection from nursing students, the researcher used Cronbach's alpha coefficient to estimate the reliability coefficients of the study instrument, and it was (0.95)

3.9 Pilot study:

A pilot study was conducted on 10% of the total sample size (n = 10) before the start of the actual data collection process and distributed to nursing students at Ahlia University before testing to determine the actual time required to complete the questionnaire, identify areas of ambiguity, and point out weaknesses in the wording and translation into Arabic.

3.10 Statistical analysis and data entry:

The statistical software for social sciences (SPSS) version 22 was used to input data into the computer. Data entry, data cleaning, and questionnaire coding were the steps in the data analysis process. Frequency table reviews and questionnaire selection by random were used to sanitize the data and guarantee data input accuracy.

Frequencies and descriptive data (mean, ranges, percentages, and standard deviations) were used in the statistical analysis to evaluate the research variables. To investigate differences between variables, use a one-way ANOVA and a t-test.

3.11 Ethical consideration:

Approval to conduct the study was obtained from the administration of the College of Allied Medical Sciences at Palestine Ahliya University. Every respondent, from the nursing students, signed a consent form before participating in the study, where the purpose of the study was explained and all information was for the purpose of scientific research only, and the participant could withdraw from the study at any time.

4. Results

This section presents the results of statistical data analysis, including participant descriptions and nursing student perspectives on patient safety competency at Palestine Ahlyia University.

In this study, 151 students studying nursing from Palestine Ahlyia University (PAU) completed the questionnaire. Table 1 presents data regarding the demographic characteristics of the respondents. Females were the main proportion (64.9%) of participants, with the majority aged between 18 and 22 years (M = 21.14 ± 1.54). The academic distribution is rather even, with a minor superiority in the fourth year (65.6%). Table 1 provides more information concerning the sociodemographic factors.

Table 1: The demographic characteristic of the study sample (N=151)

Variables		Frequency	Percentage (%)
Gender	Male	53	35.1
	Female	98	64.9
Mean M±SD	21.3±1.50		
Academic Year	1st Year	4	2.6
	2nd Year	27	17.9
	3rd Year	21	13.9
	4th Year	99	65.6
Had training in a clinical setting before	Yes	98	64.9
	No	53	35.1

Table 2 presents students' perspectives on multiple components of patient safety across the classroom and clinical settings. The mean scores across every aspect remain regularly higher in the classroom relative to the clinical setting, suggesting that students view patient safety procedures more positively in the classroom. The SD show a comparable range of variance across the two settings.The paired sample t test results and p-values show differences ($p < 0.001$) between the classroom and clinical settings. In "Clinical settings" the classroom mean (3.4983) exceeds the clinical mean (3.1772), leading to test statistic of 4.148.

Table 2: Students' perspectives in patient safety in the classroom and clinical practice.

	Domain	Mean	Std. Deviation	Test statistics	p-value
Clinical Safety	Classroom	3.4983	1.32	4.148	<0.001
	Clinical	3.1772	1.33		
Culture of safety	Classroom	3.3642	1.21	4.681	<0.001
	Clinical	3.0331	1.22		
Working in teams	Classroom	3.2831	1.20	3.477	<0.001
	Clinical	2.996	1.21		
Communicating effectively	Classroom	3.4304	1.23	4.833	<0.001
	Clinical	3.0618	1.29		
Manage Risk	Classroom	3.3730	1.22	3.875	<0.001
	Clinical	3.0618	1.24		
Human and environmental factors	Classroom	3.3885	1.23	4.383	<0.001
	Clinical	3.0596	1.27		

Overall Scale	Classroom	3.3896	1.16	4.914	<0.001
	Clinical	3.0649	1.19		

The results in table 3 shows that patient safety is addressed in health professional education, with a mean score of (M=3.284) and a standard deviation of (SD=0.8415). The mean value indicates that, on average, participants perceive that patient safety are covered in moderate average. The SD shows a moderate spread in responses, which means variation in perceptions between nursing students at PAU. This variability maybe due differences in educational programs or institutional attention toward patient safety.

Table 3: Summary of Patient Safety Issues Covered in Health Education

Scale	**Mean**	Std. Deviation
Broader aspects of patient safety	3.284	0.8415

The results in Table 4 compare students' perspectives on patient safety grouped by gender and age. The results are presented in three categories: classroom learning, clinical experience, and aspects of patient safety. Each category includes mean scores, standard deviations, independent sample t-test values, and correlation results.

The results show that there are no gender-related differences in students' views on patient safety topics in the classroom. Both male and female students had similar mean scores in areas including clinical safety, safety culture, working together, communicating, risk management and human and environmental factors. In addition, age does not affect student's perspectives in these areas, as shown by low Pearson correlation coefficients.

Differences between genders exist in clinical settings. Male students had higher scores in clinical safety ($p = 0.04$) and communication effectiveness ($p = 0.041$) relative to female students, indicating a potential greater confidence in these areas. Nevertheless, other areas did not display significant gender differences. Age had no impact on students' perceptions of clinical safety, as shown by the low correlation coefficients. Regarding the broader dimensions of patient safety, both genders had essentially equal views, with no significant variations identified ($p = 0.80$). This indicates that everyone shares understanding of the basic patient safety ideas, without regard to gender or age. Although classroom viewpoints are consistent, clinical experiences indicate minor gender differences in safety and communication, underscoring possible areas for educational enhancement.

Table 4: Gender and Age-Based Differences in Students' Perspectives on Patient Safety Domains in Classroom and Clinical Settings

	Gender						Age	
	Male		Female		Independent sample t test			
	Mean	SD	Mean	SD	T test	p-value	Pearson Correlation	p-value
Classroom								
Clinical Safety	3.66	1.30	3.41	1.34	1.11	0.27	0.04	0.64
Culture of safety	3.47	1.23	3.31	1.21	0.76	0.44	0.09	0.23
Working in teams	3.28	1.18	3.28	1.23	0.00	0.99	0.04	0.60
Communicating effectively	3.44	1.24	3.43	1.23	0.07	0.94	0.04	0.58
Manage Risk	3.41	1.24	3.35	1.23	0.26	0.79	0.05	0.56
Human and environmental factors	3.36	1.23	3.40	1.25	-0.2	0.83	0.08	0.33
Clinical								
Clinical Safety	3.47	1.26	3.02	1.35	2.02	**0.04**	0.08	0.08
Culture of safety	3.28	1.26	2.90	1.19	1.86	0.07	-0.004	0.32
Working in teams	3.17	1.17	2.90	1.24	1.26	0.21	0.01	0.96
Communicating effectively	3.34	1.25	2.91	1.30	1.96	**0.04**	0.06	0.91
Manage Risk	3.23	1.22	2.97	1.25	1.20	0.23	-0.01	0.47
Human and environmental factors	3.28	1.26	2.94	1.28	1.54	0.13	0.03	0.91
	Broader aspects							
broader aspects of patient safety	3.26	0.98	3.29	0.75	-0.2	0.80	0.003	0.93

5. Discussion

This section presents the results of the different variables as identified and explores the differences between the selected variables and discusses them in the literature review and previous studies.

A total of 151 nursing students at Ahliya University participated in the study where females made up 64.9% of the participants and the mean age came to 21.3 years (±1.5). Our subjects consisted mainly of fourth-year students who made up 65.6% of the total participants while 64.9% of students already received clinical experience training. The study showed that students rated patient safety competence in classroom education better than clinical experiences (conflicting results: 3.39–3.50 and 2.99–3.18) which produced significant differences across all parameters ($p < 0.001$). Male nursing students demonstrated superior skills in clinical safety and effective communication within their clinical training experience ($p = 0.04$ and $p = 0.041$ respectively). The results indicate that patient safety education within broader topics needs more attention ($M = 3.28$, $SD = 0.84$). The study revealed no substantial variations in the ages of students. The research findings show that healthcare institutions experience difficulty in converting theoretical information to practical clinical settings especially regarding teamwork and risk mitigation. This current study showed that students judged the competency of patient safety dimensions (clinical safety, culture of safety and communication) through classroom learning programs to surpass clinical education levels. Nursing students evaluated their patient safety competencies as superior in theoretical education compared to practical patient care [14]. Student confidence in managing security risks reached 77.3% when studying in academic environments while it stood at 72.4% in clinical environments [13].

Male students achieved superior results in clinical safety combined with effective communication according to the research findings and verification [6]. Student perceptions together with practical application of patient safety competencies seem to be influenced by gender differences in real-world clinical situations. Patient safety knowledge coverage was evaluated as moderate ($M=3.284$) according to this study [9] report similar levels of nurse-reported patient safety knowledge deficiencies. Both investigations demonstrate the necessity of fully incorporating patient safety teaching

into educational programs.

Similar to [11], this study found no significant correlation between age and patient safety competence perceptions, suggesting that age is not a determining factor in how students assess their readiness in this domain. The findings showed increased confidence levels in classrooms according to this study [14],[4] discovered different results with students feeling better at clinical sites. Student perceptions vary owing to both clinical training quality and institutional support as well as cultural elements that affect their perception.

The study results for "working in teams" dimension showed moderate performance [6] who found this to be the least scored aspect among Saudi nursing students. The dissimilarities could be explained by differences between institutions regarding their teamwork education or collaborative learning conditions. A patient safety training that lasted four hours [11] also it showed effectiveness in increasing student perceptions about safety but this current research did not assess specific training effects. Further study at Ahliya University should explore structured training programs because their advantages have been established in previous research.

6. Conclusion:

This study conducted for evaluating of 151 undergraduate nursing students at Ahliya University to achieve vital data. The results elaborate that student had better confidence inside the classroom (3.39–3.50 mean scores) while had uncertainty in clinical environments (2.99–3.18 mean scores). These findings displayed significant statistical differences ($p < 0.001$) across all safety width. Male students demonstrated better clinical safety competencies and effective communication abilities in clinical practice than female according to statistical findings ($p = 0.04$ & $p = 0.041$).

Furthermore, Patient safety topics received only moderate attention from students ($M = 3.28$, $SD = 0.84$). The research produces evidence which shows differences between classroom education and clinical situations.

7. Recommendations:

The following recommendations are planned to enhance patient safety competence between undergraduate nursing students:

- Curriculum intervention: Focus on modules about patient Safety in undergraduate nursing curriculum. These modules should emphasis on core principles.
- Simulation-Based Training Implementation: Develop structured simulation programs that reflect real clinical scenarios, to support students in practicing patient safety skills in controlled environment.
- Periodic Assessment of Student Perceptions: Conduct periodic evaluations to assess students' knowledge, attitudes, and perceptions about patient safety. To develop continually.

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