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Examining the status of patient safety education in students of health professions

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Abstract:

Patient safety means avoiding any harm to the patient while providing healthcare. Improving patient safety skills requires integrating them in health professions' education. This study aims to determine the status of patient safety education for the students of nursing, anesthesia, and operating room technology fields of Kashan University of Medical Sciences in 2023 using the Health Professional Education in Patient Safety Survey (HPEPSS). This study is a brief cross-sectional report using a census method for data collection. Descriptive and analytical statistics (independent *t*-test, Friedman, Mann–Whitney, and Kruskal–Wallis) were used for analysis, performed using SPSS version 22. The overall score of patient safety education in class (mean = 0.74) was significantly higher than the score of clinical setting (mean = 0.71) (*P* Value = 0.002). The highest score was related to the field of nursing (mean = 0.73), and the lowest score was related to the field of operating room (mean = 0.71). However, there is no significant difference between the total scores of patient safety education among students of different fields (*P* Value = 0.482). The general level of patient safety education in all three fields is in the "average" range (0.50 < Mean < 0.75). This study recommends emphasizing teamwork, patient-centered care, and creating clinical role models to enhance patient safety education.

Keywords:

Education, health professions, patient safety, quality improvement, student

Introduction

According to the definition of World Health Organization (WHO), patient safety means avoiding any harm and injury to the patient while providing health care and minimizing unnecessary harm.[1] Globally, 10% of hospitalized patients experience adverse events, with this figure rising to 18% in the Eastern Mediterranean, according to a report by Iran's Ministry of Health and Medical Education, medical errors are significantly prevalent in Iran, causing one fatality for every 150 hospital admissions.[2] Despite the challenges of maintaining patient safety, health systems must be committed to all patients and consider patient safety as a human rights issue.[1,3] Student education is one of the important dimensions that play a key role in promoting patient safety, patient safety education as a basic attitude should start from the beginning of students' education and then continue after graduation in the path of professional development.[4] Patient safety education is crucial for all health professions, especially for nurses, who spend the most time with patients.[5,6] The operating room, being one of the most hazardous hospital areas, generates 35% of hospital complaints. Therefore, operating room staff, particularly anesthesia and operating room staff, must be well-trained to prevent and manage errors, ensuring patient safety.[2,7] Although maintaining patient safety is one of the ethical expectations that are stated in the curriculum of all three fields of nursing, anesthesia, and operating room technology; however, there is not enough

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coherence and structure in educational methods and educational politicians have not reached a consensus for prioritizing different areas of patient safety.[4,5] There's a significant gap in understanding where and how patient safety should be effectively taught, as well as the extent of knowledge students need to acquire in this area.[8] This research examines the status of patient safety education and it is progression throughout students' academic journeys. The innovation of this study lies in answering the question of how patient safety education changes during students' education. Instructors and educational policymakers can use the results of this study to review and revise educational programs.

Materials and Methods

Study design and setting

This study is a brief report of a cross-sectional study, conducted in 2023, at Kashan University of Medical Sciences.

Study participants and sampling

The participants in this study were students studying nursing, anesthesia, and operating room technology, and census method was used to collect the data.

Data collection tools and technique

The inclusion criteria were completing at least one semester of clinical internship and willingness to cooperate, and the exclusion criteria were completing patient safety courses outside the academic curriculum and unwillingness to cooperate.

Data collection was done using Health Professional Education Patient Safety Survey (H-PEPSS). H-PEPSS is a self-reporting tool for evaluating education in the classroom and clinical environment, designed in 2012 by Ginsberg *et al*. Respondents rated these questions on a five-point Likert scale, from strongly agree (5) to strongly disagree (1). Notably, the option for "I do not know" was not used in the data analysis. The scores were then converted from the five-point Likert scale to 0-1 scores. To calculate the score for each dimension within the range of 0-1, negative items were reversed, and subsequently, the score of each dimension was divided by five due to the use of the five-point Likert scale.[9]

The validated Persian questionnaire was provided with the permission. The Content Validity Index (CVI) was 0.91, the Content Validity Ratio (CVR) ranged from 0.64 to 1, and Cronbach's alpha coefficient was 0.936 in the classroom and 0.949 in the clinical environment.[10]

Data analysis

The collected data were analyzed using SPSS version 22 software, using descriptive and analytical statistics (independent *t*-test, Friedman, Mann–Whitney, and Kruskal–Wallis).

Ethical considerations

After receiving the code of ethics from the Kashan University of Medical Sciences Ethics Committee (IR.KAUMS.NUHEPM.REC.1401.083), researchers coordinated with faculty and professors to explain the research objectives and obtain student consent before distributing printed questionnaires, ensuring that all data remained confidential and anonymous.

Results

The data of 310 students were included in the study, 179 individuals (57.7%) were female and 131 individuals (42.3%) were male. The average age of the participants in this study was 21.57 years. The number of students categorized by gender, major, and academic term is presented in Table 1.

The average total score for patient safety education in the classroom and clinical settings was 0.74 and 0.71, respectively. The overall education score in the classroom is significantly higher than the score in the clinical setting (*P* value of 0.002) [Table 2].

The domain of "Effective communication" received the highest score (0.78 in the classroom and 0.75 in the clinical), while the domain of "Teamwork" received the lowest score (0.71 in the classroom and 0.67 in the clinical). The mean score of clinical safety competency was 0.82 in the classroom and 0.79 in the clinical setting. In addition, the average scores for the second section of the questionnaire (How broader patient safety issues are addressed in health professional education) and the

Table 1: Students' frequency distribution based on contextual variable

	Variable	Number	Percent (%)
Gender	Female	179	57.7
	Male	131	42.3
	Nursing	204	65.8
	Anesthesia	55	17.7
	Operating room technology	51	16.5
Semester	3	35	11.3
	4	73	23.5
	5	40	12.9
	6	72	23.2
	7	29	9.4
	8	61	19.7

Table 2: Total score of patient safety

	Mean±SD	*P*
Total score in classroom	0.74±0.10	0.002*
Total score in clinical setting	0.71±0.11	

*Paired *t*-test

third section (Comfort speaking up about patient safety) were 0.68 and 0.58, respectively [Table 3].

Nursing achieved the highest scores in classroom education (mean ± SD = 0.75 ± 0.09) and, along with anesthesia, the highest scores in clinical education (mean ± SD = 0.71 ± 0.11). In contrast, operating room technology had the lowest scores in both classroom (mean ± SD = 0.72 ± 0.12) and clinical settings (mean ± SD = 0.70 ± 0.11). Overall, there was no significant difference in scores between classroom and clinical settings across the various fields of study (*P* Value > 0.05) [Table 4].

The change in patient safety education scores in the classroom during the study period is statistically significant for students majoring in Anesthesia and Nursing, with *P* values of 0.029 and 0.043, respectively. Notably, the trend in the field of Anesthesia is descending. In contrast, changes in classroom scores for students majoring in Operating Room Technology and clinical setting scores for all three fields are not significant (*P* value > 0.05) [Figure 1].

Table 3: The comparisons mean scores of H-PEPSS dimensions between classroom and clinical setting

		Mean±SD	*P**
Working In Teams with Other Health Professionals	Clinical setting	0.67±0.15	0.001>*
	Classroom	0.71±0.14	
Communicating Effectively	Clinical setting	0.75±0.16	0.001>*
	Classroom	0.78±0.16	
Managing Safety Risks	Clinical setting	0.73±0.15	0.001*
	Classroom	0.75±0.17	
Understanding Human and Environmental Factors	Clinical setting	0.71±0.18	0.001*
	Classroom	0.75±0.15	
Recognize, Respond to and Disclose Adverse Events and Close Calls	Clinical setting	0.70±0.15	0.001*
	Classroom	0.73±0.15	
Culture of safety	Clinical setting	0.69±0.17	0.001>*
	Classroom	0.72±0.17	

*Kruskal-Wallis

Table 4: Comparison of patient safety education scores in classroom and clinical setting by the field of study

	Classroom	*P*	Clinical setting	*P*
Anesthesia	0.74±0.09	0.245*	0.71±0.11	0.866*
Operating room technology	0.72±0.12		0.70±0.11	
Nursing	0.75±0.10		0.71±0.11	

*Kruskal–Wallis

Discussion

The results showed that the overall patient safety education score is at a moderate level, whereas in some similar studies, students reported higher scores, indicating a better state of patient safety education in other countries.[11,12] Some studies, however, reported lower scores compared with this study, reflecting weaker patient safety education in those cases.[2,13]

According to the results, there was a significant difference between the total score of patient safety education in the classroom and clinical setting, and the classroom score was higher than clinical setting, which was in line with other studies.[2,14] According to the literature review, it can be concluded that despite having a strong theoretical base, students do not have enough skills in clinical environments.[15] Bedside training occurs in a complex environment with challenges like ineffective communication, insufficient preparation, and uncontrolled emotional reactions. Selecting an educational method aligned with these goals is the first step in overcoming these challenges.[16]

Among the areas of patient safety, the highest score belonged to the "communicating effectively" area, which was in line with other studies.[2,12,17] Since effective communication is an essential element in interacting with the patient, and the lack of it is considered one of the main causes threatening the patient's safety, it is necessary that its training should be prioritized in all educational centers related to health sciences.[5]

Teamwork is one of the most important pillars of patient safety, and in this study, it received the lowest score. Studies conducted in various countries worldwide, have indicated the weakness of working in teams

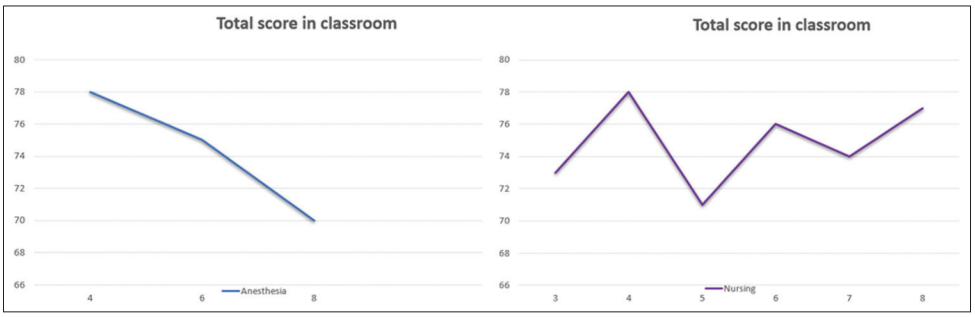


Figure 1: The change of classroom education scores in the fields of anesthesia and nursing

among health professionals.[18-20] Many medical science educational programs lack practical team-based training. Unlike technical skills, teamwork is not heavily emphasized.[21] Improving the teamwork component requires planning and practice, and it is suggested that the training of this component should start from the beginning of students' education. Considering that the highest score among the fields was achieved by effective communication and the lowest score by teamwork, it can be concluded that effective communication as a part of working in teams has been well-trained. However, other components of teamwork, such as awareness of the power difference between health professions, management of interprofessional conflicts, authority and leadership in the group, etc., are not well studied and need more attention.

This research showed that the passing of academic semesters may have a negative effect on the patient safety education of some disciplines, which was in line with the study of Zhang *et al*. (2019).[22] Various researchers consider several possible reasons for this issue, among which, curriculum overload, hidden curriculum and noncontinuity of education can be mentioned.[4,23]

Limitations and recommendation

The limitations highlight the narrow focus on specific disciplines and aspects of patient safety education. To address this, it is recommended to expand the study to include various health-related fields, explore different learning dimensions, conduct qualitative research, and focus on postgraduate students.

Conclusion

This research indicates that safety training in health professions, particularly in teamwork, is below the ideal level. Instructors can use these findings to revise educational strategies, aiming to enhance patient safety and reduce life-threatening events. Emphasizing the hidden curriculum and role modeling, the study recommends combined clinical-classroom training, early patient exposure, role models for bedside teaching, and adjusting student duties to prioritize patient safety.

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Conflict of interests

There are no conflicts of interest.

References

1. Atakora S-JS, Quartey J, Kwakye SK. Knowledge, perception and attitude of patient safety amongst clinical year physiotherapy students in Ghana. S Afr J Physiother 2021;77:1499.
2. Alidousti-Shahraki N, Farzi S, Tarrahi MJ. Patient safety competencies among senior students of health professions: An Iranian evaluation study. Open Nurs J 2022;16:1-6.
3. Abrishami R, Golestani K, Ranjbar MF, Abarghouie MHG, Ghadami A. A survey on the effects of patient safety training programs based on SBAR and FMEA techniques on the level of self-efficacy and observance of patient safety culture in Iran hospital, Shiraz in 2022–2023. J Educ Health Promot 2024;13:66.
4. Wu AW, Busch IM. Patient safety: A new basic science for professional education. GMS J Med Educ 2019;36:Doc21.
5. Dimitriadou M, Merkouris A, Charalambous A, Lemonidou C, Papastavrou E. The knowledge about patient safety among undergraduate nurse students in Cyprus and Greece: A comparative study. BMC Nurs 2021;20:1-12.
6. Osuchukwu EC, Agba M, Osuchukwu NC. Medication safety knowledge and practice among nursing students: A parallel-group randomized controlled trial at the University of Calabar Teaching Hospital. J Educ Health Promot 2024;13:400.
7. Nemati M, Mohammadzadeh Zarankesh S, Ebrahimi Abyaneh E. Factors affecting errors in the operating rooms: Study of employees' viewpoint. Med Sci J Islamic Azad Univ 2018;28:153-61.
8. Kirwan M, Riklikiene O, Gotlib J, Fuster P, Borta M. Regulation and current status of patient safety content in pre-registration nurse education in 27 countries: Findings from the Rationing-Missed nursing care (RANCARE) COST Action project. Nurse Educ Pract 2019;37:132-40.
9. Ginsburg L, Castel E, Tregunno D, Norton PG. The H-PEPSS: An instrument to measure health professionals' perceptions of patient safety competence at entry into practice. BMJ Qual Saf. 2012 Aug; 21 (8):676-84. doi: 10.1136/bmjqs-2011-000601. Epub 2012 May 5. PMID: 22562876; PMCID: PMC3402748.
10. Alidousti-Shahraki N, Farzi S, Tarrahi MJ. Psychometric properties of the persian version of the health professionals education in patient safety survey. Nurs Midwifery Stud 2022;11:51-61.
11. Shin SH, Baek OJ. Experiences of patient safety education and factors affecting the willingness to participate in patient safety in undergraduate nursing students in South Korea. Healthcare (Basel) 2023;12:54.
12. Taskiran G, Bacaksiz FE, Seren AKH. Psychometric testing of the Turkish version of the health professional education in patient safety survey: H-PEPSS$_{TR}$. Nurse Educ Pract 2020;42:102640.
13. Torkaman M, Sabzi A, Farokhzadian J. The effect of patient safety education on undergraduate nursing students' patient safety competencies. Community Health Equity Res Policy 2022;42:219-24.
14. Huang FF, Shen XY, Chen XL, He LP, Huang SF, Li JX. Self-reported confidence in patient safety competencies among Chinese nursing students: A multi-site cross-sectional survey. BMC Med Educ 2020;20:1-10.
15. Sharifi K, Mirbagher N, Aghajani M. Mentorship method in clinical education of nursing students: A systematic review. Dev Strategies Med Educ 2019;6:39-49.
16. Rousseau M, Könings KD, Touchie C. Overcoming the barriers of teaching physical examination at the bedside: More than just curriculum design. BMC Med Educ 2018;18:302.
17. Bergs J, Peeters K, Kortleven I, Creemers S, Ulenaers D, Desmedt M, *et al*. Translation and validation of the Dutch version of the health professional education in patient safety survey amongst nursing students in Belgium: A psychometric analysis. PLoS One 2021;16:e0247869.

18. VanDenKerkhof E, Sears N, Edge DS, Tregunno D, Ginsburg L. Patient safety in practical nurses' education: A cross-sectional survey of newly registered practical nurses in Canada. Nurse Educ Today 2017;51:48-56.
19. Hwang J-I, Yoon T-Y, Jin H-J, Park Y, Park J-Y, Lee B-J. Patient safety competence for final-year health professional students: Perceptions of effectiveness of an interprofessional education course. J Interprof Care 2016;30:732-8.
20. Raymond JM, Medves JM, Godfrey CM. Baccalaureate nursing students' confidence on patient safety. J Nurs Educ Pract 2017;7:56-64.
21. Khoshab H, Nouhi E, Tirgari B, Ahmadi F. A survey on teamwork status in caring for patients with heart failure: A cross-sectional study. J Interprof Care 2019;33:8-14.
22. Zhang XQ, Zhang BS, Wang MD. Application of a classroom-based positive psychology education course for Chinese medical students to increase their psychological well-being: A pilot study. BMC Med Educ. 2020 Sep 22;20(1):323. doi: 10.1186/s12909-020-02232-z. PMID: 32962664; PMCID: PMC7507630.
23. Bohomol E. Patient safety education of the graduation in Nursing from the teaching perspective. Escola Anna Nery 2019;23:e20180364.