Patient Safety Competence of Nursing Students in Saudi Arabia: A Self-Reported Survey

Paolo C. Colet, [(1)] Jonas P. Cruz, [(1)] Charlie P. Cruz, [(2)] Jazi Al-otaibi, [(3)] Hikmet Qubeilat, [(4)] Nahed Alquwez [(1)]

Lecturer, Nursing Dept., College of Applied Medical Sciences, Shaqra University, Al Dawadmi, Saudi Arabia [(1)]
Lecturer, Medical Laboratory Science Dept., College of Applied Medical Sciences, Shaqra University, Al Dawadmi, Saudi Arabia [(2)]
Department Head, Nursing Dept., College of Applied Medical Sciences, Shaqra University, Al Dawadmi, Saudi Arabia [(3)]
Assistant to the Vice Dean for Academic Affairs, College of Applied Medical Sciences, Shaqra University, Al Dawadmi, Saudi Arabia [(4)]

Abstract

Objective: With the growing recognition of the significance of patient safety (PS) in educational institutions and health organizations, it is essential to understand the perspective of nursing students on their own PS competence. This study analyzed the self-reported PS competence of nursing students at a government university in Saudi Arabia.

Methodology: A cross-sectional self-reported survey of 191 respondents, using the Health Professional Education in Patient Safety Survey (H-PEPSS) was conducted. The survey tool reflected 6 key socio-cultural dimensions assessing competence in classroom and clinical setting.

Results: Female nursing students reported higher PS competence in both the classroom and clinical settings along the dimensions 'working in teams' and 'communicating effectively' while males reported higher competence in both settings as to the 'managing safety risks' and 'understanding human and environmental factors' dimensions. The respondents' academic level and self–reported PS competence have weak negative correlation in the classroom while a strong negative correlation between the 2 variables existed in the clinical setting. Self-reported PS competence for the dimensions 'working in teams', 'recognize and respond to remove immediate risks of harm', and 'culture of safety' is significantly higher in classroom than in the clinical setting.

Conclusion: Generally, the Saudi nursing students reported varying levels of competence in the six dimensions of patient safety. Significant gap between the perceived PS competence was observed between learning settings. Educational and training interventions are suggested for implementation to bridge this gap.

Keywords: Patient safety; Patient safety competence; Nursing students; Saudi Arabia.

Corresponding author:

Jonas P. Cruz, PhD, MAN, RN, BSc
Lecturer, Nursing Dept.,
College of Applied Medical Sciences,
Shaqra University,
Al Dawadmi, Saudi Arabia
Phone: +966550176918
Email: cruzjprn@gmail.com/cruzjpc@su.edu.sa

Introduction

In response to the growing emphasis on the significance of patient safety, nursing educational institutions and other health organizations have strategic mandates in the provision of an effective patient safety education among the undergraduate nursing students. Notably, there is a necessity to improve the students' patient safety behaviors through the emerging influence of the clinical working environment. [1, 2]

In nursing education and learning throughout the world, patient safety is always a priority. [3, 4] Educational literature stresses the importance of early engagement of students in patient safety and error reduction learning for the purpose of developing competence. Learning through clinical practice has been the gold standard of professional health care education because expertise develops through multiple patient encounters. Students retain 5% of the information given to them by lecture, but 75% retention is evident if they "practice" after 6 months. [5] The clinical education of nursing students and the responsibility to the health care consumer place an enormous burden on the faculty at the bedside to provide practical opportunity and promote safe practice. [6] It has been suggested that nurses are more likely than other health care professionals to recognize, intercept, and correct errors that are often life threatening. [2]

Number of research studies has been conducted, which examined patient safety competence in the classroom and clinical settings. These studies suggest a strong impact of patient safety competence on both quality and safety. [7, 8] Similarly, patient safety is also an emerging concern in Saudi Arabia. Pressure to improve patient safety in the Kingdom is evident and studies focusing on it are essential. [9] An earlier study was conducted to measure the patient safety knowledge and attitudes of undergraduate medical students in Saudi Arabia. More than half of the respondents (52.7%) reported 'good' in their general patient safety knowledge, however, poor knowledge were reported in specific issues scores. The study also revealed unsatisfied percentages of the participants who self-rated 'good' for their general and specific knowledge on patient safety. [10]

Currently, many medical colleges in Saudi Arabia have incorporated the concept of patient safety in their curricula as an attempt to enhance their health professional education for their students. [10] Education has a significant role in developing the knowledge, skills and attitudes that promote patient safety among the healthcare providers. It is vital to capture the health care providers' perspectives on their own patient knowledge and competence. [11] However, limited knowledge hampers the healthcare professionals' preparation for their role in promoting patient safety. [7] A recommendation was made that exposure to the concept of patient safety should occur as early as the undergraduate years of the students and should be continual throughout their education. [10] It is therefore imperative to assess the patient safety competence of the students at this level in both the classroom and clinical settings purposely to determine the aspect needed for improvement while they are still undergoing training. Weaknesses in patient safety can be easily rectified while they are still nursing students than those who are already practicing.

This study was conducted to measure the self-reported patient safety competence of nursing students enrolled at a university situated in the central region of Saudi Arabia, both in the classroom and clinical settings. Operationally, the 'self-reported patient safety competence' of the respondents is referred to as their perceived confidence in learning about various dimensions of patients' safety. [12] Self-reported PS competence was measured separately in the classroom and clinical settings because earlier studies argued that educational experience differs in the classroom and clinical settings. Inconsistencies on how PS issues are imparted to the students in the classroom and clinical settings were likewise identified. [9,13]

Method

Design

This study is a cross-sectional self-reported survey of nursing students.

Participants and Settings

The study involved nursing students enrolled during the first and second semesters of the academic year 2014-2015 at a government university located in the central region of Saudi Arabia. A convenience sample of 191 nursing students was included in the

study. Inclusion criteria were: (1) males and females, (2) nursing students taking major courses in the nursing program, (3) students with clinical duties, and (4) students who were enrolled in levels 4 to 8.

Instrument

The Health Professional Education in Patient Safety Survey (H-PEPSS) was used to gather data from the respondents. The tool assesses health professionals' self-reported patient safety competence and represents the six socio-cultural areas namely: 'Working in teams with other health professionals', 'Communicating effectively', 'Managing safety risks', 'Understanding human and environmental factors that influence patient safety', 'recognizing and responding to adverse events', and 'Culture of safety'. [14,15] It specifically measures the self-reported patient safety competence in two learning environments, the classroom and clinical settings. Every dimension of the PS has a separate score for each of the settings. Obtaining overall mean score for each dimension was discouraged by the original author of the scale. [9] The H-PEPSS starts by asking self-confidence in knowledge of four clinical aspects of safety (e.g., hand hygiene and safe medication practices). These items are included in the H-PEPSS primarily to help the respondents differentiate between clinical and socio-cultural features of patient safety; thus, they can focus on the latter. [12,16] Each item begins with 'I feel confident in what I learned about…' and should be answered using a five-point disagree–agree Likert-type scale. Participants were asked to respond separately about their confidence with what they learned in the classroom setting compared to the clinical setting.

The H-PEPSS tool was originally created in English context and for the purpose of gathering reliable data, it was translated to Arabic. Forward-backward translation was used as a guideline to translate the original English version of the instrument into the Arabic edition. For the translation procedure, two bilingual translators who were fluent in both English and Arabic and knowledgeable about the content of the survey questionnaire were invited to translate the instrument from English into Arabic. Subsequently, the Arabic version was back-translated into English by two other translators who were fluent in both languages; they were blinded to the original versions. The blinding assured that the meaning of the English version was properly translated into the Arabic version. Finally, the research team members compared the original and back-translated versions for simplicity and accuracy. The translated H-PEPSS was subjected to validity and reliability test and demonstrated an acceptable validity and reliability.

Data Gathering Procedure

The translated version of the H-PEPSS was distributed to the qualified respondents. Proper coordination with the female college was done. Students were asked to answer the questionnaire honestly. Enough time was provided to each respondent to fill out the questionnaire. After the respondents completed the questionnaire, they were asked to put it inside the white envelope and sealed before collection.

Ethical Consideration

Ethical clearance was sought from the office of the Dean of the College of Applied Medical Sciences of the university. Informed consent explaining the purpose of the study as well as the expected participation of each respondent was attached to each questionnaire. The respondents were asked to sign the consent as a manifestation of their voluntary involvement in the study. Confidentiality was assured to each respondent. No incentive was offered to the respondents for their participation.

Data Analysis

All statistical computations were carried out using SPSS version 21. Frequency counts and percentages were used to analyze the responses on each item in the H-PEPSS. T-test for two independent sample means was used to examine the differences between genders on the dimensions of the H-PEPSS while Paired T-test was used to examine the differences in self-reported confidence in PS learning in the classroom setting compared to learning in the clinical setting (2-tailed test). Pearson product-moment correlation was used to examine the relationship of academic level and PS competence. A p–value less than 0.05 were considered significant.

Results

A total of one hundred ninety-six (196) nursing students were asked to answer the H-PEPSS. One hundred ninety one (191) questionnaires were sufficiently answered and were included for data analysis giving a response rate of 97.4%. Among them were 95 male nursing students (49.7%) and 96 female nursing students (50.3%). Twenty-seven (14.1%), 42 (22.0%), 23 (12.1%), 35 (18.3%) and 64 (33.5%) students were registered in levels 4, 5, 6, 7 and 8, respectively.

Table 1 Percentage of respondents that agreed with each H-PEPSS item (N=191)

H-PEPSS Dimension	Item: "I feel confident in what I learned about…"	Learning Setting	Strongly Agree/ Agree	
			n	%
1. Working in teams with other health professionals	Managing inter-professional conflict	Classroom	153	80.1%
		Clinical	83	43.5%
	Sharing authority, leadership, and decision-making	Classroom	111	58.1%
		Clinical	100	52.4%
	Encouraging team members to speak up, question, challenge, advocate and be accountable as appropriate to address safety issues	Classroom	119	62.3%
		Clinical	133	69.6%
2. Communicating effectively	Enhancing patient safety through clear and consistent communication with patients	Classroom	141	73.8%
		Clinical	159	83.2%
	Enhancing patient safety through effective communication with other health care providers	Classroom	129	67.5%
		Clinical	150	78.5%
	Effective verbal and nonverbal communication abilities to prevent adverse events	Classroom	174	91.1%
		Clinical	152	79.6%
3. Managing safety risks	Recognizing routine situations in which safety problems may arise	Classroom	110	57.6%
		Clinical	98	51.3%
	Identifying and implementing safety solutions	Classroom	138	72.3%
		Clinical	132	69.1%
	Anticipating and managing high risk situations	Classroom	133	69.6%
		Clinical	124	64.9%
4. Understanding human and environmental factors	The role of human factors, such as fatigue, that affect patient safety	Classroom	115	60.2%
		Clinical	106	55.5%
	The role of environmental factors such as work flow, ergonomics, resources, that affect patient safety	Classroom	108	56.5%
		Clinical	93	48.7%
5. Recognize, respond to immediate risks	Recognizing an adverse event or close call	Classroom	157	82.2%
		Clinical	125	65.4%
	Reducing harm by addressing immediate risks for patients and others involved	Classroom	164	85.9%
		Clinical	136	71.2
6. Culture of safety	The importance of having a questioning attitude and speaking up when you see things that may be unsafe	Classroom	168	88.0%
		Clinical	137	71.7%
	The importance of a supportive environment that encourages patients and providers to speak up when they have safety concerns	Classroom	150	78.5%
		Clinical	109	57.1%

	The nature of systems (e.g. aspects of the organization, management, or the work environment including policies, resources, communication and other processes) and system failures and their role in adverse events	Classroom	150	78.5%
		Clinical	124	64.9%

Self-reported PS Competence of Nursing Students on each H-PEPSS Items

Table 1 reflects the percentages of nursing students who either agreed or strongly agreed with each item in the 6 dimensions of the H-PEPSS. “Strongly agree” or “agree” responses indicate confidence of the nursing students in what they learn about the items in the classroom and clinical settings. As shown, majority of the respondents agreed to the items in each dimension except for "managing inter-personal conflict" in the clinical area (43.5%) of the ‘working in teams with other health professionals’ dimension and so with "the role of environmental factors such as work flow, ergonomics, resources, that affect patient safety" in the clinical setting (48.7%) of the ‘understanding human and environmental factors’ dimension.

Table 2 Differences between genders on the H-PEPSS (N=191)

H-PEPSS Dimensions	Learning Settings	Male Mean (n=95)	Female Mean (n=96)	t - value	p - value
1. Working in teams with other health professionals	Classroom	3.54	4.12	5.70	<0.000**
	Clinical	3.28	3.58	2.96	0.003**
2. Communicating effectively	Classroom	3.92	4.45	6.06	<0.000**
	Clinical	3.90	4.38	5.12	<0.000**
3. Managing safety risks	Classroom	4.03	3.57	4.94	<0.000**
	Clinical	4.01	3.38	7.23	<0.000**
4. Understanding human and environmental factors	Classroom	3.98	3.34	5.07	<0.000**
	Clinical	3.92	2.94	8.23	<0.000**
5. Recognize, respond to immediate risks	Classroom	4.28	4.32	0.35	0.725
	Clinical	4.12	3.65	4.29	<0.000**
6. Culture of safety	Classroom	4.29	4.18	1.18	0.240
	Clinical	3.47	3.97	3.65	<0.000**

Note. ** Significant at p<0.01 (2 tailed)

Gender Differences in the Self-reported Patient Safety Competence

The comparison of mean dimension scores of male and female nursing students on the H-PEPSS is reflected in Table 2. In the dimensions ‘working in teams’ and ‘communicating effectively’, females reported higher PS competence than the male students (p<0.01, two-tailed) in both the classroom and clinical set-ups. On the other hand, male students reported themselves to be more competent than their counterparts (p<0.01, two-tailed) along the ‘managing safety risks’ and ‘understanding human and environmental factors’ dimensions of PS. Along the dimension ‘recognizing and responding to remove immediate risks’, the males recorded higher competence than females (p<0.01, two-tailed) in the clinical setting but no significant difference was observed in the classroom setting. With the dimension ‘culture of safety’, the female respondents perceived better competence than the males (p<0.01, two-tailed) in the clinical area but no difference was noted in the classroom environment.

Relationship between Nursing Students’ Academic Level and Self-Reported PS Competence in Different Learning Settings

The relationship between the nursing students’ academic level and their self-reported PS competence in the classroom and

clinical settings was analyzed using the Pearson product-moment correlation coefficient. As displayed in Table 3, the students' academic level has a weak negative correlation to their self-reported PS competence in the classroom setting (r = -0.19, n=191, $p < 0.01$). This implies that as the nursing students progress to higher academic levels, their perceived patient safety competence in the classroom slightly decreases. Moreover, a strong negative correlation was established between the nursing students' academic level and self-reported PS competence in the clinical setting (r = -0.35, n=191, $p < 0.01$). This suggests that as the students progress to higher level of nursing education, their perceived PS competence in clinical settings moderately declines.

Table 3 Relationship between the nursing students' academic level and self-reported PS competence (N=191)

Self – Reported PS Competence	Nursing Students' Academic Level	
	r	p - value
Classroom Setting	-0.19	0.008**
Clinical Setting	-0.35	<0.000**

Note. **Significant at p<0.01, two-tailed

Differences in the Self-reported PS Competence in Different Learning Settings

The comparison of the mean dimension scores on the self-reported competence in PS learning between classroom and clinical settings among the nursing students was examined using the Paired t-test. A statistical difference was revealed between the classroom and clinical setting in terms of the respondents' self-reported PS competence along the dimensions 'working in teams with other health professionals' (p<0.01, two-tailed), 'understanding human and environmental factors' (p<0.05, two-tailed), 'recognize, respond to immediate risks (p<0.01, two-tailed), and 'culture of safety' (p<0.01, two-tailed). In these dimensions, the respondents reported higher PS competence in the classroom setting than in the clinical area. In other words, nursing students perceived higher competence in patient safety among these dimensions in the classroom than in clinical setting. (Table 4)

Table 4 Difference on self-reported PS competence in different learning settings (n=191)

H-PEPSS Dimensions	Learning Settings		Mean Difference	t - value	p - value
	Classroom Mean	Clinical Mean			
1. Working in teams with other health professionals	3.83	3.43	-0.40	-5.71	<0.000**
2. Communicating effectively	4.19	4.14	-0.05	-0.69	0.492
3. Managing safety risks	3.80	3.69	-0.11	-1.73	0.085
4. Understanding human and environmental factors	3.66	3.43	-0.23	-2.60	0.010*
5. Recognize, respond to immediate risks	4.30	3.88	-0.42	-6.22	<0.000**
6. Culture of safety	4.24	3.72	-0.51	-6.68	<0.000**

Note. *Significant at p<0.05 (2 tailed); **Significant at p<0.01 (2 tailed)

Discussion

The study evaluated the self-reported patient safety competence of the nursing students at a government university in Saudi Arabia. Here we discuss variations in self-reported patient safety competence, in terms of gender, academic levels and learning settings.

As reflected earlier, female nursing students reported significantly higher PS competence in the classroom and clinical settings along the dimensions 'working in teams with other health professionals' and 'communicating effectively'. In an earlier study, women were found to be more expressive, tentative, and polite in conversation. Furthermore, women engage more often in purpose-driven conversations that create a trusting bond. [17] This then can facilitate better communication and foster better working relationships among the members of the health care team. On the other hand, men usually view conversations as a way to establish a status and dominance in relationships. [18] This attitude of males can create a barrier between them and other members of the healthcare team, thus, preventing effective communication and facilitates poor work relations. Moreover, female students were likewise reported to have better attitude and opinion towards collaborative learning and working than the male students.[19] Males, however, scored higher in dimensions 'managing safety risks' and 'understanding human and environmental factors'. An earlier study on the differences in perceived patient safety among operating room caregivers reported that women were likely to demonstrate significantly less favorable perception on patient safety. [20] These inconsistencies in patient safety literature when it comes to gender differences warrant further investigation to reconcile the gap.

As to the relationship between the respondents' academic level and their self-reported PS competence, a negative correlation was determined in both the classroom and clinical settings. This suggests that the nursing students' academic level is negatively related to their perceived patient safety competence. It implies that as the nursing students advance to a higher level of nursing education, their PS competence both in the classroom and clinical settings weakens. It can also be drawn that their academic level in the nursing program is one of the factors that influence their perceived patient safety competence as students. This result is similar to a previous study, which reported that PS competence declines in the later years of the undergraduate nursing program. [21] This finding maybe associated with the courses included in the higher levels of nursing education. Most of the courses in the latter levels of nursing program such as Nursing Adult Care, Maternal and Child Care, Mental Health Nursing and Emergency Nursing have clinical learning experiences. As reported in this study, perceived PS competence in the clinical setting was significantly lower than in the classroom setting. This tends to have affected the lower self-reported PS competence in the higher levels among the nursing students. However, this is still an area needing further study to better understand the relationship between these two variables.

This study also showed that the respondents reported significantly lower patient safety competence in the clinical setting compared to the classroom setting in some of the dimensions under study. This finding affirms the results of other studies. [22,23] Specifically, the data indicated that the respondents reported significantly higher confidence in patient safety learning in the classroom setting in line with the dimensions 'working in team with other healthcare professionals', 'managing risk', 'understanding human and environmental factors' and 'culture of safety' compared to practical experience in clinical setting. These results indicate that nursing students are more confident in what they learn about patient safety in the classroom than in the clinical settings. Generally, this pattern conforms with other works demonstrating that PS confidence worsens as they thought of moving what they have learned in the classroom to the application in the real world. [23] This could also be explained by some contextual influence of training in the clinical set-up that weakens their confidence. [16] It is also important to recognize that the clinical setting is complex and dynamic, which makes learning more complicated for the students. [24,25] This then creates a significant gap between theory and practice among the students. The application of patient safety learnings may not be translated to clinical practice, which may result to a low patient safety competence in the

clinical area. As recommended by an earlier study, inter-professional education and training can be helpful in addressing the low levels of confidence in clinical settings in dimensions of teamwork, managing risk, understanding human and environmental factors, and culture of safety among the nursing students. This can provide opportunity for the students to learn with other members of the healthcare team, thus, enhancing knowledge to patient safety and fostering good working relationship, build team work and generate positive attitudes toward inter-professional collaboration in the training. [26]

This current study has some limitations. The study sample size is limited and this warrants a larger sample size for future research studies. The study also used convenience sampling technique, which limits the generalizability of the result. However, the response rate of the study is high, which serves as a strength of the study. Nevertheless, this study contributed to the existing body of knowledge about patient safety competence of nursing students. More importantly, the findings contributed to the limited literature about PS competence of nursing students in the Arab world.

Conclusions

Saudi nursing students manifested varying levels of competence in the six dimensions of patient safety based on their self-reports. Females reported higher competence than males in terms of team work with other health professionals and effective communication while males perceived to be more competent than their counterparts along safety risk management and understanding human and environmental factors. The respondents' academic level is inversely related to their self-reported patient safety competence. Classroom learning provides greater influence than clinical exposure in developing competence on patient safety among the respondents. The gaps on self-reported patient safety competence of nursing students reported in this study should be addressed by nursing education. Patient safety education efforts should deal with improving the PS competence of the students. Bridging the gap between classroom and clinical settings should also be underscored so that the level of PS competence in the classroom settings can be translated to practice to attain an optimal patient safety culture in the clinical area.

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