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Association of Nursing Students' Awareness with Patient Safety Issues and Expectations

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ABSTRACT This study aimed to identify demographic differences in patient safety awareness and expectations by using a verified World Health Organisation Medical School Curricular Guide for Patient Safety survey at a Saudi Government University. Nursing students and 298 patients participated in this study that used a descriptive comparative design. Statistical tests included means, standard deviations, t-tests, and one-way analysis of variance (ANOVA). The t-test revealed no significant statistical difference between males and females regarding patients' safety knowledge and expectations. The t-test and one-way ANOVA revealed significant differences in patient safety knowledge and expectations between programs and academic levels, discovering faults to enhance patient safety, learning from mistakes, and recognising errors. The researchers concluded that there was no gender variation in patient safety issues. Furthermore, bridging program students and students with higher levels of nursing tend to know more about patient safety issues and have higher expectations.

INTRODUCTION

Healthcare is becoming progressively complex and may incorporate a cluster of complicated procedures and forms, subsequently increasing the likelihood of committing errors. In 2019, the World Health Organisation (WHO) reported that unsafe care was one of the top 10 causes of mortality and disability worldwide. In 2004, the World Alliance for Patient Safety provided guidelines for adverse events reporting and learning systems, which are a basic source of morbidity and mortality data worldwide (Leape 2021). Furthermore, to deliver high-quality health service, all preventable errors should be avoided, and patient safety should be provided with the highest priority (WHO 2017).

Patient safety is a global issue and is fundamental to delivering quality essential healthcare services to all populations across lifespans (WHO 2019). The Institute of Medicine reported in 2000 that 98,000 individuals died in hospitals due to medication errors. The public and healthcare sectors were completely engaged with the findings at the time (Palatnikk 2016). Hence, to improve patient safety, healthcare services should evaluate and create measures to reduce medical mistakes, healthcare-associated infections, surgical errors, and post-operative complications, diagnostic and laboratory errors, fall injuries, communication errors, and patient identification errors (Duhn et al. 2012; Mansour 2015; Murray et al. 2018; Stevanin et al. 2015). Several studies conducted in different countries found that the healthcare personnel's understanding

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of patient safety context influences the students' attitudes and behaviour toward safe treatment (Dominika et al. 2022; Vaismoradi et al. 2011). The study by Oliveira et al. (2017) revealed that the multi-professional residents' knowledge on patient safety was on the borderline satisfactory level. On the contrary, a previous study described that physicians have a positive attitude toward patient safety with different specialties in Cairo University being higher than that of their influence and knowledge, whereas Malaysian medical students displayed a high degree of knowledge, awareness, and a favourable attitude towards patient safety measures in the healthcare system (Asem et al. 2019; Sen et al. 2020). In addition, previous studies investigating the patient safety culture in Saudi Arabia reported that their positive patient safety culture "strengths" included supportive organisational attitudes to learning or continuous improvement (Mansour 2015), strong unit teamwork, and hospital administration support on patient safety (Albalawi et al. 2020; Alshammari et al. 2019; Tella et al. 2014).

Allied health students should ensure patient safety during the provision of health care and identify effective educational strategies to improve the patient safety knowledge and competency among healthcare professionals (al-Nawafilah et al. 2022; WHO 2019) not only to be restricted to the practice of bedside care (Murray et al. 2018). Therefore, in preparing future nurses, nursing students' knowledge, abilities, and attitudes should be developed to ensure patient safety (Levett-Jones et al. 2020). Hence, the aim of this study was to look at the differences in nursing students' degrees of knowledge of patient safety concerns and their expectations.

Objective

The aim of this study was to examine how nursing students differ in their awareness of patient safety concerns and their expectations.

METHODOLOGY

Research Design

This descriptive-association study was carried out to investigate the differences between the dependent variables (components of patient safety issues and expectations) and independent variables (demographics) and to get new information about those variables (Polit and Beck 2020).

Population and Sampling Scheme

The respondents in this study were male and female nursing students from the University of Hail, Saudi Arabia. All level 5-8 students were considered for both regular programs and bridge programs. These students were chosen because they already had clinical experience. Students who have not yet had clinical exposure are excluded from this study. The study population comprised a total of 303 students, and to adequately represent the population, total enumeration was used, and there are 298 respondents in this study with a 1.65 percent research mortality rate. Because of the low research mortality rate, the respondents are still an adequate representation of the population (Kellar and Kelvin 2013).

Instrumentation

A validated survey tool from the World Health Organisation (WHO) (2011), entitled the W.H.O. Medical School Curriculum Guide for Patient Safety, is a questionnaire on patient safety, and was administered to students at the University of Ha'il, College of Nursing. The tool was designed to evaluate the students' level of awareness on patient safety issues as well as their expectations on how patients were handled in the healthcare system. The tool is available on the WHO website, which is open source.

The questionnaire was split into two sections. The first section determined the profile of the respondents, including their academic level, gender, and degree program. The second section determined their level of awareness regarding patient safety issues, which was divided into five sections, that is, error and patient safety, safety of the healthcare system, personal influence on safety, personal attitudes toward patient safety, and safety at the workplace.

Prior to the data collection, the questionnaire was subjected to a pilot test. This was carried out to check the reliability of the questionnaire. Twenty faculty members participated in the pilot test, of whom 12 were women and 8 were men.

The Cronbach's alpha was 0.87, indicating that the questionnaire's validity was high (Taber 2018).

Ethical Consideration

Prior to the data collection, approval was obtained from the dean's office to conduct the survey, and a consent form was attached to the questionnaire. The respondents did not receive any reward nor penalty for participating in this study.

Data Collection

The survey was personally administered by the researchers and conducted between December 15, 2019, and January 2, 2020. The researchers stayed with the respondents until the completion of the survey to ensure that all clarifications or questions are properly addressed.

Tools for Data Analysis

The questionnaires were distributed properly and retrieved for statistical analysis. The data obtained were statistically analysed using SPSS. The following statistical tests were used. First, the mean and standard deviation were used to describe the respondents' level of awareness on patient safety issues and expectations (Kellar and Kelvin 2013). Then, the t-test was used to analyse the differences in patient safety awareness and expectations among respondents based on gender and program, Post Hoc Tukey and one-way ANOVA was performed to identify any significant differences depending on the respondents' academic level (Kellar and Kelvin 2013).

RESULTS

For respondents' perceived degree of patient safety knowledge, the grand mean (SD) score was 3.20 (0.94), and the mean score for female respondents was the same (Table 1). While the mean score of male responders is 3.22 (0.92). In addition, the t-test found no statistically significant difference between respondent gender and patient safety knowledge (score: t (296) = 0.17, p = 0.87). In contrast, the t-test revealed a statistically significant difference between students enrolled in the regular Bachelor of Science in Nursing (BSN) program (mean (SD):3.08 (0.91)) and the bridging BSN program (mean (SD):3.94 (0.75)) and their level of patient safety knowledge (t (296) =5.72, p0.001). In addition, one-way ANOVA demonstrated a significant difference between the levels of students and their degree of patient safety knowledge (F (3,294) =19.21, p0.001, partial eta square: 0.20). Tukey's post hoc test revealed that respondents at Levels 6, 7, and 8 scored considerably higher than those at Level 5.

The respondents earned a grand mean (SD) score of 3.15 (0.98) for their views on the security of the healthcare system (Table 2). The mean score for male respondents is 3.06 (SD = 1.12), but the mean score for female respondents is 3.20 (SD = 0.91). In addition, the t-test found no significant association between the gender of respondents and their degree of agreement with the safety of the healthcare system (t (296) = 1.12, p = 0.27). In contrast, the t-test demonstrated a significant difference in healthcare system knowledge between students enrolled in the standard BSN program and the bridging BSN program (mean (SD): 3.04 (0.98) and 3.81 (0.81)), respectively. The degree of consensus on the security of the healthcare system (t (296) = 4.78; p 0.001). A one-way ANOVA indicated a significant difference in the degree of agreement about the security of the healthcare system (F (3,294) =22.86, p0.001, partial eta squared = 0.2). In addition, post hoc Tukey's test revealed that respondents at Levels 6, 7, and 8 scored considerably higher than those at Level 5.

The respondents' perspectives on the importance of personal factors on patient safety obtained a mean (SD) score of 3.35 (0.87) (Table 3). Table 3 reveals that male respondents have a mean score of 3.37 (SD = 0.92) while female respondents have a mean score of 3.34 (SD = 0.84). Moreover, the t-test demonstrated that there was no statistically significant difference between the gender of respondents and their opinions of their impact on patient safety (t (296) = 0.29, p = 0.78). The t-test demonstrated a significant difference between the opinions of students participating in the standard BSN program (mean (SD):3.26 (0.86)) and the bridging BSN program (mean (SD):3.88 (0.72)) about their effect on patient safety (t (296) =4.42, p 0.001, F (3,294) =10.88, p 0.001, partial eta square = 0.10). The post hoc Tukey test revealed that respondents at Levels

Table 1: Association between the level of knowledge on patient safety across the respondents' profile (n=298)

Variables		*Mean*	*SD*	*Test value*	*df*	*p-value*	η_p^2
Gender	Male	3.22	0.92	(t)0.17	296	0.87	-
	Female	3.20	0.94				
Program	Regular	3.08	0.91	(t)-5.72	296	<0.001	-
	Bridging	3.94	0.75				
Academic Level	5	2.82	0.89	(F) 19.21	SSb= 3	<0.001	0.16
	6	3.29	0.91		SSw= 294		
	7	3.50	0.77		SSt= 297		
	8	3.73	0.85				
Grand Mean	3.20	0.94					

Post Hoc Tukey

Variable	*Mean group*	*Mean difference*	*p-value*
Academic Level	M_1-M_2	-0.47	0.03
	M_1-M_3	-0.68	<0.001
	M_1-M_4	-0.92	<0.001
	M_2-M_3	-0.21	0.66
	M_2-M_4	-0.44	0.09
	M_3-M_4	-0.24	0.41

Legend: $M_{1=}$ Level 5; $M_{2=}$ Level 6; $M_{3=}$ Level 7; $M_{4=}$ Level 8

Table 2: Association between the level of agreement on the healthcare system's safety across the respondents' profile (n=298)

Variables		*Mean*	*SD*	*Test value*	*df*	*p-value*	ς_p^2
Gender	Male	3.06	1.12	(t)-1.12	296	0.27	-
	Female	3.20	0.91				
Program	Regular	3.04	0.98	(t)-4.78	296	<0.001	-
	Bridging	3.81	0.81				
Academic Level	5	2.70	0.92	(F) 22.86	SSb= 3	<0.001	0.19
	6	3.24	1.08		SSw= 294		
	7	3.55	0.86		SSt= 297		
	8	3.69	0.79				
Grand Mean	3.15	0.98					

Post Hoc Tukey

Variable	*Mean group*	*Mean difference*	*p-value*
Academic Level	M_1-M_2	-0.54	0.02
	M_1-M_3	-0.85	<0.001
	M_1-M_4	-0.99	<0.001
	M_2-M_3	-0.31	0.38
	M_2-M_4	-0.45	0.12
	M_3-M_4	-0.14	0.81

Legend: $M_{1=}$ Level 5; $M_{2=}$ Level 6; $M_{3=}$ Level 7; $M_{4=}$ Level 8

7 and 8 scored considerably higher than those at Level 5.

Personal attitudes toward patient safety received a grand mean (SD) score of 3.53 (0.87) (Table 4). Males have a mean score of 3.42 (SD = 0.94), whereas females have a mean score of 3.60 (SD = 0.98). In addition, the t-test demonstrated, with a score of (t (296) =-1.58, p= 0.12), that there was no statistically significant difference between the gender of respondents and their personal views toward patient safety. The t-test demonstrated a significant difference between

Table 3: Association between the view on personal influence over patient safety across the respondents' profile (n=298)

Variables		*Mean*	*SD*	*Test value*	*df*	*p-value*	η_p^2
Gender	Male	3.37	0.92	(t)0.29	296	0.78	-
	Female	3.34	0.84				
Program	Regular	3.26	0.86	(t)-4.42	296	<0.001	-
	Bridging	3.88	0.72				
Academic Level	5	3.06	0.85	(F) 10.88	SSb= 3	<0.001	0.10
	6	3.48	0.85		SSw= 294		
	7	3.54	0.84		SSt= 297		
	8	3.72	0.75				
Grand Mean	3.35	0.87					
Post Hoc Tukey							

Variable	*Mean group*	*Mean difference*	*p-value*
Academic Level	M_1-M_2	-0.42	0.59
	M_1-M_3	-0.48	<0.001
	M_1-M_4	-0.66	<0.001
	M_2-M_3	-0.64	0.98
	M_2-M_4	-0.25	0.55
	M_3-M_4	-0.18	0.61

Legend: $M_{1=}$ Level 5; $M_{2=}$ Level 6; $M_{3=}$ Level 7; $M_{4=}$ Level 8

Table 4: Association between the personal attitude to patient safety across the respondents' profile (n=298)

Variables		*Mean*	*SD*	*Test value*	*df*	*p-value*	η_p^2
Gender	Male	3.42	0.94	(t) -1.58	296	0.12	-
	Female	3.60	0.98				
Program	Regular	3.42	0.97	(t) -4.69	296	<0.001	-
	Bridging	4.15	0.69				
Academic Level	5	3.18	1.00	(F) 15.13	SSb = 3	<0.001	0.13
	6	3.89	0.95		SSw= 294		
	7	3.64	0.83		SSt= 297		
	8	4.05	0.72				
Grand Mean	3.53	0.97					
Post Hoc Tukey							

Variable	*Mean group*	*Mean difference*	*p-value*
Academic Level	M_1-M_2	-0.71	0.001
	M_1-M_3	-0.67	0.003
	M_1-M_4	-0.87	<0.001
	M_2-M_3	0.24	0.592
	M_2-M_4	-0.16	0.855
	M_3-M_4	-0.41	0.59

Legend: $M_{1=}$ Level 5; $M_{2=}$ Level 6; $M_{3=}$ Level 7; $M_{4=}$ Level 8

students enrolled in the standard BSN program and the bridge BSN program (mean (SD): 3.42 (0.97) and 4.15 (0.67)), respectively. There was a significant difference between the levels of students and their attitudes toward patient safety (t (296) = 4.69, p0.001, F (3,294) =15.13, p0.001, partial eta square = 0.21), and the one-way ANOVA revealed a significant difference between the students' levels and their personal attitudes toward patient safety (p0.001, F = 15.13, p0.001, partial eta square = 0.21). In addition, post-hoc Tukey's test indicated that respondents at levels 6, 7, and 8 scored considerably higher than those at level 5.

Table 5: Association between the expectations about safety at the workplace across the respondents' profile (n=298)

Variables		*Mean*	*SD*	*Test value*	*df*	*p-value*	η_p^2
Gender	Male	3.38	1.02	(t) 0.93	296	0.35	-
	Female	3.49	0.91				
Program	Regular	3.35	0.94	(t)-4.27	296	<0.001	-
	Bridging	4.01	0.84				
Academic Level	5	3.07	1.01	(F)17.07	SSb= 3	<0.001	0.15
	6	3.52	0.85		SSw= 294		
	7	3.74	0.74		SSt= 297		
	8	3.96	0.73				
Grand Mean	3.45	0.96					

Post Hoc Tukey

Variable	*Mean group*	*Mean difference*	*p-value*
Academic Level	M_1-M_2	-0.45	0.53
	M_1-M_3	-0.66	<0.001
	M_1-M_4	-0.88	<0.001
	M_2-M_3	-0.22	0.679
	M_2-M_4	-0.43	0.131
	M_3-M_4	-0.22	0.504

Legend: $M_{1=}$ Level 5; $M_{2=}$ Level 6; $M_{3=}$ Level 7; $M_{4=}$ Level 8

The respondents achieved a grand mean (SD) score of 3.53 (0.87) for their workplace safety expectations (Table 5), with a mean score of 3.38 (SD=1.02) for men and 3.49 (SD=0.91) for women. The t-test also found that there was no significant difference between the genders of respondents and their workplace safety expectations (t (296) = 0.93, p = 0.35). The t-test demonstrated a significant difference between students enrolled in the standard BSN program (mean (SD): 3.35 (0.94)) and those enrolled in the bridging BSN program (mean (SD): 4.01 (0.84)) in terms of their expectations about workplace safety (t (296) =4.69, p0.001). F (3,294) =17.07, p 0.001, partial eta square: 0.21) demonstrated a significant difference between the level of pupils and their expectations regarding job safety. In addition, post hoc Tukey's test indicated that respondents at Levels 7 and 8 scored considerably higher than those at Level 5.

DISCUSSION

According to the findings of this study, male and female respondents had shown no differences in their attitudes towards patient safety issues, and this finding is consistent with the findings of Tussardi et al.'s study (2021), which found no significant differences in the attitudes of aspiring healthcare professionals toward patient safety.

The respondents had an average knowledge of patient safety (Table 1), and this result was lower than that of nursing students in an Italian university, who were reported to be highly knowledgeable. In addition, nurses in tertiary hospitals in Pakistan, Indonesia and Italy have been described as having good knowledge of patient safety (Bari et al. 2017; Bressan et al. 2021; Noviyanti et al. 2018). Furthermore, bridging students performed significantly better than regular nursing program students, and based on the researchers' observations, these students had already gained experience (Alquwez et al. 2019). Bridging students in Saudi Arabia have gained clinical knowledge. Some are working in hospitals while completing the requirements of the BSN degree. It has been demonstrated that experience improves patient safety (Hashish et al. 2020; Kaud et al. 2021). The findings also affirmed the results of Rebeschi's study (2020), which indicated that higher-level nursing students scored the highest in perceived safety knowledge and competence.

The respondents believed that the healthcare system in their area was relatively safe (Table 2), and this observation included the practice of the healthcare workers, the administra-

tion of proper medications, and patient safety training, as well as their perception of adverse events, which is consistent with the findings of Sen et al.'s study (2020), which concluded that medical students at a Malaysian university perceived that their healthcare system was safe. However, bridging students and levels 6, 7 and 8 students scored higher than regular BSN students and level 5 students, indicating that they were confident in the healthcare system in their area. This finding may be attributed to the experience and prolonged exposure of bridging students and level 6, 7, and 8 nursing students to the clinical area. Student nurses may have a better observation of how healthcare systems work, such as the presence of nurses 24 hours a day, 7 days a week, which substantially helps healthcare system safety (Allari and Farag 2017; Phillips et al. 2021).

In terms of personal influence on patient safety, most respondents believed that they could make changes to improve patient safety. They were willing to report their errors, wanted to speak to someone who was unconcerned about patient safety, and believed that filling out a written report helped improve patient safety. However, even if the mean score is acceptable, there are several ways to impart this aspect by giving these students first-hand experience in caring for a patient. Furthermore, bridging and more senior nursing students performed better than regular nursing students and Level 5 nursing students. This may be attributed to the lack of direct patient exposure, as claimed by Bressan et al. (2021) and Pearce et al. (2022). Nursing students' confidence levels increased as their exposure to clinical placement increased.

Among the Patient Safety Questionnaire subscales, personal attitude toward patient safety garnered the highest mean score, which can be translated as a highly positive result, including finding the error to contribute to the improvement of patient safety, learning from mistakes, and acknowledging their errors. This finding is consistent with that of (Dimitriadou et al. 2021) and Sen et al. (2020). Furthermore, bridging students performed substantially better than ordinary pupils, and the higher-level students scored significantly higher than the level 5 nursing students, which was attributed to the lack of exposure of level 5 students, as the more hands-on experience that these students are exposed to, the more learning opportunities they can gain from making medical errors (Longenecker 2017). Therefore, the institutional findings also point to the necessity for more emphasis on patient safety in curriculum (Cantero-López et al. 2021; Tella et al. 2014). Moreover, Nadarajan et al. (2020) reported that medical students have a positive attitude toward patient safety, believing that they learn more from their own mistakes, as well as those that harm patients. Concerning workplace safety expectations and cultural aspects of nursing, the result can be interpreted as high expectations and be treated fairly if they make mistakes in the future, which is consistent with the findings of Hashish et al. (2020) and Sen et al. (2020), who reported that medical students had high expectations of fair treatment. Again, the bridging students outperformed ordinary students, and levels 7 and 8 students performed significantly better than level 5 students, which may be attributed to the clinical exposure gained by the higher levels (Stevanin et al. 2015) and bridging students.

CONCLUSION

This study verified that nursing students had an intermediate understanding of patient safety, they felt the healthcare system in their region was safe, they believed they could enhance patient safety, and they had outstanding personal attitudes, expectations, and workplace safety. When delivering care, the idea of patient safety is unique and beneficial to the development of the essential areas of professional skills. Similar conclusions have been reached in prior study, that is, the higher the academic level of the students, the higher their awareness and expectations should be. Furthermore, there were no gender variations in attitudes and views about patient safety problems. In addition, higher-level nursing students and students in bridging programs had greater expectations and were more aware of patient safety problems than students in standard nursing programs.

RECOMMENDATIONS

The findings of this study highlight the various practical implications for educators and health care institutions. This study was limited to the certain region of Governmental Universi-

ty in Saudi Arabia that has only provided a nursing program. According to the findings, students' awareness and expectations increase towards patient safety. Academics and practice organisations should deliver consistent messages and support clinical supervisors in creating a culture of shared learning among staff and students. As the BSN program nears completion, the changing nursing duties and responsibilities at each academic level and the different patient cultures need an increase in patient safety awareness and expectations. Thus, harmonising and supporting lifelong patient safety learning aims and teaching methods in nursing programs require the formulation of national and international policies. Hence, further studies are needed to determine the most effective educational strategies for improving patient safety knowledge and competency among nursing professions and students.

CONFLICT OF INTEREST STATEMENT

There are no conflicts of interest reported by the authors.

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AUTHOR CONTRIBUTION

Dr. Hamdan Mohammad Albaqawi led the conception of the study, helped in the identification of research design, helped in the manuscript review, and approved the final manuscript.

Dr. Van Andrew V. Villaverde helped in the conception of the study, data acquisition, and results interpretation, prepared the manuscript, and approved the final form of the manuscript.

Dr. Farida Mahmoud Hassona helped in the conception of the study, literature search, data acquisition, helped in the results interpretation, facilitated manuscript editing, and approved the final manuscript.

Dr. Larry Terence O. Cornejo helped in the conception of the study, edited the manuscript, and shared valuable inputs, and approved the final form of the manuscript.

Dr. Jordan H. Llego assisted in the study's conceptualisation, established the research design, performed statistical analysis and interpretation, supervised the research, and approved the final paper.

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