

## **Patient Safety Education: A Perspective of Southern Jordan Nursing Students'**

\*

**Ahmad H. AlNawafleh**

**alnawafleh@mutah.edu.jo**

**Muwafaq Al-Momani**

**Fadwa Alhalaiqa**

### **Abstract**

**Background:** Health care organizations are challenged to improve patient safety. Establishing baseline data on patient safety education is an effective intervention in this domain. This study aims at measuring nursing students' perceptions of patient safety.

**Methods:** Quantitative methodology, utilising cross sectional survey distributed to 158 final year nursing students and analysed by confirmatory factor and descriptive statistics.

**Results:** The model produced 4 components and their Cronbach Alpha reliabilities are: Comfort (0.778), Error reporting (0.638), Denial (0.510) and Culture (0.739), while the overall reliability for is (0.845). While 62% of students have observed medical errors during their clinical practice; only 25% of them have reported an error using incident report.

**Discussion and conclusion:** It is significant to include Patient Safety in nursing education and training programs. The inclusion will excel the level of clinical excellence, shed a light on trimming down medical errors, and enhancing health outcomes.

**KeyWords:** Patient Safety, Education, Nursing, Jordan, Students, HPPSACS

---

\* College of Nursing, Mutah University.

Received: 25/8/2020.

Accepted: 19/1/2021.

© All rights reserved to Mutah University, Karak, Hashemite Kingdom of Jordan, 2022.

## تعليم سلامة المرضى: من منظور طلاب التمريض الأردنيين

\*  
أحمد النوافله  
موفق المومني  
فدوى الحلايقه

### ملخص

خلفية: منظمات الرعاية الصحية تواجه تحدي تعزيز سلامة المرضى. إنشاء قاعدة بيانات حول تعليم سلامة المرضى يعتبر اجراء فعالا في هذا المجال. تهدف هذه الدراسة إلى قياس توجهات طلاب التمريض لسلامة المرضى.

المنهجية: تم توظيف المنهج الكمي، باستخدام مسح مقطعي لعينة (158) من طلاب التمريض في السنة النهائية وتحليلها بمعامل توكيدي والإحصاء الوصفي.

النتائج: نتج عن التحليل نموذج بأربع مكونات وبمصادقية ألفا كرونباخ لكل منها: الراحة (0.778)، والخطأ في الإبلاغ (0.638)، والإنكار (0.510) والثقافة (0.739)، بينما الإعتيادية للمقياس كانت (0.845). في حين، 62% من الطلاب لاحظوا خطأ طبيا أثناء التدريب السريري؛ فقط 25% منهم ابلغوا عن الخطأ باستخدام تقرير الحوادث.

المناقشة والاستنتاج: من المهم تضمين "سلامة المرضى" في برامج التعليم والتدريب للتمريض. تضمينها سوف يرفع مستوى الكفاءة السريرية، ويسلط الضوء على التقليل من الأخطاء الطبية، ويحسن المستوى الصحي للمرضى.

**الكلمات المفتاحية:** سلامة المريض، التعليم، التمريض، الأردن، الطلاب، HPPSACS

---

\* كلية التمريض، جامعة مؤتة.

تاريخ قبول البحث: 2021/1/19 م .

تاريخ تقديم البحث: 2020/8/25.

© جميع حقوق النشر محفوظة لجامعة مؤتة، الكرك، المملكة الأردنية الهاشمية، 2022 م.

## **1 - Background**

Health care organizations has been facing the challenge of improving patient safety (Singh & Graber, 2015). It was proposed that the student's safety behavior in clinical settings can be influenced by the quality, content and delivery of nursing education (Walton & Barraclough, 2011). Measuring the competence of any recommended curriculum to develop nursing patient safety education require establishment of base-line evidence on the existing position of patient safety education (Walton & Barraclough, 2011). While several studies have been conducted worldwide to evaluate the student nurses views on their undergraduate patient safety education, such research has mostly focused on the local and national perspective in the developed countries (Attree, Cooke, & Wakefield, 2008; Chenot & Daniel, 2010; Madigosky, Headrick, Nelson, Cox, & Anderson, 2006). Limited research has been carried out to compare the nurses' perceived Knowledge and attitudes regarding patient safety education in low resource countries and across several countries, therefore, missing an important opportunity to highlight an international pattern on the student nurses' perceived patient safety education in nursing domain. This paper is part of a wider research proposal, therefore, addressed the apparent gap in the literature. It outlined a quantitative study, by distributing a survey to the final year undergraduate nursing students in three nursing institutions in the UK, Jordan, and Saudi Arabia. The aim of the wider study was to provide a comparison of the student nurses' perceived Knowledge, skills, and attitudes regarding patient safety education across the three sites and examining any pattern or common relationships among the students' perceptions that may emerge in the study. This paper is reporting only patient safety education among Jordanian nursing students through a survey on knowledge, skills and attitudes in one of the nursing schools.

## **2- Literature review:**

There is a dearth of empirical research examining the relationship between patient safety and education of health professionals in both quality management and health service literature (Han, Kim, & Seo, 2020; Kirwan, Riklikiene, Gotlib, Fuster, & Borta, 2019; Taskiran, Bacaksiz, & Seren, 2020; Yoo, Park, & Kwon, 2019). There have been some descriptive works suggesting the link between patient safety and undergraduate nurses' curriculum and education practices (Yoo et al., 2019).

health care organizations encounter a challenge of sustaining health care service delivery under safety measures. thoughtful patient safety, and safe patient care delivery can be achieved through health professional's knowledge, skills and attitudes. Those, usually gained during education when it contains patient safety contents and courses (Greiner & Knebel, 2003; Hwang et al., 2016; Kongsvik, Halvorsen, Osmundsen, & Gjørund, 2016). Nursing education worldwide was investigated to measure the students' patient safety knowledge, skills and attitudes (Han et al., 2020; Johnson, McNally, Meller, & Dempsey, 2019; Kirwan et al., 2019; Okuyama, Martowiriono, & Bijnen, 2011; Taskiran et al., 2020; Yoo et al., 2019). In the UK, Attree, et al (2008) examined the undergraduate nursing degree curriculum to find contents related to patient safety. The study utilized various qualitative data collection methods, including curriculum analysis, focus group interviews with 15 students, 10 educators, and 6 education delivery key informants. The study found a lack of patient safety knowledge based on the systems approach and the nursing curriculum had no learning objectives with direct focus on patient safety (Reason, 2000). Pearson, Steven, & Dawson (2009) also carried out a study on nursing students beside three other health professions to understand patient safety learning. The study utilized a qualitative design encompassing range of data collection methods, such as curriculum analysis, interviews with students, patients, academics, qualified health care professionals, and observation of

teaching methods. The study found lack or sometimes several gaps in the curriculum content of subjects related to patient safety.

In the context of North America and the US specifically, undergraduate nursing students before licensed submit approval of patient safety education. This came as recommendation from Smith, et al (2007) study which concluded that qualified nurses must demonstrate patient safety competencies. In their study, Smith, et al (2007) investigated the curriculum of more than 600 nursing schools and programs in the US to find whether it contains competencies related to quality and safety. The online survey of the schools yielded that schools' curriculum threaded with (95%) patient – centred care, followed by (89%) safety and (82%) teamwork collaboration. In another study, Chenot and Daniel (2010) evaluated the Knowledge of pre-licensure nursing students about patient safety topics. They implemented pre and post curriculum survey of Patient Safety/Medical Fallibility Assessment -which published by Madigosky et al. (2006)- and they developed the Health Care Professionals Patient Safety Assessment Curriculum Survey (HPPSACS). They collected their data from seven universities in the USA through a questionnaire distributed to a sample of 618 students and more than half responded. The researchers concluded that patient safety knowledge measures are valid and reliable. Their conclusion based on results indicate HPPSACS items scored Alphas estimates above or near the range of the recommended level of 0.70 (Cortina, 1993; Nunnally 1978).

Although most research in nursing patient safety education appears to have been undertaken in Western Europe and North America, there were some attempts to carry out similar research in other countries. Vaismoradi et al (2011) explored the role of nursing education on patient safety from the point view of Iranian nurses. Their sample was seventeen undergraduate nursing students enrolled in one university in Tehran. Their data collected through personal interviews and qualitative content analysis reported dissatisfaction with the classroom conversations about patient safety issues.

The students expressed concerns about the medical domain of handling the topics. Therefore, the students highlighted difficulty in making the connection between the theoretical courses directed toward patient safety standards and their nursing practice applications. However, the Iranian culture, values, and educational systems may differ from others and the context may apply elsewhere. To generalize these findings in different cultural contexts, there is need to carry out further investigations.

Assessing the patient safety education in nursing programs in Jordan received little attention, while it was prone to numerous investigations internationally. Moreover, Jordan is less involved in patient safety education based on a recent recommendation from the World Health Organization office in Amman to design a patient safety and quality curriculum for health disciplines' students. Conducting such research on the local level would help to evaluate the Jordanian nursing students current perceived status of patient safety education. On the international level, such research would help to highlight more visibly the themes in patient safety education, across-county, which are lacking, or exiting, in the current nursing curriculum. This would contribute to establishing across-countries shared indicators for patient safety education in nursing, but the results would also inform policy makers of areas of patient safety education that may be best addressed by shared efforts. The World Health Organization (WHO) is going ahead in developing and implementing Patient Safety Curriculum Guide for Multi-professions students (Walton & Barraclough, 2011). However, the patient safety education in nursing run in short of trustworthy baseline data on the current status. This hinders measuring the impact of any proposed intervention, including the new curriculum guide, on the health care professional' KSA toward patient safety education.

## **Aim and purpose**

This paper aims to assess nursing students in Jordan current perceived status of patient safety education. The purpose is to provide recommendations of basic knowledge required to develop nursing competencies for undergraduate nurse student to carry safe nursing practice therefore it attempts to answer the following questions:

Is the HPPSACA suitable for measuring nursing students KSA in Jordan?

What are the undergraduate nursing students' KSA regarding patient safety (PS) in Jordan?

## **3- Methodology**

this study used a cross sectional survey based on quantitative methodology distributed to undergraduate nursing students in one academic nursing institution in Jordan during four semesters. The study utilized the previously validated Health Care Professionals Patient Safety Assessment Curriculum Survey (HPPSACS) (Chenot & Daniel, 2010). Permission from the author has been sought. Although the nursing education is delivered in English, Arabic language is the native language in Jordan. Therefore, the survey tool was combined with a translation for the items to Arabic to support students understanding of every item. The items in the survey translated into Arabic and back translated to English by two independent translators (Ryan & Bernard, 2000).

The survey distributed to the final year undergraduate nursing students in a public university in the south of Jordan during four different semesters. By the time data collection started, final year students have covered most of the courses during their curriculum and are likely to provide more informed evaluation of their knowledge, skills, and attitudes regarding patient safety education. Moreover, selecting undergraduate nursing students for

evaluating their nursing education would be more appropriate. This is because while they are still students, their patient safety behaviours are likely to be influenced by their educational program, before they qualify as registered nurses where their patient safety knowledge, attitude and behavior become more influenced by their new working climate (Flin & Patey, 2009; Mansour, 2015). The survey distributed to 158 final year undergraduate nursing students in the academic institution. In total, 125 of final year students returned surveys, in a response rate of 79%, two were excluded as they were incomplete and 123 considered for the analysis.

The students on the nursing training course received a questionnaire after a consent from them and from the other academic colleagues who were delivering teaching to the final year nursing students. The researchers chose a lecture, whereby the final year nursing students were attending, and the questionnaires delivered. The students were encouraged to return the questionnaires after the lecture finishes, but also given opportunity to return the completed questionnaires to a designed mailbox in the institution at later date.

### **1.1 Data analysis:**

#### **Data analysis involved:**

The researcher coded the returned questionnaires and entered the data into SPSS Software version 20 (Allen & Bennett, 2012). The data statistically analysed using factorial Analysis to ascertain the students' knowledge and attitudes regarding patient safety. This study tested HPPSACS scores for validity and reliability by employing alpha reliability analysis and confirmatory factor analysis (CFA). The underlying constructs was revealed by grouping the items into subscale scores on the patient safety instrument. The students' KSA concerning patient safety was reported by descriptive statistics.



## **1.2 Ethical approval:**

Mutah Faculty of Nursing Research Ethics Committee granted the institutional review approval before data collection commences. Moreover, a permission to distribute the questionnaire from the dean of the Nursing Faculty was obtained in advance. Information sheet distributed to the participants, which states the purpose of the research, the likely benefits, and the voluntary nature of participation. The students assured their identity will never be sought at any stage of the research. Each questionnaire was assigned a code to facilitate the data entry and analysis. There was no physical risk to the students participating in this project, and to minimise any potential psychological distress on the participants. A research assistant who is not part of the teaching or assessment of the nursing students collected the data.

## **4- Results**

The survey analysis conducted on data from hundred twenty-three nursing students. Most of them were females 41.5% (n=51), 32.5% (n=40) were male, and 26% (n= 32) left the item without answer. The students mean of age was 21, although the youngest was 20 and the older was 27 years old. All the students enrolled in three nursing programs and respondents represent 54.5% (n=67) morning program, 12.2% (n=15) parallel program, 1.6% (n=2) bridging program and 31.7% (n=34) did not indicate their program.

**Table 0: Confirmatory Factor Analysis for the tool.**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.518	28.339	28.339	4.331	18.829	18.829
2	1.927	8.378	36.718	3.426	14.894	33.723
3	1.656	7.201	43.918	1.966	8.550	42.273
4	1.480	6.434	50.353	1.858	8.080	50.353
5	1.281	5.570	55.923			
6	1.095	4.761	60.684			
7	.991	4.309	64.992			
8	.892	3.878	68.871			
9	.813	3.533	72.403			
10	.766	3.330	75.733			
11	.687	2.987	78.720			
12	.660	2.868	81.589			
13	.577	2.507	84.095			
14	.560	2.434	86.529			
15	.529	2.298	88.827			
16	.485	2.107	90.935			
17	.429	1.867	92.802			
18	.379	1.646	94.447			
19	.342	1.487	95.934			
20	.280	1.219	97.153			
21	.253	1.098	98.251			
22	.225	.978	99.229			
23	.177	.771	100.000			

**Extraction Method: Principal Component Analysis.**

This study reports on usability of a framework for examining the knowledge and attitudes about patient safety education from the perspective of undergraduate nursing students'. Using Likert scale, the participants selected their level of disagreement and agreement with the items 1-18 and their discomfort and comfort for items 19-23. Patient safety situations the students may had experienced during their last year training examined by choosing yes or no reply for items 24-29 of the questionnaire. CFA examined the data and confirmed the factor model of patient safety education reported by Chenot and Daniel (2010) as illustrated in tables 0 and 1. Four factors identified in this model.

**Table 1: HPPSACS factors and associated items**

	<b>factor</b>	<b>Item no.</b>	<b>Item description</b>
1	Comfort (5 items)	19	Accurately completing an incident report.
		20	Analysing a case to find the causes of an error.
		21	Supporting and advising a peer who must decide how to respond to an error.
		22	Disclosing an error to a faculty member.
		23	Disclosing an error to another healthcare professional.
2	Error reporting (9 items)	2	Competent healthcare professionals do not make medical errors that lead to patient harm.
		4	Only physicians can determine the causes of a medical error.
		5	Healthcare professionals should not tolerate uncertainty in patient care.
		6	The culture of healthcare makes it easy for healthcare professionals to deal constructively with errors.
		8	Healthcare professionals routinely share information about medical errors and what caused them.
		10	Healthcare professionals routinely report medical errors.
		12	Physicians should be the healthcare

	<b>factor</b>	<b>Item no.</b>	<b>Item description</b>
			professionals that report errors to an affected patient and their family.
		13	Effective responses to errors focus primarily on the healthcare professional involved.
		17	After an error occurs, an effective strategy is to work harder to be more careful.
3	Denial (4 items)	11	Reporting systems do little to reduce future errors.
		14	If there is no harm to a patient, there is no need to address an error.
		15	If I saw a medical error, I would keep it to myself.
		16	Most errors are due to things that healthcare professionals can't do anything about.
4	Culture (5 items)	1	Making errors in healthcare is unavoidable
		3	Healthcare professionals should routinely spend part of their professional time working to improve patient care.
		7	Learning how to improve patient safety is an appropriate use of time in health programs in school.
		9	In my clinical experiences so far, faculty and staff communicate to me that patient safety is a high priority.
		18	There is a gap between what we know as 'best care' and what we provide on a day-to-day basis.

The 23 items produced a good model fit in CFA. The 23 items are abstracted in 4 factors, those are:

1. 'Comfort' factor labelled the comfort feeling level of the student when they complete revelation of medical errors and writing incident reports.

2. 'Error reporting' a factor labelled for dealing with medical errors and reporting its incidence.
3. 'Denial' factor labelled the medical errors denial.
4. The "culture" factor was used to label the rest of items.

Those factors have a relationship with the student knowledge and attitudes toward patient safety education. Patient safety education measured by recognising patient safety occurrence, disclosing this error to others and education coverage of patient safety theme within the curriculum.

**Table (1) Student response to the second section of the survey.**

	<b>Uncomfortable</b>	<b>Neutral</b>	<b>Comfortable</b>
Accurately completing an incident report.	20.5%	30.3%	49.2%
Analysing a case to find the causes of an error.	20.8%	26.7%	52.5%
Supporting and advising a peer who must decide how to respond to an error.	18.2%	23.1%	58.7%
Disclosing an error to a faculty member.	21.5%	27.3%	51.2%
Disclosing an error to another healthcare professional.	26.5%	28.9%	44.7%

Cronbach Alpha scores for HPPSACA indicated reliability and internal consistency of the measure. Cronbach Alpha over all scored (0.845), however, the model components reliability scores are (0.778) for Comfort, (0.638) for Error reporting, (0.510) for Denial and Culture (0.739). Apart from Denial, the other three components are within accepted range of recommended threshold of 60. These coefficients are satisfactory in the light of few items for each component and the exploratory nature of this construct validity analysis.

**Table (2) Student response to the first section of the survey.**

	<b>Disagree %</b>	<b>Neutral %</b>	<b>Agree %</b>
In my clinical experiences so far, faculty and staff communicate to me that patient safety is a high priority.	20.5%	17.2%	62.3%
Healthcare professionals routinely report medical errors.	35.8%	25.8%	38.3%
If I saw a medical error, I would keep it to myself.	65.7%	13.5%	20.7%
There is a gap between what we know as 'best care' and what we provide on a day-to-day basis.	19.5%	26.8%	53.7%

The study reports that 62% of students have observed medical errors during their clinical practice; however, only 25% of them have reported an error using incident report (see table 4). On the other hand, disclosing of these errors to faculty member represented third only while almost all the students witnessing errors disclose it to their colleagues. This is an indication that there are barriers in communicating errors to the faculty. It may also indicate that there is a culture of blame rather than a reporting errors within the training area.

**Table (3) Student response to questions regarding experience of patient safety situation**

	<b>Yes</b>	<b>No</b>
Have you observed a medical error in your clinical experiences?	61.7%	38.3%
Have you disclosed a medical error to a faculty member?	32.8%	67.2%
Have you disclosed a medical error to a staff member?	50.4%	49.6%
Have you disclosed a medical error to a fellow student?	58.8%	41.2%
Have you reported an error using an incident report?	24.6%	75.4%
Did your nursing program of study provide sufficient coverage on the topic of patient safety?	65.3%	34.7%

Next section presents a brief for the discussion, the study implications, and conclusions. It gives further discussion for the study results in the light of the theoretical context. It closes with future studies speculation based on the findings of this study.

## **2- Discussion**

This study examined undergraduate nursing students' KSA regarding patient safety that were in BSc nursing degree programs in Jordan. It is significant to include Patient Safety in nursing education and training programs. More specifically there is a need to add the socio-cultural aspects of safety to the nursing curriculum. Although curriculum development in nursing education is demanding, efforts to include PS are not satisfactory. This indicates the value of conducting research to recognise the senior nurse students' level of patient safety awareness.

This study suggests the HPPSACA can be used to assess senior undergraduate nursing students KSA about patient safety. Indeed, the student's perception of professional confidence in providing safe patient care is one of several indicators for assessing the student's competency and effectiveness of nursing education. Existing instruments to measure patient safety KSA were developed primarily to explore the impact of curriculum proposals for patient safety.

Several tools used to assess safety competencies of nursing students, however, most measures have few aspects of PS competencies outlined by national and international bodies (Okuyama et al., 2011). Using the CFA to analyse the wide range patient safety competencies as measured by HPPSACA, this study addressed the literature gaps.

Our results confirmed previous results of four-factor, 23-item model of student nurses' patient safety competence (Ginsburg, Tregunno, & Norton, 2013; Mansour, 2015). Those can be used to assess senior students learning about Patient Safety competence: (1) comfort, (2) reporting, (3) denial, (4) Culture of safety. Evaluation of students KSA in the main safety competencies is essential, mainly due to small evidence about patient safety competency assessment.

The HPPSACA can be used to investigate whether the students attained the learning objective of patient safety during their training. Therefore, it is helpful for the academics in their class room teaching, clinical training and to design curriculum for professional nursing (Ginsburg et al., 2013). It does worth to mention that we found during this study few academic members

expressing understanding the basic knowledge and skills required to teach patient safety related materials.

Curriculum at the undergraduate nursing programs is modified every 4-6 years in Jordan, however, it is difficult to find who has the power to include new competencies and subjects in the curriculum. Further research is necessary to understand how to include PS knowledge in this curriculum. Moreover, it is important to determine which PS aspects and teaching approaches are more appropriate considering the stage and the setting.

Since academic and hospital environment can influence the adoption of PS for quality health care service it is necessary also to assess the formal and informal factors related to inclusion of PS in nursing education curriculum. Despite this problem adoption of PS in nursing education is important; because, there is evidence supporting PS knowledge achievement from the curriculum. The key issue of this argument is the identification that nursing students' KSA of PS is essential and adjustable.

This study recommends for a future research to build on these findings and examine academics interpersonal relationships impact on patient safety knowledge among students in nursing bachelor programs in Jordan. Learning patient safety component would need to incorporate an appraisal of pedagogic teaching concepts and tools. There is need to identify any barriers to report errors mainly to instructors. It may also identify any curriculum aspects that influence students' interpersonal relationships. Also, an examination of nursing teachers and instructors' ability to conduct patient safety knowledge and convey it to their students to build KSA. Thus, we propose that an increase in students KSA of patient safety might correlate with an increase in patient safety KSA among nursing teachers and instructors. A future research would be to develop a study to assess the nursing curriculum contents of patient safety domains in Bachelor programs. Likewise, there is need to determine the correlation of patient safety learning outcomes with indicators of health outcomes through an examination of patient safety courses and teaching practices. This may include topics related to incidence reports and medication errors.

This study may present issues related to generalisability of its results to wider population which may be considered during future implications. Its data come from senior nursing students in the clinical training in one Jordanian governorate, Karak. In Jordan, there tends to be some variation in nursing school curriculum. Internationally, Jordan's nursing training



structure and environment are equivalent to the wider programs adopted by other countries in Europe and North America. It is however possible that our four patient safety factors validated in this study will be translated in different way for new graduates from other national cultures. Additional exploration and cross-validation with wider samples of senior student nurses or fresh graduates of the HPPSACA is necessary to generalise wider implication.

### **3- Conclusion**

This study added to the literature of patient safety the value of its integration in nursing curriculum. This integration would contribute to improving health outcomes, reduce medical errors and lead to quality health service. Conducting a study using HPPSACS with undergraduate nursing students would shed a light on their awareness about patient safety. Descriptive statistics of this study reported that the nursing students' have positive attitude and highlight their patient safety awareness on scores expressed by the HPPSACS.

Patient safety should be considered in nursing curriculum and should be taught by nursing academics. Policy development must include patient safety, and this is the responsibility of nursing leaders. Both the nursing leaders and academics must work toward approval of the patient safety competencies at the national level and at the level of nursing education programs. Nursing academics in the accreditation boards, Jordanian Nursing Council and nursing institutes are required to address nursing students' competencies of patient safety. This is required to enhance health care and health outcomes. Adoption of patient safety in the nursing curriculum will enhance health, save patients' lives, and it will sustain Jordan's health system.

This study should be followed up by examining patient safety KSAs of associate, bachelor, master's, and doctoral nursing students. Further examination is recommended for nursing academics perceptions of patient safety and its applications for their students.

### **Acknowledgements**

Thanks go to our colleagues in the Faculty of Nursing at Mutah University for their support during the study and for the study participants from the students. Great thanks go to the authors of HPPSACS; Wendy Madigosky at University of Colorado and Theresa Chenot at Jacksonville University for giving permission to use the study tool.

**Reference:**

- Allen, P., & Bennett, K. (2012). *SPSS statistics: A practical guide version 20*: Cengage Learning Australia.
- Attree, M., Cooke, H., & Wakefield, A. (2008). Patient safety in an English pre-registration nursing curriculum. *Nurse Educ Pract*, 8(4), 239-248. doi:10.1016/j.nepr.2007.09.003
- Chenot, T. M., & Daniel, L. G. (2010). Frameworks for patient safety in the nursing curriculum. *J Nurs Educ*, 49(10), 559-568. doi:10.3928/01484834-20100730-02
- Cortina, J. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98-104. doi:10.1037/0021-9010.78.1.98
- Flin, R., & Patey, R. (2009). Improving patient safety through training in non-technical skills. *BMJ*, 339, b3595.
- Ginsburg, L., Tregunno, D., & Norton, P.(2013). Self-reported patient safety competence among new graduates in medicine, nursing and pharmacy. *BMJ Quality & Safety*, 22(2), 147-154. doi:10.1136/bmjqs-2012-001308
- Greiner, A., & Knebel, E. (2003). *Health Professions Education: A Bridge to Quality*. Institute of Medicine Committee on the Health Professions Education Summit. Washington, DC.
- Han, Y., Kim, J., & Seo, Y. (2020). Cross-Sectional Study on Patient Safety Culture, Patient Safety Competency, and Adverse Events. *Western Journal of Nursing Research*, 42(1), 32-40.
- Hwang, J., Yoon, T., Jin, H., Park, Y., Park, J., & Lee, B.(2016). Patient safety competence for final-year health professional students: Perceptions of effectiveness of an interprofessional education course. *Journal of Interprofessional Care*, 30(6), 732-738.
- Johnson, L., McNally, S., Meller, N., & Dempsey, J. (2019). The experience of undergraduate nursing students in patient safety education: A qualitative study. *Australian Nursing and Midwifery Journal*, 26(8), 55-55.
- Kirwan, M., Riklikiene, O., Gotlib, J., Fuster, P., & Borta, M. (2019). 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*, 37, 132-140.
- Kongsvik, T., Halvorsen, K., Osmundsen, T., & Gjørund, G. (2016). Strengthening patient safety in transitions of care: an emerging role for local medical centres in Norway. *BMC Health Services Research*, 16(1), 452.
- Madigosky, W., Headrick, L., Nelson, K., Cox, K., & Anderson, T. (2006). Changing and Sustaining Medical Students' Knowledge, Skills, and Attitudes about Patient Safety and Medical Fallibility. *Academic Medicine*, 81(1), 94-101.
- Mansour, M. (2015). Factor analysis of nursing students' perception of patient safety education. *Nurse education today*, 35(1), 32-37.
- Nunnally, C. (1978). *Psychometric theory*. New York: NY: McGraw-Hill.
- Okuyama, A., Martowirono, K., & Bijnen, B. (2011). Assessing the patient safety competencies of healthcare professionals: a systematic review. *BMJ Quality & Safety*, qhc-2011-000148.
- Pearson, P., Steven, A., & Dawson, P. (2009). Patient safety in health care professional educational curricula: examining the learning experience. Patient Safety Education Study Group. Retrieved from <http://www.ncl.ac.uk/medev/assets/documents/Patientsafetyfullreport.pdf>
- Reason, J. (2000). Human error: models and management. *British Medical Journal*, 320(7237), 768-770. doi:10.1136/bmj.320.7237.768
- Ryan, G., & Bernard, H. R. (2000). *Data management and analysis methods*.
- Singh, H., & Graber, M. L. (2015). Improving diagnosis in health care—the next imperative for patient safety. *New England Journal of Medicine*, 373(26), 2493-2495.
- Smith, E., Cronenwett, L., & Sherwood, G. (2007). Current assessments of quality and safety education in nursing. *Nursing Outlook*, 55(3), 132-137.

Taskiran, G., Bacaksiz, F., & Seren, A. (2020). Psychometric testing of the Turkish version of the Health Professional Education in Patient Safety Survey: H-PEPSSTR. *Nurse Educ Pract*, 42, 102640.

Vaismoradi, M., Salsali, M., & Marck, P. (2011). Patient safety: nursing students' perspectives and the role of nursing education to provide safe care. *International Nursing Review*, no-no. doi:10.1111/j.1466-7657.2011.00882.x

Walton, M., & Barraclough, B. (2011). *Patient safety curriculum guide multi-professional edition*. Malta: World Health Organisation.

Yoo, S., Park, J., & Kwon, S. (2019). Factors affecting on the Practice of Patient Safety Management (PSM) in Nursing College Students. *Journal of Digital Convergence*, 17(11), 279-288.