

## Effectiveness of Educational Program for Nurses about Patient Safety Values, Attitudes and Competency

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### Abstract

**Background:** Patient safety is the core indicator of nursing quality. Nursing competency abilities required for performing one's role as a nurse with knowledge, attitudes and skills. **Aim:** The study aimed to determine the effectiveness of educational program for nurses about patient safety values, attitudes and competency. **Design:** A quasi-experimental design. **Setting:** Intensive care and emergency units at Main Assiut University Hospital. **Study subjects:** Nurses working in intensive care and emergency units with experience less than one year (No= 55). **Study tools:** Data were gathered through four tools namely (1): Personal & job characteristics, (2): Patient Safety Value Questionnaire, (3): Patient Safety Attitudes Questionnaire, and (4): Health Professional Education in Patient Safety Survey **Results:** There were highly statistically significant differences between pre, post & follow up of the program related to nurses' knowledge about patient safety values, attitudes and competency. **Conclusion:** There were marked improvements in nurses' knowledge regarding patient safety value, attitude and competence immediately after implementation of the educational program. **Recommendation:** Implement of patient safety culture in healthcare organization according to policies, guidelines, and protocols.

**Keywords:** Attitudes, Competency, Nurses, Patient Safety & Values

### Introduction

In modern healthcare settings, both private and public institutions place a strong emphasis on ensuring the safety of patients while they are hospitalized. Patient safety is a critical concern at both national and global levels in healthcare delivery. According to WHO, (2019) adverse events during care contribute significantly to mortality and disability, highlighting the importance of safe practices. This poses challenges for hospital management as incidents rise and key issues emerge. In this situation, registered nurses are essential because they must possess strong expertise and a good outlook on patient safety in order to provide patients with high-quality treatment while they are in the hospital.

The nursing profession is vital to patient safety, yet because of budget constraints and time constraints, nurses frequently find it difficult to complete all the requirements of individual care plans. This may occur in circumstances when nurses are unable to provide the necessary level of care, which may cause important components of patient care to be omitted, delayed, or shortened. These limitations on nursing care go counter to the holistic nursing principles and negatively affect the standard and safety of care given (Mandal et al., 2019).

In Egypt, a deficiency of skilled personnel exists as the nurse-to-patient ratio falls significantly below global standard. This insufficiency can result in a lack of clear understanding concerning safety procedures.

Operating within a high-pressure and rapidly moving setting with overwhelming workloads may heighten the likelihood of safety risks for healthcare professionals in this context (El-Sherbiny et al., 2020).

Wake et al., (2021) stated that nurses make up the largest cohort of healthcare practitioners, hold the prime responsibility for enhancing patient safety. Additionally, registered nurses are the constant presence by the patient's side for 24 hours, providing care until their recovery.

Numerous researches works highlighted values and attitudes as integral aspects of safety culture, each with distinct definitions. Safety values represent fundamental principles that gauge ethical standards, distinguishing between right and wrong or good and bad within operations. These values apply to a variety of systems in the context of companies, including basic security principles, security policies, missions, visions, and objectives, as well as associated components (Johnston et al., 2020).

Safety value, which forms the cornerstone of the organization's patient safety culture, is the collective opinion held by staff members of medical facilities regarding the significance and applicability of patient safety concerns (Ullman & Davidson, 2021).

Values served as an internal compass for individuals, mirroring their understanding, influencing their decisions, and shaping their actions (Dombrádi et al., 2021). Within the realm of patient safety, values

encompass both stated values (which embody the patient safety standards advocated by healthcare institutions) and demonstrated values (which mirror the patient safety principles embodied through the actions of healthcare practitioners) (Hu et al., 2021).

While the person's thoughts and behaviors that can affect their decisions are included in their safety attitude (Ünver & Yeni, 2020). Initiatives that help protect patients are encouraged by positive attitudes toward patient safety. Assessing nurses' attitudes towards patient safety offers insights into their perspectives and actions related to preventing medical errors and maintaining patient safety standards (El Shafei & Zayed, 2019).

Through the integration of information, competence, and attitudes, competent nurses play a crucial role in maintaining safe and effective healthcare services, enabling them to adapt to changing health environments (Fukada, 2018).

The term "patient safety competency" describes the fundamental beliefs, abilities, and expertise that medical personnel must have in order to protect patients from preventable risks and hazards, with a particular emphasis on nurses due to their round-the-clock patient care responsibilities (Han & Roh, 2020).

Patient safety competences are a vital element within the spectrum of professional growth initiatives aimed at safeguarding patients from avoidable dangers and threats. Proficiency in this area plays a crucial role in promoting the realization and upkeep of patient safety objectives (Ayoung & Juh, 2021).

Patient safety competent nurses are aware of basic safety and system design principles; they also improve human and environmental aspects; communicate well; use appropriate tactics and safety resources; and efficiently use error-reporting mechanisms (Han et al., 2020).

Enhancing safety within healthcare environments necessitates enhancements in the education and practical training of healthcare professionals (Alquwez et al., 2018). Adverse incidents often stem from the inadequacy of individual healthcare providers in ensuring patient safety, which can be attributed to insufficient skills or knowledge, or inadequately tailored training programs (Kakemam et al., 2022).

### Significance of the study:

Every person may experience disease at some point in their lives, and when they use health services, they expect to receive the safest and finest care possible. For patients seeking medical attention as well as the healthcare facilities that offer it, ensuring the highest level of patient safety is crucial. **The National Academies of Sciences, Engineering, and Medicine**

(2018) stated that it is intolerable that risky healthcare practices continue to be practiced in low- and middle-income countries, causing 134 million adverse events yearly and around 2.6 million fatalities. One of the most important ways to improve patient safety is to get the opinions of nurses. Nurses play a crucial role in achieving patient safety goals since they are a vital group among healthcare providers. There are two international studies were identified during the researcher's review of the literature. The first was titled "Person-Centered Care Practice, Patient Safety Competence, and Patient Safety Nursing Activities of Nurses Working in Geriatric Hospitals done by Ayoung & Juh, (2021) and the second one was titled "Knowledge and attitude towards patient safety among registered nurses of a private hospital in Selangor Malaysia " done by Jamal, (2023). Furthermore, there were no national studies that implemented nurses' education program at three studied variables in the chosen setting. This has prompted researchers to look at the effectiveness of Main Assuit University Hospital nurses' education program on patient safety value, attitudes, and competence in critical care and emergency departments.

### Aim of the study

#### The present study aims to:

Determine the effectiveness of educational program for nurses about patient safety values, attitudes and competency.

#### Specific objectives:

- Assess nurses' knowledge about patient safety values, attitudes and competency.
- Plan an educational program about patient safety values, attitudes and competency for nurses.
- Implement an educational program about patient safety values, attitudes and competency for nurses.
- Evaluate of nurses' knowledge about patient safety values, attitudes and competency pre, post and after 3 months of educational program implementation.

#### Research hypothesis:

The implementation of the educational program will improve nurses' values and attitude and competency toward patient safety.

### Subject and Methods:

**Technical design:** This design involved the research design, setting, subject, sample and data collection tool.

**Research Design:** A quasi-experimental design was used for the current study

**Setting:** The current study was conducted in intensive care and emergency units at Main Assiut University Hospital. The program implementation was take place at the Continuing Education Center.

**Subjects:** Nurses with less than a year of experience (N = 55) who worked in the emergency and critical care departments at Main Assiut University Hospital were included in this study.

Units	Numbers
Chest ICU	6
Efficiency ICU	5
General ICU	8
Intensive anesthesia care	6
Intensive trauma care	8
Intermediate trauma care	5
Medical ICU	3
Trauma emergency	6
General emergency	6
Burn emergency	2
<b>Total</b>	<b>55</b>

**Data collection tools:** Data were gathered through four tools:

**Tool (1): Personal & job characteristics**

Self-administered questionnaire created by the researchers and including nurse age, gender, residence, marital status, department, and years of experience.

**Tool (2): Patient Safety Value Questionnaire**

Hu et al., (2021) created a questionnaire consisting of 15 items to assess nurses' safety values across two dimensions: espoused value (7 items) and practiced value (8 items).

**Scoring system:**

Respondents used a six-point Likert scale, ranging from 1 for strongly disagree to 6 for strongly agree, to provide their responses. Elevated ratings indicate favorable attitudes towards patient safety within the surveyed nurses.

**Tool (3): Patient Safety Attitudes Questionnaire**

This questionnaire was created by Guo & Zhou, (2010) and is a commonly used tool for evaluating the attitudes of healthcare workers toward the problem of workplace and patient safety. It has thirty items in six different dimensions. Five items measure job satisfaction; seven measure safety climate; six measure climate of teamwork; five measure working conditions; four measure management preparations, and four measure stress recognition.

**Scoring system:**

A five-point likert scale is used for responses, with 1 denoting strongly disagree and 5 denoting strongly agree. Higher ratings represent more favorable opinions toward patient safety attitudes.

**Tool (4): Health Professional Education in Patient Safety Survey(H-PEPSS)**

Ginsburg et al., (2012) developed a tool to evaluate health workers' self-reported patient safety competencies, considering six key sociocultural domains critical to patient safety. These domains

include collaborating with other healthcare professionals (3 items), effective communication (3 items), risk management (3 items), awareness of human and environmental factors impacting patient safety (2 items), swift hazard recognition and response (2 items), and promoting a safety-oriented culture (3 items).

**Scoring system:**

Respondents rate their agreement with statements on a five-point Likert scale, ranging from 1 for strongly disagree to 5 for strongly agree.

**Administrative design:**

The Dean of Faculty of Nursing at Assiut University, the Director of Assiut University Hospital, the Nursing Director, and nurses in each department were given official permission for the study, with the purpose explained and their oral consent requested for participation.

**Operational design:**

**Preparatory phase:** The research proposal was finalized following a review of relevant academic literatures, conducted from the beginning to the end of January 2024. It was done to translate the research tool into Arabic.

**Ethical considerations:** The study received approval from the Ethical Committee at the Faculty of Nursing, Assiut University, and followed conventional ethical standards in clinical research. Prior to participation, all participants provided verbal consent. They had the freedom to withdraw from the study at any stage, with assurances of confidentiality, anonymity, and privacy during data collection. The data collected was strictly utilized for research purposes.

**Face validity:** was performed to guarantee a clear understanding of the study tool, utilizing a panel of 5 Nursing Administration professors from Assiut University's Faculty of Nursing.

**Content validity** was evaluated through confirmatory factor analysis to ascertain the relevance, clarity, and appropriateness of each item in the tool. The analysis indicated a value of  $\geq 1.8$  for all items, confirming the validity of each

**Reliability:** Testing the study tools for reliability involved using Cronbach's Alpha Coefficient test. The patient safety value scale scored ( $\alpha = 0.836$ ), the patient safety attitude scale scored ( $\alpha = 0.858$ ), and the Health Professional Education in Patient Safety Survey (H-PEPSS) scored ( $\alpha = 0.861$ ). This suggests that the study tools are very reliable.

**Pilot study:** Conducted to assess the feasibility, clarity, and practicality of the data collection instrument. (6) Nurses, or 10% of the sample, were the subject of the pilot study. The pilot study was conducted in February 2024. There were no changes, thus the nurses who took part in the study were also considered part of the entire sample.

**Implementation phase:**

This period occurred from the beginning to the finish of March 2024, lasting one month. Creating an educational program involves establishing both general and specific objectives, and selecting the program content and methods based on a nurses' knowledge. The materials were categorized based on priority of needs. The choice of teaching methods was based on the subjects and the educational principles. The methods employed included lectures, posters, and audiovisual aids. Booklet and power point presentation were utilized as teaching aids to assist in achieving the objectives. The researchers distributed a structured questionnaire for participants to assess their knowledge about patient safety values, attitudes and competency before beginning the program and carried out the program on the (55) nurses, dividing them into two groups with 27 nurses each. The program lasted 12 hours spread over two days with 6 sessions for each group, 3 sessions each day.

The program covered definitions and types of patient safety value, attitudes, and competences, safety standards in hospitals, nursing practices, and

healthcare-related risks. It also discussed risk management, components of patient safety, the nurse's role in patient safety and examples of patient safety measures to prevent and control infections.

**Evaluation phase:**

The researcher evaluates the outcome of the program through post-test immediately after implementation of the program and follow up (after 3 months) to evaluate the change in the nursing knowledge regarding patient safety value, attitude and competence. The structured questionnaire took approximately 30 minutes to complete.

**Statistical analysis:**

Statistical package for the social science (SPSS) version 26 was utilized for data entry and analysis Data were displayed as number, percentage means and standard deviation. The difference between mean and standard deviation was demonstrated using T-test and ANOVA. The Pearson test was utilized to demonstrate a relationship between the variables. P-value considered statistically significant when  $p < 0.05$ .

**Result:**

**Table (1): Percentage distribution of personal & job characteristics data of the studied nurses included in the educational program (No=55):**

Personal characteristics	No.	%
<b>Age in years:</b>		
20 years	17	30.9
21-22 years	38	<b>69.1</b>
Age in years (mean± SD)	20.73±0.52	
<b>Genders:</b>		
Male	16	29.1
Female	39	<b>70.9</b>
<b>Marital status:</b>		
Married	24	43.6
Single	31	<b>56.4</b>
<b>Current department:</b>		
Burn reception	2	3.6
Chest ICU	6	10.9
Efficiency ICU	5	9.1
General ICU	8	<b>14.5</b>
General reception	6	10.9
Intensive anesthesia care	6	10.9
Intensive trauma care	8	<b>14.5</b>
Intermediate trauma care	5	9.1
Medical ICU	3	5.6
Trauma reception	6	10.9
<b>Experience in work/ months:</b>		
<6 months	10	18.2
6 or more	45	<b>81.8</b>
Experience month (mean± SD)	9.04±2.57	
<b>Residence</b>		
Rural	31	<b>56.4</b>
Urban	24	43.6

**Table (2): Mean score of the studied nurses' knowledge regarding patient safety values for the three period tests of the educational program (No=55)**

Items	Mean and SD			PV1	PV2	PV3
	Before intervention	After intervention	During follow up			
<b>Espoused Values</b>	23.72±4.72	35.80±3.74	32.12±4.23	<b>0.002**</b>	0.368	<b>0.001**</b>
<b>Practiced Values</b>	28.31±2.20	<b>38.35±3.37</b>	36.68±5.25	<b>0.002**</b>	0.091	<b>0.001**</b>
<b>Total Safety Value scores</b>	54.55±5.48	74.15±8.36	69.56±9.75	0.002**	0.261	0.001**

T-test &amp; Anova test

(\*\*) highly statistical significant difference

PV1 (between before and after intervention)

PV2 (between after intervention and during follow up)

PV3 (between before, after and during follow up)

**Table (3): Mean score of the studied nurses' knowledge regarding patient safety attitude for the three period tests of the educational program (No=55)**

Items	Mean and SD			PV1	PV2	PV3
	Before intervention	After intervention	During follow up			
Job satisfaction	19.45±4.15	23.21±6.24	21.11±5.30	<b>0.003**</b>	0.223	<b>0.013*</b>
Safety Climate	26.29±3.20	<b>32.58±5.89</b>	31.50±5.25	<b>0.001**</b>	0.401	<b>0.001**</b>
Teamwork climate	21.96±3.89	24.34±5.02	22.89±4.89	<b>0.031*</b>	0.613	<b>0.026*</b>
Working conditions	14.71±2.98	29.10±5.23	27.54±4.51	<b>0.001**</b>	0.279	<b>0.001**</b>
Preparation of Management	13.73±3.31	17.01±1.08	16.28±2.54	<b>0.007**</b>	0.054	<b>0.001**</b>
Stress recognition	15.09±2.72	18.24±2.01	17.38±2.33	<b>0.028*</b>	0.281	<b>0.001**</b>
<b>Total Safety attitude scores</b>	111.24±13.53	134.0±9.18	130.74±8.56	<b>0.005**</b>	0.609	<b>0.001**</b>

T-test &amp; Anova test

(\*\*) highly statistical significant difference

PV1 (between before and after intervention)

PV2 (between after intervention and during follow up)

PV3 (between before, after and during follow up)

**Table (4): Mean score of the studied nurses' knowledge regarding patient safety competency for the three period tests of the educational program (No=55)**

Items	Mean and SD			PV1	PV2	PV3
	Before intervention	After intervention	During follow up			
Working in teams with other health Professionals	7.12±2.45	12.33±1.68	10.72±1.56	<b>0.006**</b>	0.587	<b>0.001**</b>
Communicating effectively	9.01±3.95	<b>13.11±1.59</b>	12.35±1.87	<b>0.001**</b>	0.236	<b>0.001**</b>
Managing safety risks	8.25±4.02	12.82±1.62	11.01±1.89	<b>0.001**</b>	0.260	<b>0.001**</b>
Understanding human and environmental Factors	5.13±2.09	8.53±1.39	7.87±1.44	<b>0.003**</b>	0.796	<b>0.003**</b>
Recognize, respond to immediate risks	6.05±1.96	8.24±1.29	6.95±1.58	<b>0.002**</b>	0.139	<b>0.009**</b>
Safety culture	8.35±2.67	12.31±1.94	11.34±2.08	<b>0.021*</b>	0.610	<b>0.042*</b>
<b>Total safety competency scores</b>	52.55±4.14	71.18±6.12	67.27±6.91	<b>0.004**</b>	0.375	<b>0.001**</b>

T-test &amp; Anova test

(\*\*) highly statistical significant difference

PV1 (between before and after intervention)

PV2 (between after intervention and during follow up)

PV3 (between before, after and during follow up)

**Table (5): Correlation between total patient safety value, total patient safety attitude and total patient safety competency scores of the studied nurses before implementation of the program (No=55)**

Item		Total safety value	Total safety attitude	Total safety competency
<b>Total safety value</b>	Pearson Correlation		.257	.181
	Sig. (2-tailed)		.058	.185
<b>Total safety attitude</b>	Pearson Correlation	.257		.203
	Sig. (2-tailed)	.058		.138
<b>Total safety competency</b>	Pearson Correlation	.181	.203	
	Sig. (2-tailed)	.185	.138	

Pearson test.

(\*) statistically significant difference.

(\*\*) highly statistically significant difference.

**Table (6): Correlation between total patient safety value, total patient safety attitude and total patient safety competency scores of the studied nurses after implementation of the program (No=55)**

Item		Total safety value	Total safety attitude	Total safety competency
Total safety value	Pearson Correlation		.019	.154
	Sig. (2-tailed)		.888	.261
Total safety attitude	Pearson Correlation	.019		<b>.451</b>
	Sig. (2-tailed)	.888		<b>.001**</b>
Total safety competency	Pearson Correlation	.154	<b>.451</b>	
	Sig. (2-tailed)	.261	<b>.001**</b>	

Pearson test. (\*) statistically significant difference. (\*\*) highly statistically significant difference.

**Table (7): Correlation between total patient safety value, total patient safety attitude and total patient safety competency scores of the studied nurses during follow up of the program (No=55)**

Item		Total safety value	Total safety attitude	Total safety competency
Total safety value	Pearson Correlation		.280	.372
	Sig. (2-tailed)		<b>.039*</b>	<b>.005**</b>
Total safety attitude	Pearson Correlation	.280		.256
	Sig. (2-tailed)	<b>.039*</b>		.059
Total safety competency	Pearson Correlation	.372	.256	
	Sig. (2-tailed)	<b>.005**</b>	.059	

Pearson test (\*) statistically significant difference (\*\*) highly statistically significant difference

**Table (1):** Shows that the highest percentage of nurses having experience equal or more than 6 months, was females, aged between 21 to 22 years old, and single (**81.8%**, **70.9%**, **69.1%**, and **56.4%**) respectively. Also, the table illustrates that, more than half of them live in rural (**56.4 %**).

**Table (2):** Shows that there are highly statistically significant differences between pre& post of the program and pre, post & follow up of the program regarding nurse's knowledge about patient safety values. Also shows that the highest mean score of patient safety values in post as regard to practiced values (**38.35±3.37**).

**Table (3):** Shows that there are highly statistically significant differences in the nurse's knowledge about patient safety attitudes before and after the program, as well as during the follow-up period. Moreover, this table shows that the highest mean score for patient safety attitudes is seen in the post period in relation to safety climate. (**32.58±5.89**).

**Table (4):** Reveals that there are highly significant statistical differences between pre and post-program as well as pre, post, and follow-up of the program concerning nurses' knowledge of patient safety competency. Additionally, this table shows that the highest mean score for patient safety competence in the post-program phase pertains to communicating effectively (**13.11±1.59**).

**Table (5):** Demonstrates that there is no statistically meaningful variation in total patient safety values,

total patient safety attitudes, and total patient safety competency scores among the nurses examined prior to the program being introduced.

**Table (6):** Indicates a highly significant difference in total patient safety attitude and total patient safety competency scores among nurses after program implementation (**001\*\***).

**Table (7):** Indicates a strong statistical significant difference between the patient safety values and total patient safety competency scores (**.005\*\***). Additionally, a statistically significant difference was found in total patient safety values and total patient safety attitude scores, with a p-value of (**.039**) during the program follow up.

## Discussion

Nurses dedicate the majority of their time by the patient's side and play a crucial role in recognizing safety risks for the patient. Moreover, they guarantee that patients are provided with safe and high-quality care throughout all stages of their illnesses. Ensuring patient safety in nursing involves supporting patient safety, protecting patient care, and documenting adverse events. Nevertheless, quality and safety issues persistently affect the healthcare system (**Mortensen et al., 2022**).

The results of the current study demonstrated that there are highly statistically significant differences in nurse's knowledge of patient safety values between pre and post program and pre, post, and follow up

programs. Additionally, it demonstrates that the post's patient safety values had the greatest mean score in relation to practiced values. It appears that the training was successful in raising nurses' awareness of the value of patient safety. This result was in line with the findings of **Oliveria et al., (2017)** research, which indicated that nurses' knowledge of patient safety value was good. The variation could be attributed to factors such as sample size, location, education, and facility practices.

The study is supported by **Wake et al., (2021)** who found that individuals who had a strong understanding and good knowledge of patient safety value received information during initial education and continued their education. This finding aligned with **Jamal et al., (2023)** who found that most registered nurses at the Specialist Hospital had a solid grasp of the value of patient safety, its significance, and its function in a trustworthy healthcare facility.

However, the study's results contradict **Vaismoradi et al., (2020)** assertion that nurses' views on patient safety are crucial steps for improving patient safety. Globally, numerous healthcare professionals, such as nurses, possess decreased awareness regarding patient safety.

Based on the results of the current research, there are highly statistically significant differences in the nurse's knowledge about patient safety attitudes before and after the program, as well as during the follow up period. Moreover, this table shows that the highest mean score for patient safety attitudes is seen in the post period in relation to safety climate. This outcome could be attributed to the positive influence of the program on nurses' understanding of patient safety attitudes. This consistent with **Asem, et al., (2019)** who found that healthcare professionals who had undergone previous training courses had positive attitudes towards patient safety aligning with their high attitude towards it. Similarly, **Wake et al., (2021)** observed that more than half of the nurses exhibited strong knowledge and a positive attitude towards patient safety.

And also a study by **Hussein et al., (2022)** titled "Patient safety attitude among healthcare workers at different levels of healthcare in Sharqia Governorate, Egypt" discovered that the majority of participants had negative attitudes toward patient safety. This underscores the necessity of consistently developing more patient safety attitude training programs for all healthcare workers at all healthcare organizations.

In contrast with **Mohammed et al., (2022)** research, it was found that nurses displayed the highest positive attitudes towards patient safety measures in terms of job satisfaction, followed by management readiness, safety climate, and teamwork climate, with slightly less than two-thirds exhibiting overall positive

attitudes. Moreover, 75% of the participants demonstrated an acceptable level of overall knowledge. Also, **Elmwafie et al., (2022)** identified that about two-thirds of the nurses in their study had insufficient overall comprehension of safety protocol implementation, with only 30% displaying satisfactory practice.

The current study's results contradicted those of **Almugheed et al., (2022)** who observed that the safety climate domain had the lowest perception rate among nurses and doctors. This indicated a statistically insignificant difference, suggesting that there was a minimal impact of safety climate on healthcare providers in their respective institutions.

Ongoing on the study findings there are highly significant statistical differences between pre and post program as well as pre, post, and follow-up of the program concerning nurses' knowledge of patient safety competency. Additionally, this table shows that the highest mean score for patient safety competence in the post program phase pertains to communicating effectively. This result might be attributed to the positive impact of the program on nurses' understanding of patient safety competency.

This discovery aligns with the research by **Jang & Lee, (2017)** that emphasizes the importance of nurse competency in patient safety for ensuring high quality healthcare and the need for proper training. Patient safety has been highlighted by the WHO as a critical focus in global health, in line with the United Nations' Sustainable Development Goal that underscores universal access to top-tier healthcare services. Universities provide educational programs and modules in patient safety to enrich students' understanding, capabilities, and mindsets, with the goal of preparing nursing practitioners with the requisite competencies for delivering secure patient care.

Also the results aligned with **Alswat et al., (2017)** who advocated for international accreditation bodies mandating the evaluation of patient safety competence in all clinical healthcare settings within a country. These accreditation systems assess various elements of patient safety culture and can aid hospitals in comprehending factors such as teamwork among healthcare professionals, communication, safety management culture, risk assessment staffing, and response to errors. To meet these national accreditation standards, hospitals should reorganize their operations to enhance patient safety competence. Additionally according to **Alquwez et al., (2018)** students at higher academic levels demonstrate greater competency in patient safety. An increased grade level offers more chances to learn about patient safety concepts, leading to greater confidence in implementing safe practices.

Moreover, the study findings demonstrated that there is no statistically meaningful variation in total patient safety values, total patient safety attitudes, and total patient safety competency scores among the nurses examined prior to the program being introduced. This might be due to lack of nurses' knowledge and awareness about patient safety values, attitudes, and competency before implement program and the important for practitioners in healthcare settings to continue exploring these factors through further future interventions and programs in order to gain insights into how best to enhance patient safety practices among nursing staff effectively

These findings is consistent with **Mansour, (2015)** who emphasized the importance of nurses being competent in delivering safe care services based on nursing care standards. Patient safety competence within undergraduate nursing education should encompass knowledge, skills, and attitudes, with a focus on prioritizing these aspects.

In the same line **Langari et al., (2017)** demonstrated that the establishment and inclusion of patient safety as a distinct educational field has benefited healthcare professionals, managers, organizations, institutions, governments, and consumers globally. It is advised that individuals within healthcare settings, such as nurses and nursing students, should have a strong understanding of patient safety concepts and their practical applications

Also, **Colet et al., (2018)** advocated for the incorporation of patient safety education into nursing and other healthcare curricula, emphasizing that students in nursing schools need to develop a strong understanding and competence in patient safety. This is essential for enhancing patient recovery, averting adverse events, and addressing the global concern shared by healthcare and academic institutions.

Finally our findings indicated that there are highly significant differences in total patient safety attitude and total patient safety competency scores among nurses after program implementation. Also there are statistical significant differences between patient safety values, attitude and competency scores during the program follow up. This suggested that the program had a substantial impact on improving both the attitudes and competencies of nurses in relation to patient safety. The findings indicate that the program was successful in enhancing nurses' overall approach to patient safety, as well as their ability to effectively implement safe practices in their daily work. This is a promising outcome, demonstrating the effectiveness of the program in promoting a culture of patient safety within healthcare settings.

Our research aligns with **Cho & Choi's, (2018)** findings, which indicated that safety attitude and value in patient safety can forecast safety

competence, with safety attitude acting as a mediating factor. The study also revealed the substantial direct and indirect impacts of safety value on safety competency. Additionally, a noteworthy association between patient safety culture and safety competence was identified among registered nurses employed at a South Korean university hospital.

Also consistent with **Mukahana et al., (2019)** who found that the improvements in care and safety are positively impacted by nurses' competence and that patient safety is constantly addressed.

Furthermore, the current study's findings were compatible with those of **Lu et al., (2021)** who said that patient safety education is connected with improved patient outcomes and patient empowerment. Positive patient attitudes toward their own safety, combined with health care providers' efforts to improve safety, can have synergistic effects.

### Conclusions:

There were highly statistically significant differences between pre& post of the program and pre, post & follow up of the program regarding nurse's knowledge about patient safety values, attitudes and competency. There was a statistically significant difference with an improvement in knowledge regarding to patient safety value, attitude and competence scores among nurses immediate post program and follow up (after 3 months) as compared to pre program in all dimensions.

### Recommendations:

- Implement of patient safety culture in healthcare organization according to policies, guidelines, and protocols.
- Encourage nurses to engage in patient safety activities and communication channels is essential for upholding safety regulations
- Establish quantifiable criteria for the patient safety system by administrative authorities and leaders.
- Ensure that the work environment has sufficient staffing and resources, as well as foster teamwork, in order to prevent patient care errors and omissions by nurse managers.

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