

# IMPACT OF PATIENT SAFETY TRAINING PROGRAM ON NURSING STAFF COMPLIANCE WITH SAFETY GOALS AND SAFETY CULTURE

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## Abstract

**Background:** Patient safety is a crucial principle in healthcare, requiring strategic planning, consistent practices, and targeted training programs. **Aim:** The study examined the impact of patient safety training programs on nursing staff compliance with safety goals and safety culture. **Design:** A quasi-experimental research was utilized. **Setting:** The study was conducted at Al Kaser ElAini Teaching Hospital, affiliated with Cairo University. **Subjects:** All nursing staff (n=40) at the selected critical care units. **Tools:** Data was collected via a patient safety knowledge test, a safety culture survey, and an observational checklist of compliance with safety goals. **Results:** The study revealed significant statistical differences in total knowledge and knowledge dimensions during assessment periods. It also revealed significant differences in total patient safety culture and all dimensions. The total mean score across all dimensions increased significantly from  $\bar{x}=65.53$  pre-program to  $\bar{x}=153.79$  post-program and  $\bar{x}=147.00$  at follow-up. Additionally, there were significant differences in total compliance with patient safety goals mean scores and all dimensions, with the overall total mean compliance score increased from ( $\bar{x}=34.64$ ) pre-program to ( $\bar{x}=56.83$ ) post-program. **Conclusion:** The study found a significant improvement in nursing staff's knowledge test scores, patient safety culture, and compliance with safety goals immediately and three months after program implementation compared to before. **Recommendations:** Healthcare administrators should consider implementing regular patient safety training programs to enhance nursing staff knowledge of patient safety, foster a patient safety culture, and promote compliance with safety goals.

**Keywords:** Knowledge, Patient Safety, Safety Culture, Nursing Staff, Safety Goals.

## INTRODUCTION

Patient safety in the context of healthcare organizations was highlighted following the Institute of Medicine (IOM) report "To Error is Human: Building a Safer Health System." This report argued for a safety culture in which adverse events are reported without people being blamed and that lessons are learned when mistakes occur. Therefore, if hospitals want to improve patient safety, it is important to know more about the views of their staff about the culture of patient safety (Brás et al., 2023). Patient safety has risen to the top of the healthcare improvement agenda in recent years, as increasing evidence highlights the severity of patient harm caused by medical errors. Creating a positive patient safety culture is essential for improving patient safety in healthcare organizations (Lee & Dahinten, 2020).

The shared beliefs, attitudes, and behaviors that influence the safety of healthcare practices comprise the patient safety culture. It requires healthcare providers to prioritize patient safety and continuously improve care quality. A positive patient safety culture promotes open communication, operational error reporting, and a nonpunitive approach to learning from errors. By fostering a safety culture, healthcare organizations can create an environment where patient safety is a top priority, reducing adverse events and enhancing healthcare outcomes (Babaie et al., 2023).

International patient safety goals are a global framework for standardizing patient safety practices among healthcare organizations. These goals address vital aspects of patient safety, including medication safety, infection control, surgical safety, and communication between healthcare providers. By establishing these goals, international bodies intend to align healthcare organizations and promote consistent practice to improve global patient safety. These goals enable healthcare providers to concentrate on evidence-based strategies and continuously enhance patient safety outcomes (Sithi & Widyastuti, 2019).

According to Kakemam et al. (2022), developing and fostering a patient safety culture is essential for healthcare organizations to effectively address international patient safety goals. A robust patient safety culture ensures that all healthcare team members adhere to safety objectives and implement best practices. This alignment encourages healthcare professionals to proactively approach patient safety by fostering continuous improvement, teamwork, and communication. By fostering a robust culture of patient safety, healthcare organizations can improve compliance with international patient safety goals and ultimately enhance the quality and safety of patient care.

The understanding of international goals has emerged as a pivotal factor for advancement and progress, particularly in the context of the growing globalization of the healthcare sector. Furthermore, patient safety goals have become essential for all hospitals seeking accreditation from the Commission on Accreditation of Hospitals. The Joint Commission International has delineated six international patient safety goals: (1) Correct Patient Identification, (2) Enhancement of Effective Communication, (3) Augmentation of the Safety of High-Alert Medications, (4) Assurance of Correct-Site, Correct-Procedure, Correct-Patient Surgery, (5) Reduction of the Risk of Health Care–Associated Infections, and (6) Decrease in the Risk of Patient Harm Owing to Falls (Shehata Mohammed Mady et al., 2017).

However, Tlili et al. (2021) concluded that investing in patient safety culture and safety goals has significant economic implications for healthcare organizations. Organizations can reduce costs associated with adverse events, preventable errors, and litigation by prioritizing patient safety. Additionally, a positive patient safety culture improves staff retention, enhances patient satisfaction, and promotes organizational reputation. The financial savings and improved operational efficiency resulting from a strong patient safety culture can be redirected towards further patient safety initiatives and quality improvement efforts, creating a positive feedback loop that benefits both patients and

healthcare organizations. This study examines the impact of patient safety training programs on nursing staff compliance with safety goals and safety culture.

### **Significance**

Nurses are pivotal in any healthcare institution, often the primary caregivers interacting directly with patients. The researcher's professional experience across various hospitals highlighted a significant need for enhancing the nursing staff's understanding of patient safety culture and patient safety goals, as there was a noticeable gap in their knowledge and abilities in these areas. Furthermore, the nurses themselves expressed a keen interest in participating in patient safety training programs. Such initiatives could equip them with the necessary skills to navigate their challenges while treating patients and minimize the risk of errors and mishaps.

### **Aim of the Study**

The current study examined the impact of patient safety training programs on nursing staff compliance with safety goals and safety culture.

### **Research Hypothesis**

- H1: The mean scores of the nursing staff knowledge test of patient safety in the post-test will be higher than the mean pretest scores.
- H2: The mean scores of the nursing staff's perception of patient safety culture after the program implementation will be higher than the mean scores before.
- H3: The mean scores of nursing staff compliance with patient safety goals after the program implementation will be higher than the mean scores before.

### **Research Design**

A quasi-experimental (one group pretest/posttest) design was utilized in this study.

### **Setting**

The study was conducted in two selected critical care units at the New Emergency Hospital (185), an affiliate of Cairo University, located in Al Kasr Al-Ainy.

### **Sample**

All nursing staff (n=40) working in the previously selected critical care units were included in this study. These nurses, who were part of the active workforce during the data collection period, had at least one year of experience providing direct patient care during data collection and were accepted to participate in the patient safety training program.

### **Data Collection Tools**

Three tools were utilized as follows:

### **First tool: patient safety knowledge Test.**

The researcher developed it after an extensive review of the literature, and it was divided into two parts as follows:

#### **1<sup>st</sup> Part: Personal Characteristics Data Sheet**

The researcher developed it; it includes such personal data of the participants (age, level of education, gender, and years of experience in the unit).

#### **2<sup>nd</sup> part: Patient safety knowledge Test**

This tool was employed to evaluate the understanding of the nursing staff concerning patient safety, with particular emphasis on patient safety culture and international patient safety goals. The evaluation comprised 20 questions, split evenly into two categories: 10 multiple-choice questions focused on patient safety culture and another 10 on international patient safety goals.

### **Scoring System**

The value of each question was granted one point for the correct answer and zero for the incorrect answer.

### **Second Tool: Patient Safety Culture Survey**

The survey employed for assessing nursing staff perception of patient safety culture. It was adopted from the Agency for Healthcare Research and Quality's model. This tool, composed of 42 items, is divided into 12 dimensions. Notably, it does not incorporate sociodemographic variables (AHRQ, 2019). The twelve dimensions of patient safety culture are teamwork within units (4 items), supervisor/manager expectations and actions promoting patient safety (4 items), organizational learning-continuous improvement (3 items), management support for patient safety (3 items), overall perceptions of patient safety (4 items), feedback and communication about error (3 items), communication openness (3 items), frequency of events reported (3 items), teamwork across units (4 items), staffing (4 items), hands-off and transitions (4 items), and non-punitive response to errors (3 items).

### **Scoring System**

Respondents were asked to respond to nine dimensions of patient safety culture (including teamwork within units, supervisor/manager expectations & actions promoting patient safety, organizational learning-continuous improvement, management support for patient safety, overall perceptions of patient safety, teamwork across units, staffing, handoffs & transitions, and non-punitive response to errors) using a 5-point Likert scale based on agreement levels (ranging from strongly agree to strongly disagree). The remaining three dimensions of patient safety culture (communication openness, feedback & communication about error, frequency of events reported) required responses on a 5-point Likert scale, but in this case, it was based on the frequency of occurrence (options ranged from always to never).

### **Third Tool: Observational Checklist of Staff Compliance with Patient Safety Goals**

This tool, developed by the researcher and informed by the Joint Commission International Accreditation (2017), consists of six dimensions designed to gather study-relevant data. It breaks down into 35 items, structured as follows: correct patient identification (6 items); enhancement of effective communication (7 items); improvement in the safety of high-alert medications (6 items); assurance of correct-site, correct-procedure, and correct-patient surgery (6 items); reduction of the risk of healthcare-associated infections (5 items); and reduction of the risk of patient harm due to falls (5 items).

#### **Scoring System**

The scoring system was a three-point Likert scale as follows:

- Done (2)
- Not done (1)
- Not applicable (0)

For each goal and sub-goal and the total checklist, the scores of the items were summed up, and the totals were divided by the number of corresponding items, giving mean scores. These were converted into percent scores. The performance was considered adequate if the percent score was 80% or higher and inadequate if less than 80%.

#### **Tools Validity**

Content validity was checked by a panel of five experts from the nursing administration department at the Faculty of Nursing at Cairo University. The content, coverage, clarity, wording, length, format and the overall appearance of the tool were checked.

#### **Tool Reliability**

The reliability of the study tools was evaluated using Cronbach's Alpha test, a widely accepted measure for internal consistency. The patient safety knowledge test and patient safety culture tool demonstrated high reliability with Cronbach's Alpha score of 0.82 and 0.85, respectively. The compliance observational checklist exhibited a Cronbach's Alpha of 0.79, signifying an acceptable level of reliability. These results suggest that the tools used in the study were reliable and provided consistent results.

#### **Ethical Consideration**

Primary approval was obtained from the Faculty of Nursing Cairo University research ethical committee.

## **The Procedure**

### **Assessment Phase**

After thoroughly reviewing relevant literature, the researcher developed the study's research tools, ensuring their reliability and validity through a rigorous process. Ethical approval was obtained from the Faculty of Nursing-Cairo University, and the hospital's medical and nursing director permitted the study. The researcher then met with the nurse director to clarify the study's objectives and collaborated with the hospital administration. Subsequently, nursing staff that met the inclusion criteria were informed about the study's purpose and significance, and their written consent for participation was obtained, adhering to ethical guidelines and preserving the voluntary nature of participation.

### **Planning Phase**

Before implementing the program, an extensive assessment was conducted to evaluate the nursing staff's understanding of patient safety principles using a knowledge test questionnaire, a Hospital Survey on Patient Safety Culture, and direct observation. The staff was observed three times across different shifts, and their adherence to international patient safety goals was scored on a three-level system. Based on the assessment data, a custom educational program was developed to address the identified needs, which experts then reviewed for its alignment with educational objectives, and a detailed timetable was planned for optimal session distribution.

### **Implementation Phase**

The researcher launched a four-week patient safety training program for the nursing staff, consisting of six classroom instruction sessions and practical exercises. Due to scheduling conflicts, particularly for those engaged in intensive care units, some sessions were repeated, and most were conducted online, with recordings provided for review. The program's purpose, objectives, and content were shared with the staff upfront, and sessions, which varied in location and time based on shift, began with an introduction and ended with feedback solicitation. The program's duration extended beyond the initial plan due to the logistical challenges and the need to conduct some sessions online via Zoom.

### **Evaluation and Follow-Up Phase**

In this phase, the researcher evaluated the immediate impact of the training program with the same previous tools.

## **RESULTS**

Table (1) shows that more than half (52.2%) of the studied nursing staff were females. Half (50%) of them were in the age group (20-< 30) and had 1-< 5 years of experience. Also, one quarter (25%) of them had a diploma degree. The highest percentage (87.5%) of them did not attend any training program on patient safety.

Table (2) shows that there were highly significant statistical differences ( $p < 0.05$ ) in both total knowledge and knowledge dimensions during periods of assessment among the studied nursing staff with elevation in post-test and follow-up above pre-test. When considering the total knowledge scores, the mean score considerably increased from  $\bar{x} = 11.18$  (SD = 3.86) at the pre-program to  $\bar{x} = 18.50$  (SD = 1.81) at the post-program and slightly decreased to  $\bar{x} = 18.0$  (SD = 1.40) at the follow-up. The changes across periods of assessment were highly statistically significant for patient safety culture ( $F = 59.98$ ,  $p = 0.00$ ), international patient safety goals ( $F = 84.21$ ,  $p = 0.00$ ), and total knowledge ( $F = 100.0$ ,  $p = 0.00$ ).

Table (3) concludes that there were significant statistical differences ( $p < 0.05$ ) in both total patient safety culture and all dimensions between the different periods of assessment among the studied nursing staff with elevation in post-test and follow-up above pre-test. In each domain, the mean score increased from pre-program to post-program and largely maintained at follow-up. The most significant leap was observed in the "Overall Perceptions of Patient Safety" domain. The mean score rose from  $\bar{x} = 4.28$  pre-program to  $\bar{x} = 15.05$  post-program and  $\bar{x} = 14.63$  at follow-up ( $F = 1.22$ ,  $p < 0.01$ ). The total mean score across all domains also significantly increased from  $\bar{x} = 65.53$  pre-program to  $\bar{x} = 153.79$  post-program and  $\bar{x} = 147.00$  at follow-up ( $F = 3.09$ ,  $p < 0.01$ ).

Table (4) concludes that there were significant statistical differences ( $p = 0.00$ ) in both total compliance with patient safety goals mean scores and all dimensions between the different points of assessment among the studied nursing staff with elevation in post-program and follow-up above pre-program. The dimensions with the largest pre-to-post increases in mean scores were high-alert medication safety (from  $\bar{x} = 6.12$  to  $\bar{x} = 11.18$ ), Effective Communication (from  $\bar{x} = 7.01$  to  $\bar{x} = 10.25$ ), and correct patient identification (from  $\bar{x} = 6.38$  to  $\bar{x} = 10.05$ ). The overall total mean compliance score increased from ( $\bar{x} = 34.64$ ) pre-program to ( $\bar{x} = 56.83$ ) post-program. Although slight regressions in mean scores occurred at follow-up, they remained significantly higher than baseline for all dimensions and overall.

Table (5) reveals that there were significant statistical positive correlations between the following: knowledge & compliance ( $r = 0.24$ ,  $p = 0.01$ ), knowledge & safety culture ( $r = 0.14$ ,  $p = 0.05$ ), and safety culture & compliance ( $r = 0.32$ ,  $p = 0.03$ ) at pre-program.

Table (6) reveals that there were significant statistical positive correlations between the following: knowledge & compliance ( $r = 0.67$ ,  $p = 0.00$ ), knowledge & safety culture ( $r = 0.36$ ,  $p = 0.02$ ), and safety culture & compliance ( $r = 0.60$ ,  $p = 0.01$ ) at post-program.

Table (7) reveals that there were significant statistical positive correlations between the following: knowledge & compliance ( $r = 0.54$ ,  $p = 0.01$ ), knowledge & safety culture ( $r = 0.38$ ,  $p = 0.04$ ), and safety culture & compliance ( $r = 0.52$ ,  $p = 0.01$ ) at follow up.

**Table 1: Frequency Distribution of Nursing Staff Personal Characteristics (n=40)**

Personal Characteristics	No.	%
<b>Gender:</b>		
Male	19	47.5
Female	21	52.5
<b>Age:</b>		
20-< 30 years	20	50
30-< 40 years	15	37.5
40-< 50 years	5	12.5
<b>Mean± SD</b>	29.80± 4.07	
<b>Years of experience:</b>		
1-< 5 years	20	50
5-< 10 years	15	37.5
10-< 15 years	5	12.5
<b>Mean± SD</b>	5.83± 1.31	
<b>Degree of Education:</b>		
Diploma	10	25
BSc	15	37.5
Associate degree	15	37.5
<b>Attending training program on safety:</b>		
Yes	5	12.5
No	35	87.5

**Table 2: Comparing the Mean difference of nursing staff patient safety knowledge test scores among Different Periods of Assessment (Pre-program- Post-program – Follow-up) (n=40)**

Knowledge dimensions	Pre-program		Post-program		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Patient safety culture	5.88	2.41	9.33	0.92	9.00	0.78	59.98	0.00
International patient safety goals	5.30	2.09	9.18	1.28	9.00	0.91	84.21	0.00
Total knowledge	11.18	3.86	18.50	1.81	18.0	1.40	100.0	.00

\*P value is significant at ≤0.05.

**Table 3: Comparing Mean Scores of Nursing Staff Perceived Patient Safety Culture Dimensions During Different Periods of Assessment ( Pre-program- Post-program – Follow-up ) (n=40)**

Safety culture dimensions	Pre- program		Post- program		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
1. Teamwork Within Units	6.38	2.61	16.23	2.04	15.58	1.89	7.28	0.00



2. Supervisor/Manager Expectations & Actions Promoting Patient Safety	5.95	2.30	15.18	1.43	15.03	1.76	5.14	0.01
3. Organizational Learning-Continuous Improvement	5.73	1.89	12.33	1.24	11.90	1.21	12.54	0.00
4. Management Support for Patient Safety	4.78	1.61	11.33	1.62	11.03	1.25	1.34	0.00
5. Overall Perceptions of Patient Safety	4.28	2.47	15.05	2.11	14.63	2.07	1.22	0.00
6. Feedback & Communication About Error	4.25	2.58	10.73	2.32	9.70	2.74	3.51	0.03
7. Communication Openness	3.95	2.02	9.30	1.86	8.60	2.15	1.73	0.01
8. Frequency of Events Reported	4.25	3.00	10.00	3.00	9.25	2.88	0.85	0.03
9. Teamwork across units	6.58	2.25	13.93	2.00	13.55	1.97	0.41	0.02
10. Staffing	7.45	2.12	14.78	2.06	14.70	1.95	0.29	0.01
11. Hands-off and transitions	6.63	1.96	14.08	2.18	12.55	2.80	8.45	0.00
12. Non-punitive response to errors	5.30	1.45	10.85	1.72	10.48	2.11	2.15	0.02
<b>Total</b>	65.53	10.75	153.79	23.58	147.00	24.78	3.09	0.01

\*P value is significant at  $\leq 0.05$ .

**Table 4: Comparing Mean Scores of Nursing Staff Compliance with International Patient Safety Goals during Different Periods of Assessment ( Pre-program- Post-program – Follow-up ) (n=40)**

International patient safety goals compliance dimensions	Pre-program		Post-program		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
1-Identify Patients Correctly	6.38	0.87	10.05	1.01	10.30	0.82	411.24	0.00
2-Improve Effective Communication	7.01	0.70	10.25	0.71	9.55	0.93	455.07	0.00
3-Improve the Safety of High-Alert Medications	6.12	0.52	11.18	0.68	9.73	0.64	988.20	0.00
4-Ensure Safe Surgery	4.90	0.39	6.63	0.54	6.60	0.50	507.65	0.00
5-Reduce the Risk of Health Care-Associated Infections	5.03	0.61	9.43	0.78	8.58	0.71	592.55	0.00
6-Reduce the Risk of Patient Harm Resulting from fall	5.20	0.39	9.30	0.72	8.50	0.82	527.51	0.00
<b>Total</b>	34.64	3.48	56.83	4.44	53.25	4.42	3301.88	0.00

\*P value is significant at  $\leq 0.05$ .

**Table 5: Correlation between Knowledge about Patient Safety, Patient Safety Culture, and Compliance with Patient Safety Goals among the Nursing Staff during the Pre-program (n=40)**

Pre-program Pearson Correlation		Total knowledge	Total compliance
Total compliance	r	.24	
	P	.01*	
Total safety culture	r	.14	.32
	P	.05*	.03*

\*P value is significant at  $\leq 0.05$ .

**Table 6: Correlation between Knowledge about Patient Safety, Patient Safety Culture, and Compliance with Patient Safety Goals among the Nursing Staff during the Post-program (n=40)**

Post-program Pearson Correlation		Total knowledge	Total compliance
Total compliance	r	.67	
	P	.00*	
Total safety culture	r	.36	.60
	P	.02*	.01*

\*P value is significant at  $\leq 0.05$ .

**Table 7: Correlation between Knowledge about Patient Safety, Patient Safety Culture, and Compliance with Patient Safety Goals among the Nursing Staff during Follow-Up (n=40)**

Follow up Pearson Correlation		Total knowledge	Total compliance
Total compliance	r	.54	
	P	.01*	
Total safety culture	r	.38	.52
	P	.04*	.01*

\*P value is significant at  $\leq 0.05$ .

## DISCUSSION

Regarding **nursing staff total knowledge level of patient safety**, the data revealed a significant increase in knowledge levels among nursing staff from pre-program to post-program and follow-up. In the pre-program, the majority had low to moderate knowledge, while the post-program and follow-up data showed that nursing staff had high knowledge levels with a small decrease in the follow-up. From the researcher's point of view, the

significant increase in knowledge levels can be attributed to the practical application of the patient safety concepts taught during the program. The training was not just theoretical, but allowed for active participation and hands-on experiences, embedding the importance of patient safety in real-world scenarios. Moreover, following the training, regular assessments and feedback sessions were conducted to reinforce the newly acquired knowledge and to address any areas of confusion.

The results of the study was in agreement with the findings of Abdullah, Abdullah, and Abo Elmagd (2020) highlighted in their study that nurses' knowledge levels about patient safety showed marked improvement after implementing a training program about patient safety. Similarly, Agbar, Zhang, Wu, and Mustafa (2023), who demonstrated a significant improvement in the nursing staff's knowledge levels regarding patient safety after implementing targeted educational programs. Their study, like the current one, underscored the importance and effectiveness of specialized training in enhancing knowledge and awareness about patient safety among nursing staff.

As regard to **total perception of nursing staff regrading patient safety culture** , the current study was based on another hypothesis that there would be discernible differences in nursing staff's perception of patient safety culture following program implementation and at a three-month follow-up compared to the baseline scores. The data revealed statistically significant differences accompanied by a pronounced improvement in the total mean scores of the nursing staff's perception of patient safety culture. Most nursing staff achieved high mean scores immediately after the program and maintained this level three months post-program implementation, compared to their pre-program scores.

From the researcher point of view, this could be due to increased nursing staff awareness and knowledge regarding patient safety culture after program implementation. The results of the current study are consistent with the research conducted by Alsabri et al. (2020), who reported that a structured program significantly improved the perception of patient safety culture among nursing staff. Additionally, this similarity in findings underscores the effectiveness of such programs in fostering a culture of patient safety. In another study by Konjengbam and Akoijam (2023), they found that structured interventions aimed at improving patient safety culture led to significant improvements. Contrary to the current study's findings, a study by Kakemam et al. (2022) found that no significant improvements in staff perceptions of patient safety culture following an educational intervention.

Concerning **overall nursing staff compliance with patient safety goals**, the current study was based on another hypothesis that there would be significant differences in nursing staff compliance with safety goals following program implementation and at a three-month follow-up compared to the baseline scores. The findings supported this hypothesis, demonstrating statistically significant variations in the mean scores of nursing compliance with safety goals across different assessment periods. The highest mean scores were recorded immediately after the program's implementation and sustained at a three-month follow-up.

This could be due to addressing the initial lack of training and education, thereby boosting the staff's understanding of the goals and their skills to achieve them. It also equipped nursing staff with clear guidelines and procedures that made best practices easier to integrate into daily work. Therefore, the program was pivotal in nurturing a culture that places patient safety at the forefront.

This finding was supported by Sukesi and Rohana (2022) research. Their study, aimed at elevating knowledge and modifying nurses' compliance in implementing patient safety goals, found a notable improvement in nurses' compliance levels post-education about patient safety goals. On the same line, Abdullah, Abdullah, and Abo Elmagd (2020) conducted a study at Rajhy Liver Hospital, Assiut University, to evaluate the impact of a training program on international patient safety goals and its effect on patient safety culture. They discovered that the training program's execution proved successful and positively affected enhancing nurses' performance concerning the application of international patient safety goals post-implementation.

At pretest, the study found significant positive correlations between knowledge about patient safety, patient safety culture, and compliance with safety goals among nursing staff. This aligns with Vaismoradi et al. (2020) and Albalawi et al. (2020), indicating that increased knowledge can lead to better compliance and a stronger patient safety culture.

At post-test and follow-up, the findings again showed strong correlations between these variables, supporting Chung (2018) and Lee et al. (2023). These correlations were even stronger post-tests, likely due to the staff's increased knowledge from the training program.

However, the correlations slightly reduced at follow-up, suggesting the training program's effect may decrease over time, highlighting the need for continuous reinforcement, as pointed out by Schulman (2020). Our research underlines the importance of knowledge enhancement, a robust safety culture, and ongoing reinforcement in improving patient safety compliance.

## **CONCLUSION**

The finding of the present study concluded that there was a statistically significant difference in knowledge test scores with marked improvement of nursing staff about patient safety after the program implementation and three months later compared to pre-program. Additionally, there was a statistically significant difference in both total patient safety culture and all dimensions after the program implementation and three months later compared to pre-program. Furthermore, there was a statistically significant difference in total compliance with patient safety goals mean scores and all dimensions after the program implementation and three months later compared to pre-program.

## RECOMMENDATION

- Healthcare administrators should consider implementing regular patient safety training programs to enhance nursing staff knowledge of patient safety, foster a patient safety culture, and promote compliance with safety goals.
- Head nurses should conduct regular monitoring to identify gaps and provide insights for future safety training programs.
- Administrators should develop policies that support and encourage a robust patient safety culture and foster compliance with patient safety goals.
- Incorporate patient safety into the nursing curriculum to ensure that future nurses meet the necessary knowledge required to practice in different healthcare sectors.
- Nursing faculties should organize regular workshops and seminars on patient safety to provide students and faculty members with up-to-date information on best practices in patient safety.
- Future studies should investigate the impact of patient safety training programs on other healthcare team members.

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