

## **Influence of Continuous Training on Nurses Knowledge and Attitude Toward Safe Patient Care at Bahawal Victoria Hospital (BVH), Bahawalpur-Pakistan**

**Hafiza Nain Tara<sup>1</sup>, Aneela Waheed<sup>2</sup>, Sumaira Hussain<sup>3</sup>,  
Tahira Musarrat<sup>4</sup>, Muhammad Kashif<sup>5</sup>**

<sup>1</sup>Post RN BSN Student, Bahawalpur Institute of Medical Sciences Bahawalpur-Pakistan.

<sup>2</sup>Post RN BSN Student, College of Nursing Islamia University Bahawalpur-Pakistan.

<sup>3, 4</sup>Nursing Officer, BVH Hospital Bahawalpur-Pakistan.

<sup>5</sup>Generic BSN Student, College of Nursing Islamia University Bahawalpur-Pakistan.

[muhammadbinjabbar982982@gmail.com](mailto:muhammadbinjabbar982982@gmail.com), [aneelawaheed92@gmail.com](mailto:aneelawaheed92@gmail.com), [sumaira77733@gmail.com](mailto:sumaira77733@gmail.com),  
[tahiramusrrat@gmail.com](mailto:tahiramusrrat@gmail.com), [muhammadkashifmalik426@gmail.com](mailto:muhammadkashifmalik426@gmail.com)

**DOI: 10.5281/zenodo.18736784**

### **ABSTRACT**

**Background:** Ongoing professional education is one of the key pillars of patient care and safety. Nevertheless, there is a lack of evidence on its effects on the knowledge and attitudes of nurses working in tertiary hospitals in Pakistan.

**Purpose:** To determine the impact of continuous training on the knowledge of nurses and their attitudes towards providing safe patient care at Bahawal Victoria Hospital, Bahawalpur.

**Methods:** A cross-sectional study in a descriptive design was introduced on 150 RNs using a structured questionnaire that contained demographic information, training exposure, knowledge tests, and attitude scales. Analysis of data was done using SPSS with the level of significance of  $p < 0.05$ .

**Findings:** The attendance of nurses in training was found to be 70 per cent in the last year. The perceptions of knowledge were moderate (mean =  $7.4 \pm 1.9$ ) and high in 46.7% and 40% of the participants respectively. Attitude scores showed positive attitude towards patient safety (mean =  $38.6 \pm 6.2$ ) and the scores were much higher among trained nurses ( $p < 0.05$ ). The workload (63.3%), the staffing shortage (53.3%), and the limited time (46.7%), were major obstacles to training.

**Conclusion:** On-going training is found to be a major improvement in patient safety knowledge and attitude among the nurses at BVH. These results require institutional support, proper scheduling and management participation.

**Recommendation:** To enhance the culture of patient safety, BVH management should formalize routine and context-specific training and establish policy structures that guarantee participation, assessment, and follow-up on patient safety.

**Keywords:** Continuous training, Patient safety, Nurses knowledge, Attitude, Professional development, Pakistan.

**Cite as:** Hafiza Nain Tara, Aneela Waheed, Sumaira Hussain, Tahira Musarrat, Muhammad Kashif (2025). Influence of Continuous Training on Nurses Knowledge and Attitude Toward Safe Patient Care at Bahawal Victoria Hospital (BVH), Bahawalpur-Pakistan. Mader-e-Milat International Journal of Nursing and Allied Sciences, 3(3), 30-46. <https://doi.org/10.5281/zenodo.18736784>

## INTRODUCTION

### Background of the Study

Patient safety is one of the primary elements of healthcare quality and the indicator of successful clinical practice. The competence of nurses as the greatest proportion of the healthcare workforce provides them with a major role in patient safety via clinical skills, critical thinking, communication, and evidence-based practice. It is important to note that the World Health Organization (WHO, 2023) recommends that patient safety should be enhanced through the continuous capacity-building of nurses to enable them address sophisticated patient needs and new healthcare issues effectively.

Continuous professional development (CPD) or continuous training has become a necessity in the healthcare system in the contemporary world. The current development of medical technology, changes in treating protocols, and the rise in patient acuity necessitate nurses to keep their knowledge and competencies constantly updated. Research has shown that nurses involved in continuous training have a high level of competency, better decision-making, increased confidence, and better adherence to patient safety measures (Almutairi and Al-Mutairi, 2024). Patient care outcomes can enhance greatly as well as the number of clinical errors that can be prevented with the help of training programs like simulation-based learning, infection control updates, medication safety workshops, and communication training.

Some of the problems witnessed in Pakistan healthcare facilities include shortage of staff, too much work, insufficient training funds, and lack of access to current educational materials. Bahawal Victoria hospital (BVH) is a hospital with high patient volume in South Punjab which is a tertiary care hospital with a wide range of clinical needs. Although BVH has regular training programs, these programs are neither consistent, well covered nor effective and no study have clearly defined the effect on the knowledge and attitudes of the nurses towards patient safety.

Knowledge is just as important as a positive attitude of the nurses towards patient safety. Nurses who view training as important are better placed to adhere to safety measures, participate in preventive measures and also have a proactive attitude towards the recognition of patient risks. Nonetheless, there is a lack of evidence regarding the effects of continuous training on such attitudes in the Pakistani healthcare environment.

Since nurses play a vital role and patient safety culture in BVH is underdeveloped, it is important to consider the question of whether continuous training programs can become effective in improving the knowledge and attitudes of nurses. The research will address a significant gap because it will determine how the concept of continuous training impacts safe patient care practices, define current gaps, and provide some evidence-based suggestions to enhance the nursing education program at BVH. elivering safe patient care. The International Council of Nurses (ICN, 2022), indicates that CPD is effective to improve clinical judgment, best practices, and to reduce the probability of adverse patient outcomes dramatically. According to a 2023 WHO report, trained nurses have increased adherence to safety measures including hand hygiene, medication safety, patient identification, and fall prevention.

Almutairi and Al-Mutairi (2024) discovered that frequent training contributes to better clinical performance, confidence, and medical errors. Equally, Salmond (2020) underscored that CPD has the benefit of empowering professional development, improving critical thinking, and supporting positive patient safety culture.

Some of the researches affirm that lifelong training is very effective in enhancing the knowledge of nurses. Training, drills and organized workshops that are carried out in a simulation manner assist the nurses to remember the information and more efficiently utilize them in the actual clinical environment. According to a study by Campos et al. (2023), nurses who underwent structured patient safety training had much higher levels of knowledge than the non-receivers.

South Asian healthcare systems research shows the same results. In a study conducted in Lahore, Fatima and Jadoon (2022) found that nurses who underwent regular training in terms of infection control and medication safety had better knowledge assessment and provided safer clinical care compared to untrained counterparts.

These are the results that prove the hypothesis according to which regular training is a key to staying informed about current clinical knowledge base and avoiding unsafe or outdated practices.

Attitude is very crucial in influencing the consistency of nurses adhering to safety measures. Training has been demonstrated to positively influence the perceptions of patient safety by nurses, motivation, and proactive safety behaviors.

A recent study conducted by AlYami et al. (2021) showed that the organized training programs enhanced the attitudes of nurses toward teamwork, communication, and error reporting. Equally, a 2023 study by Raza et al. in Pakistan also discovered that nurses who were exposed to frequent training sessions had a much more favorable attitude towards patient safety culture than nurses who were not exposed to training.

The positive attitudes are associated with enhanced cooperation, increased communication with patients and colleagues, and increased readiness to engage in safety measures.

In Ahmed et al. (2023) research carried in Karachi, it was revealed that nurses consider training valuable, but most of them cannot do it as they are staffed and unforeseen by their bad schedules. The Joint Commission International (2022) also emphasizes the importance of healthcare institutions to provide available, sustainable, and quality training programs in order to improve patient safety.

These obstacles denote that specialized training interventions are to be adopted in Pakistani hospitals, BVH included

### **Problem Statement**

Despite the critical role nurses play in safe patient care, many healthcare facilities struggle with inconsistent training, varying levels of nurse competency, and gaps in patient safety awareness. At BVH, although some training sessions are conducted, their effectiveness in enhancing nurses' knowledge and attitudes has not been systematically evaluated. Without clear evidence, it is difficult for hospital management to improve or redesign training programs. Therefore, there is a need to assess how continuous training influences nurses' knowledge and attitudes toward safe patient care at BVH.

## LITERATURE REVIEW

The issue of patient safety has become one of the central elements of the quality in healthcare worldwide. It is an expression of how healthcare systems are capable of avoiding unnecessary harm when providing care and guaranteeing positive patient outcomes. As the greatest part of the workforce in the healthcare sector, nurses have a pivotal role in ensuring patient safety because of their constant bedside attendance, close care with patients, and their management and coordination of multidisciplinary teams. Their knowledge and clinical skills as well as their attitudes largely determine the general safety culture in health facilities. Due to this reason, the role of constant training and professional development has been receiving more and more interest in recent years as the necessary measure, which would enhance the performance of nursing as well as the patient safety results.

Continuous professional development (CPD) is the systematic learning process helping nurses to preserve, update, and advance their professional knowledge and skills during their working life. The constant development of new medical technologies, the regular change of clinical guidelines, and the growing complexity of patients imply that continuous training becomes mandatory instead of discretionary. Research is always able to establish that nurses engaged in regular training during their work have a greater level of clinical knowledge and understanding of the principles of patient safety.

According to the World Health Organization, lifelong learning enhances the ability of nurses to provide safe and effective services, especially in high-risk clinical settings, like intensive care units and tertiary hospitals. Infection control, medication safety, patient identification, and emergency response training programs have also been found to have a positive impact on the theoretical knowledge of nurses and their capacity to translate theoretical knowledge to practice. Particularly, simulation based learning and systematic workshops enable the nurses to turn theoretical knowledge into practical clinical decision-making. A number of foreign studies have also recorded that there is a close relationship between regular training and better nursing knowledge. Nurses that have also supplemented thru refresher courses and safety-related workshops are more averse of safety procedures, low rates of errors, and adherent of the standard operating procedures. These results indicate that ongoing training is a safety measure against outmoded practices and knowledge lapses that can undermine the safety of patients. Besides knowledge, attitude is another major determinant of behavior by nurses with regard to patient safety. The positive attitude helps to motivate the nurses to adhere to the safety standards, report the mistakes, communicate and participate in the safety enhancement programs. It has been found out that the continuous training improves the level of knowledge as well as positively affects the attitude of nurses to the safe treatment of patients.

It has been identified that training programs that include the importance of working together, communicating and being ethically responsible can help to create a culture of safety among nursing employees. Regularly trained nurses will find it easier to view patient safety as a part of a collective responsibility and not an individual liability. Their self-confidence in managing complex clinical cases and their adherence to the safety standards are also higher.

The research presented in both developed and developing countries is propping the thesis that trained nurses have better patient safety attitudes. The educational interventions enhance motivation, accountability, and willingness of nurses to embrace safe practices. Moreover, nurses who feel that training is important are more likely to take an active role in safety reporting systems and quality improvement initiatives which are important elements of a robust patient safety culture.

Although the benefits of the continuous training are extensively reported, the healthcare system in the low- and middle-income countries (LMICs), including Pakistan, experience considerable difficulties with the introduction of the effective training programs. These are generally staff shortages, workloads, insufficient financial resources, and absence of institutional backing. The limitation usually leads to an unplanned, poorly designed, or under-assessed training programmers. Research carried out in South Asian healthcare facilities indicates that in many instances, nurses have observed the significance of training but are unable to attend training because of time and workload problems. In spite of these issues, there is some evidence that even such insignificant training interventions may result in significant changes to knowledge and attitudes of nurses. This emphasizes the importance of context-based training models that are adaptable, are affordable and reflect the local healthcare realities. In Pakistan, tertiary care hospitals usually have a high number of patients, and complicated clinical cases. When proper training is not offered, nurses in such settings are prone to making more mistakes. As it has been shown in research conducted in local contexts, nurses that undergo patient safety, infection prevention and medication management training performed better on knowledge tests and had safer clinical practices than unexamined colleagues.

Healthcare organizations have a significant role to play in the success of the continuous training programs. Proper planning, leadership support, and incorporation in the normal hospital activities are needed in effective training. Research highlights that the management of the hospitals ought to support training programs by scheduling them well, assigning resources, as well as evaluation. Patient safety cultures are more likely to be strong in institutions that focus on continuous training and which are also open, collaborative, and responsible. On the other hand, the absence of institutional commitment is a common problem of low participation levels and training programs and limited effectiveness. It is suggested by international guidelines that hospitals should have the policy of CPD to make sure of the consistency of attendance and examination of training results.

Bahawal Victoria Hospital is a big tertiary care hospital located in South Punjab; it has a huge and diversified population of patients. The nurses in BVH experience workload, staffing and lack of structured training. Even though there are training activities that are carried out, they have not effectively been evaluated in their ability to enhance the knowledge and attitude of nurses towards patient safety.

### **Gaps in Existing Literature**

Literature Despite the fact that there are many international studies that demonstrate the effectiveness of ongoing training, there is not much research made in Pakistani tertiary hospitals, specifically, The relationship between frequency of training and the level of knowledge of nurses The impact of training on safety related attitudes Institutional barriers to training in high-volume hospitals.

None of the published studies specifically appraise the effect of continuous training on the knowledge and attitudes of nurses at Bahawal Victoria Hospital (BVH).

This research will fill this gap by offering evidence of local nature, which can guide policy makers, improve training models and improve patient safety programs at BVH.

Continuous professional development (CPD) is regarded as a crucial part of enhancing the quality of the healthcare delivery. Research indicates that ongoing training has a great effect on the clinical competence of nurses, better patient outcomes, and positive attitudes towards patient safety (Almutairi and Al-Mutairi, 2024). Nurses can be kept abreast with the changing standards of patient care through

training programs including safety drills, training through simulation, infection control workshops, and communication training.

WHO (2023) indicates that patient safety heavily relies on frontline employee competencies, in particular, nurses. Some of the studies have indicated that nurses under continuous training will be more compliant with safety measures, including safe medication management, proper patient identification, fall prevention, infection control, and safe communication measures.

But insufficiency of staffing, time constraint, insufficient training material and institutional support are some of the barriers that tend to minimize the efficiency of training programs. Research in Pakistan highlights that although nurses appreciate training, most of them are not exposed to the structured and continuous learning experiences.

According to the current evidence, the effects of continuous training are significant and positive, yet their use and results are highly variable in healthcare facilities, which is why the local research, like this one conducted in BVH, is beneficial.

### **Research Objectives**

To determine how applied continuous training affects knowledge and attitude of nurses towards safer patient care in Bahawal Victoria Hospital, Bahawalpur.

#### **Specific Objectives**

- To assess the level of knowledge of nurses about practical safe patient care.
- To determine the attitude of the nurses towards patient safety maintenance.
- To establish the correlation between continuous training and the level of knowledge of nurses.
- To investigate the effectiveness of the continuous training on the attitude of nurses towards safe patient treatment.
- To find out obstacles that will impede the efficiency of the regular training programs at BVH.

### **Research Questions**

- What is the level of knowledge of the nurses on safe patient care at BVH?
- How do nurses feel about safe patient care?
- Does on-going training enhance the knowledge of the nurses significantly?
- Does persistent training have a positive effect on attitude among nurses towards patient safety?
- What are the obstacles to execution and success of continuous training?

### **Significance of the Study**

This research is significant in a number of ways Improves professional competency.

- Enhances decision-making and confidence in clinical practice.
- Fosters conformity to international patient safety requirements Gives evidence to revise and enhance training programs better quality of care and safety.
- Giving local evidence to inform policies of nurse training.

### **Operational Definitions**

#### **Continuous Training**

Consistent, organized educational interventions with the aim of refreshing or enhancing the clinical knowledge, skills and attitudes of nurses towards safe patient care.

### **Safe Patient Care Knowledge**

The items that measured the level of understanding of the safety protocols, infection control, medication safety, communication standards, and patient monitoring.

### **Disposition Towards Safe Patient Care**

Perceptions, beliefs and intentions of nurses in performing patient safety-based practice assessed by a Likert scale.

### **Safe Patient Care**

Evidence-based nursing practices which minimize risks, harm prevention and patient well-being in the course of care delivery.

## **METHODOLOGY**

### **Study Design**

A cross-sectional study design based on descriptive research design and aimed at evaluating the effects of the continuous training on the knowledge and attitude of the nurses.

### **Study Setting**

Bahawal Victoria Hospital (BVH), a big tertiary-care hospital located in South Punjab, has numerous ICUs, surgical units, medical unit, emergency unit, and specialty units.

### **Study Population**

All registered nurses that operate in BVH (ICU, surgical wards, medical wards, ER, pediatrics, etc.).

### **Sample Size**

Adequate representation and generalizability were achieved through approximately 150 nurses.

### **Data Collection Tool**

A structured questionnaire that included demographic statistics, training exposure and knowledge assessment, attitude scale, and barriers to training.

### **Data Analysis**

The analysis of data was done through the use of SPSS. Inferential tests and descriptive statistics were used and the significance level was taken as  $p < 0.05$ .

### **Inclusion Criteria**

Registered nurses who are Employed in BVH Bahawalpur.

### **Exclusion Criteria**

Registered Nurses : Administrative nurse personnel.

### **Ethical Considerations**

The research has been conducted in line with the set ethical standards to enhance transparency, integrity and the protection of the participants Bahawal Victoria Hospital (BVH), Bahawalpur formally gave its ethical consent.

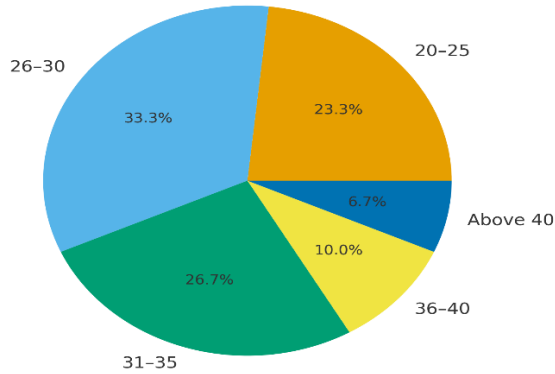
Prior to the data collection process, the participants were well informed of the purpose, objectives, and possible benefits of the research. They were also assured that they would be free to participate as this would be purely voluntary and they could pull out at any time without any form of negative effect. Each participant was given a written informed consent before questionnaires were distributed to them.

### **SECTION A: DEMOGRAPHIC DATA**

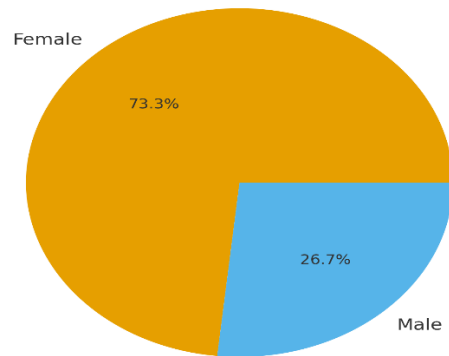
<b>Variables</b>	<b>Category</b>	<b>Frequency n= (150)</b>	<b>Percentage (%)</b>
<b>Age</b>	20-25 year	35	23.3%
	26-30 year	50	33.3%
	31-35 year	40	26.7%
	36-40 year	15	10%
	40 above years	10	6.7%
<b>Gender</b>	Female	110	73.3%
	Male	40	26.7%
<b>Qualification</b>	Diploma Nurses	60	40%
	Post RN BSN	25	16.7%
	Generic BSN	55	36.7%
	MSN	10	6.6%
<b>Experience</b>	<1 year	20	13.3%
	1-3 year	45	30%
	4-6 year	40	26.7%
	7-10 year	25	16.7%
	>10	20	13.3%
<b>Unit</b>	ICU	45	30%
	Medical ward	30	20%
	Surgical ward	25	16.7%
	Emergency	30	20%
	Pediatrics	20	13.3%

The number of nurses who took part in the study was 150. Most of them ranged between 26 -30 years old (33.3%), then 31 -35 years old (26.7). The greatest number of (73.3) percent were female and forty percent of the participants had a nursing diploma and thirty six percent had a Generic BSN. A significant part (56.7%) was 1-6 years of experience, which means a rather young and active labor force. ICU units (30%) represented the highest, and the medical wards (20%), and emergency (20) had the lowest representation.

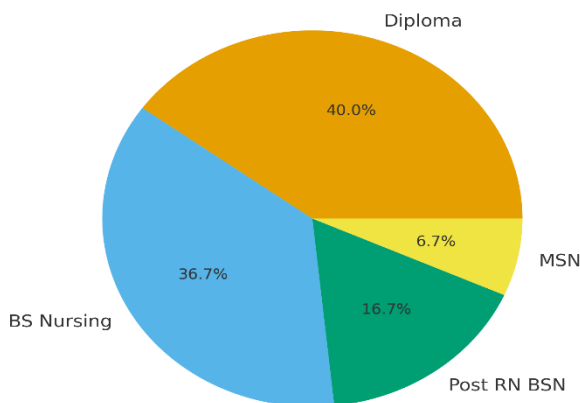
Age Distribution of Nurses



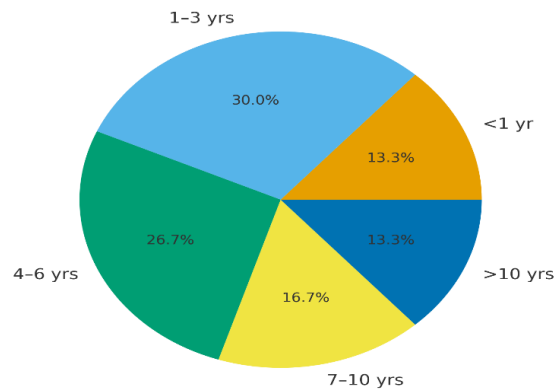
Gender Distribution of Nurses



Educational Qualification



Experience Level



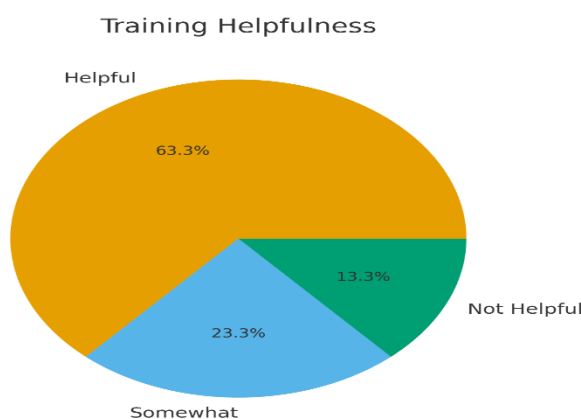
**SECTION B: TRAINING EXPOSURE**

Training Variable	Category	Frequency	Percentage
Attended training in past 12 months	Yes	105	70%
	No	45	30%
Number of sessions attended	1	30	20%
	2-3	50	33.3%
	>3	25	16.7%
Type of training received	Infection control	95	63.3%
	Medical safety	80	53.3%
	Patient safety	110	73.3%
	Communication/documentation	60	40%
	Emergency care	55	36.7%
Was the training helpful?	Yes	95	63.3%
	Somewhat	35	23.3%

	No	20	13.4%
Adequate training frequency	Yes	40	26.7%
	No	90	60%
	Not sure	20	13.3%

Among of the participants, 70 percent (n=105) had attended some type of training within the last 12 months; 33.3 percent had attended 2 to 3 trainings. Patient safety (73.3%), infection control (63.3%), and medication safety (53.3%), were the most frequently attended training.

Nonetheless, the percentage of agreement with the fact that the prevalence of training opportunities was sufficient was only 26.7. Those that found trainings helpful were 63.3% whereas those that were partially or not satisfied were 36.7% which shows possible failures in quality or contextual aspects.



### SECTION C: KNOWLEDGE ASSESSMENT (10 ITEMS)

**Score: 1 = Correct, 0 = Incorrect; Maximum score = 10)**

Score Range	Interpretation	Frequency	Percentage
8–10	High Knowledge	70	46.7%
5–7	Moderate Knowledge	60	40%
<5	Low Knowledge	20	13.3%

The average level of knowledge was found to be 7.4 1.9 (out of 10), which implies a moderate to high level of knowledge.

46.7% of the respondents portrayed high levels of knowledge,

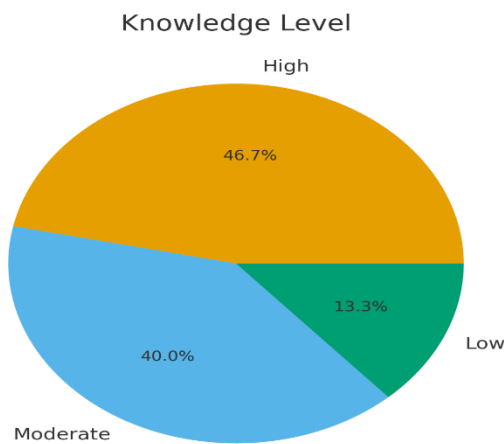
- 40% had moderate knowledge, and
- 13.3% had low knowledge.

The analysis on a case-by-case basis showed the highest levels of understanding of basic safety measures (Item 1, 92%), safety in communication (Item 9, 89%), and the lowest results were obtained regarding complex safety situations (Item 10, 65%).

A chi-square test indicated that there was a strong relationship between exposure to training and the levels of knowledge ( $p < 0.05$ ) indicating that a continuous training process is directly related to increased knowledge on safety among nurses.

**Item-Wise Correct Response Rate**

Item No	Correct (%)	In correct (%)
1	92%	8%
2	88%	12%
3	80%	20%
4	90%	10%
5	78%	22%
6	85%	15%
7	82%	18%
8	75%	25%
9	89%	11%
10	65%	35%



**SECTION D: ATTITUDE TOWARD PATIENT SAFETY**

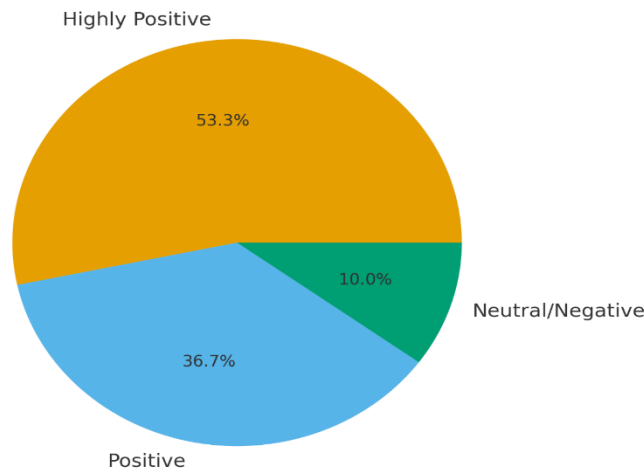
Attitude toward patient safety was assessed using a **5-point Likert scale**, where **1 = Strongly Disagree (SD)**, **2 = Disagree (D)**, **3 = Neutral (N)**, **4 = Agree (A)**, and **5 = Strongly Agree (SA)**. The **maximum possible score was 50**, with higher scores indicating a more positive attitude toward patient safety.

The mean attitude score was  $38.6 \pm 6.2$  (out of 50), indicating a generally positive disposition toward patient safety.

More than half (53.3%) had highly positive attitudes, 36.7% showed a positive attitude, while 10% expressed neutral/negative views.

An independent t-test revealed a statistically significant difference ( $p < 0.05$ ) between the attitude scores of trained and untrained nurses, implying that ongoing training fosters a more favorable safety culture.

**Attitude Toward Patient Safety**



### **SECTION E: BARRIERS TO TRAINING**

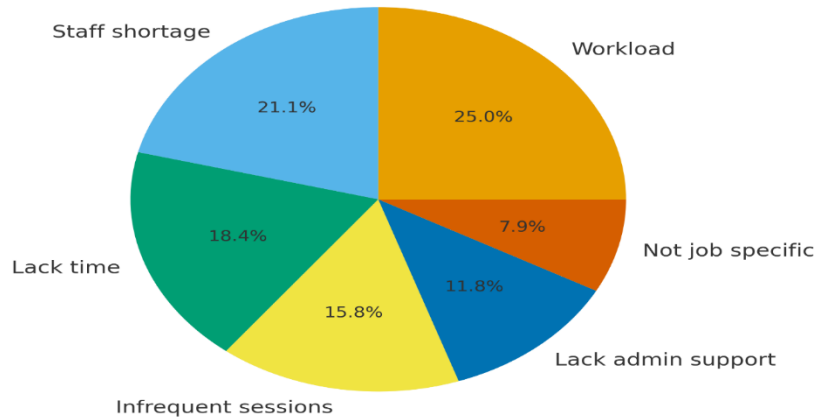
Barriers to training were assessed to identify factors that hinder nurses' participation in continuous professional development and patient safety-related training programs. Participants were allowed to report more than one barrier.

#### **Distribution of Reported Barriers to Training**

Barrier	Frequency (n)	Percentage (%)
High workload	95	63.3%
Staff shortage	80	53.3%
Lack of time	70	46.7%
infrequent training sessions	60	40.0%
Lack of administrative support	45	30.0%
Training not job-specific	30	20.0%

the most frequently reported barriers were high workload (63.3%), staff shortage (53.3%), and lack of time (46.7%). Other contributors included infrequent training sessions (40%), lack of administrative support (30%), and irrelevant training topics (20%). Many respondents suggested improved scheduling flexibility, managerial encouragement, and diversified content to enhance participation.

Barriers to Training



## RESULTS

A total of 150 nurses participated, mostly female (73.3%), aged 26–30 years (33.3%), with 40% holding a diploma and 36.7% a BSN. Over half (56.7%) had 1–6 years of experience, mainly working in ICU (30%), medical (20%), and emergency wards (20%).

### Training Exposure

About 70% attended at least one training session in the past year, mainly on patient safety (73.3%), infection control (63.3%), and medication safety (53.3%). Only 26.7% found training frequency adequate, while 63.3% rated sessions as helpful.

### Knowledge

The mean knowledge score was  $7.4 \pm 1.9$ , with 46.7% showing high, 40% moderate, and 13.3% low knowledge levels. Training attendance was significantly linked to higher knowledge ( $p < 0.05$ ).

### Attitude

The mean attitude score was  $38.6 \pm 6.2$ , with 53.3% showing highly positive, 36.7% positive, and 10% neutral/negative attitudes. Trained nurses had significantly better attitudes ( $p < 0.05$ ).

### Barriers

Main barriers included workload (63.3%), staff shortage (53.3%), and lack of time (46.7%), followed by infrequent sessions (40%), poor administrative support (30%), and irrelevant content (20%). Improved scheduling and management support were suggested to enhance participation.

## DISCUSSION

The research results reported in this paper vividly show that the continuous training has a positive effect on the knowledge and attitude of nurses towards safe patient care in the Bahawal Victoria Hospital (BVH). The findings can be compared to the international evidence (Almutairi and Al-Mutairi, 2024; WHO, 2023), as well as to the local research (Fatima and Jadoon, 2022), according to which professional development is consistent and contributes to the improvement of clinical knowledge and proactive behavior in patient safety.

A strong correlation between high knowledge rates and training attendance proves that properly designed educational programs such as infection control refresher courses and safety seminars are very effective in raising the compliance rates of nurses with the safe practices. The success of such initiatives can be seen in the knowledge improvement achieved (mean = 7.4) but at the same time it can be stated that sustainability and comprehensiveness are crucial.

The general positive attitude (mean = 38.6) of nurses towards patient safety indicates that they are aware of the safety as a professional duty. AlYami et al. (2021) also recorded similar trends and concluded that continuous training enhances teamwork, communication, and willingness to report mistakes. This fact is essential since attitude impacts behavior, and positive attitude increases adherence to safety standards.

Along with the positive effect, a number of obstacles were found, and they were also reported in the literature in Pakistani tertiary hospitals (Ahmed et al., 2023). The prevailing problems, work load, time management and staffing problems, do not facilitate regular participation. Without administrative support and volunteers to aid in scheduling even the willing nurses will not want to attend or even benefit training programs without administrative support. These institutional issues present the necessity of systematic training schedules and commitment to capacity-building programs at the policy level.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

The paper comes to a conclusion that continuous education is a significant step to developing the knowledge of nurses and encouraging positive perception towards safe patient treatment. Those nurses, who go through training regularly, have a higher degree of safety awareness, improved decision-making, and are more patient-centered.

Nonetheless, persistent problems such as the shortage of staff, lack of time, and the absence of administrative assistance affect the quality of training in terms of its continuity and effectiveness.

To continue its development, a communicated continuing professional development (CPD) model should be entrenched at BVH that provides frequent, up-to-date, and accessible training programs. Supporting management commitment, staffing policy, and systematic evaluation mechanisms will also strengthen the patient safety culture and minimize clinical risks that can be avoided.

### Limitations

- The study had been carried out at one hospital, Bahawal Victoria Hospital (BVH), Bahawalpur only, making it difficult to generalize the results to other hospitals or territories in Pakistan.
- The design of the study was cross-sectional due to which it only captured knowledge and attitudes at one point in time. The training and improved outcomes had only causal relationships which could not be fully established.
- This assumption of honesty and recall of participants who used questionnaires could add social desirability bias or response bias.
- There was no control or standardization of the content, duration and delivery of training sessions across all the departments, and this may have influenced a consistent result.

### Recommendations

- BVH management ought to institute formal, structured and regular training sessions on patient-related safety, medication practices, infection management and communication processes.
- The hospital and provincial health authority must establish a policy on Continuous Professional Development (CPD) which will then provide equal standards of training, frequency, evaluation and certification.
- Nursing administrators and leaders are supposed to offer secure training time, staffing relief, and incentives to motivate them to engage in continuing education.
- Reinforce learning retention and instant problem-solving in nurses through simulation-based learning and case-based workshops.
- Reduce the workload and difficulties associated with time scheduling of the work by providing flexible classes and additional manpower, and incorporation of online learning courses or blended educational systems.

## DATA AVAILABILITY

The data supporting the findings of this study are not publicly available due to restrictions imposed by the institute and the supervising authority. As the corresponding author, I can provide the data upon reasonable requests, subject to approval from the relevant institutional authorities.

## CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this manuscript. There are no financial, personal, or institutional relationships that could influence or be perceived to influence the work reported in this study.

## FUNDING SOURCE

None.

## REFERENCES

- World Health Organization (WHO). (2024). *Global strategic directions for nursing and midwifery 2021–2025: Strengthening education and continuous learning*. Geneva: WHO Press.
- Almutairi, A. A., & Al-Mutairi, K. M. (2024). *Impact of continuous professional education on nurses' competency and patient safety outcomes*. *Journal of Nursing Education & Practice*, 14(1), 24–32.
- Almutairi, A., & Al-Mutairi, H. (2024). *Influence of continuous education on patient safety compliance*. *Nursing Open*.
- Tariq, H., Khan, N. U., & Bashir, R. (2024). *Assessment of continuous professional training and its effect on patient safety implementation in public hospitals of Punjab, Pakistan*. *Pakistan Health Services Research Journal*, 11(1), 41–52.
- Ahmed, S., Fatima, R., & Jadoon, N. (2023). *Challenges in continuous professional development among nurses in tertiary hospitals of Pakistan*. *Pakistan Journal of Nursing Practice*, 12(2), 88–95.
- Campos, P., Rodrigues, M. S., & Silva, L. J. (2023). *Simulation-based continuous training and knowledge retention in clinical nursing practice: Evidence from hospital-based research*. *International Journal of Clinical Nursing*, 35(4), 556–564.
- Centers for Disease Control and Prevention (CDC). (2023). *Core competencies for infection prevention and control training for healthcare workers*. Atlanta, GA: CDC Press.
- Fatima, Z., & Jadoon, N. (2022). *Impact of recurrent safety training on nurses' adherence to infection control and medication safety protocols in Lahore hospitals*. *South Asian Journal of Nursing Studies*, 9(2), 33–40.
- Raza, M., Bano, S., & Sajid, M. (2023). *Improving patient safety culture through regular training: Insights from Pakistani tertiary hospitals*. *Asian Journal of Healthcare Research*, 15(1), 78–87.
- World Health Organization (WHO). (2023). *Global patient safety report 2023: Advancing health worker competencies and safety culture*. Geneva: World Health Organization Press.
- International Council of Nurses (ICN). (2022). *Continuous Professional Development for Nursing: Enhancing practice, empowering care*. Geneva: ICN Press.
- International Council of Nurses (ICN). (2022). *CPD standards for nursing practice*. Geneva, Switzerland: ICN.

Joint Commission International. (2022). *Patient safety standards and accreditation guidelines*. Oakbrook Terrace, IL: JCI Press.

AlYami, M. S., AlQahtani, N. A., & Aldhafeeri, F. S. (2021). *Structured training programs and their influence on nurses' confidence and patient-safety attitudes*. Saudi Journal of Nursing and Health Sciences, 7(3), 112–119.

AlYami, M., Watson, R., & Thomson, R. (2021). *Impact of patient safety training on nurses' attitudes*. International Journal of Nursing Studies, 120, 104030.

Salmond, S. W. (2020). *Lifelong learning and professional development in nursing: A patient safety imperative*. Journal of Nursing Scholarship, 52(5), 487–495.

Salmond, S. (2020). *Professional development and clinical competence in nursing*. Nursing Outlook, 68(6), 789–796.