

FACTORS AFFECTING PATIENTS' SAFETY AS PERCEIVED BY NURSES

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Abstract

Background: Patient safety is a fundamental component of healthcare quality and a critical responsibility of nursing staff. Various organizational, individual, and environmental factors may influence patient safety outcomes in clinical settings. **Aim:** to investigate the factors affecting patients' safety as perceived by nurses. **Research Design:** a descriptive research design was used to achieve the aim of this study. **Setting:** The study was conducted at King Khalid Hospital in Najran region, affiliated to the Ministry of Health at Saudi Arabia. **Sample:** A convenient sample of (130) nurses having at least one year of experience, include male & female and at work during the period of data collection were composed the study sample. **Tools:** Two tools were used for the study as follow; I) personal characteristics and work-related data sheet and II) Nurses' perception of factors affecting patient safety questionnaire. **Results:** The study revealed that the highest percentage of participants were females (71.5%) aged 30 to less than 40 years (52.3%), with Saudi nationality comprising 76.9% of the sample, nearly half held a bachelor's degree (44.6%) and 93.1% had not received prior patient safety training. The current study demonstrated that teamwork factor showed the highest factor loading, identifying it as the single most influential domain driving nurses' overall perception regards factors affecting patient safety. There was a significant negative correlations between teamwork and individual performance factors, as well as between work-environment factors and both individual performance and patient safety factors. Organizational factors also correlated negatively with patient safety. Conversely, significant positive correlations emerged between organizational factors and both work-environment and staffing factors. Finally, a statistically significant gender-based difference was observed regarding teamwork perceptions, with male nurses scoring a higher mean than female nurses. **Conclusion:** The present study highlights that patient safety is a multifaceted concept influenced by a complex interaction of personal, organizational, environmental, and staffing-related factors. While nurses possess clinical experience, the lack of continuous education in patient safety limits the translation of experience into safe practice. **Recommendation:** The healthcare institutions should implement mandatory, ongoing patient safety training programs to bridge existing knowledge gaps and boost clinical competence. Simultaneously, organizations should establish robust wellness and psychological support systems to actively mitigate nurse burnout and alleviate job stress. Furthermore, fostering a non-punitive "Just Culture" is essential.

Keywords: Nurses and Patient Safety.

INTRODUCTION

Patient safety is paramount in the nursing profession; nurses play a critical role in ensuring patient safety by providing quality care and advocating for their patients' well-being through preventing medical errors, minimizing the risk of infections, and ensuring

patient comfort and dignity (Phillips, Malliaris & Bakerjian, 2021). The International Council of Nurses (ICN) (2023), highlighted the importance of patient safety in all aspects of care, emphasizing the need for nurses to inform patients about risks and risk reduction strategies. By prioritizing patient safety, nurses contribute to positive patient outcomes and enhance the overall quality of healthcare delivery. Patient safety was defined as the “absence of preventable harm to a patient and reduction of risk of unnecessary harm associated with health care to an acceptable minimum (Khalid, Shlofmitz & Ahmad, 2023). Patient safety represents the “quality” dimension of health care service delivery, an essential component of universal health coverage. There is a clear consensus that quality health care services across the world should be safe, effective, and people centered. So, to realize the benefits of quality health care; health services should also be equitable, integrated, timely, and efficient (Samuel & Sinhaa, 2023). Implementing patient safety strategies requires having a clear set of policies, employing skilled health care professionals, implementing data-driven safety improvement, and building leadership capacity (Pacific & Hasan, 2023).

The nursing profession is the largest segment of the nation's health care workforce, so, nurses are critical to patient safety, have an important role as a coordinator of multidisciplinary care and is involved in many aspects of patient care, from providing comfort and hygiene to administering drugs, updating medical records, as well as handling some therapeutic and diagnostic procedures (Anders, 2025). Nurse staffing levels, workload, and educational levels have been linked to various patient safety outcomes. Nurses' perceptions of factors affecting patient safety is vital in improving the safety of patient care (Mostafa, Faisal & Fathy, 2023). Furthermore, the perception of patient safety by nurses, as a core concept; an aim in healthcare service delivery and it is central to the actual improvement of patient safety. Positive and strong patient safety cultures are known to have a significant impact on patient safety in terms of reducing the number of adverse events reported in a healthcare organization (Algethami, Alasmari & Alessa. 2024). Patient safety is a complex issue influenced by a multitude of factors; these include: 1) system and organizational factors such as inadequate staffing, poor communication, and lack of resources. 2) Human factors like fatigue, stress, and cognitive biases also play a significant role. 3) Technological factors, such as the misuse of medical devices or errors in electronic health records, can contribute to patient harm. Additionally, 4) patient-related factors like limited health literacy and non-adherence to treatment plans can impact safety outcomes. Addressing these multifaceted factors requires a comprehensive approach that involves improving systems, enhancing teamwork, and promoting patient safety within healthcare organizations (Albalawi, Kidd & Cowey. 2020).

Nursing workload was defined as “all nursing work that must be carried out over a defined period of time” and recently described as “the amount of time and care that a nurse devotes (directly and indirectly) to patients, the workplace, and professional development (Albuhumud & Mozo, 2023). Systems based on quantification of patient care needs, including patient acuity/intensity, complexity of nursing care, case mix of patient diagnosis, and patient turnover, attempted to estimate the demand for nursing resources and related workload. An increase in nursing care requests, the number of patients cared

for, patient demands, and diagnoses can lead to discrepancy between patient needs and the adequacy of nursing resources and heavier workloads. Moreover, increased patient numbers and a heavier patient load limit nurse–patient contact, increase care left undone, and intensify time pressure on nurses and concerns about patient outcomes (Ivziku et al., 2021). There are several important consequences of high nursing workload; research done by Alzoubi., et al, (2024) showed that a heavy nursing workload adversely affects patient safety. Furthermore, high nursing workload negatively affects job satisfaction and, as a result, contributes to high turnover and nursing shortage. Nursing workload affects the time that a nurse can allot to various tasks. Under a heavy workload, nurses may not have sufficient time to perform tasks that can have a direct effect on patient safety. A heavy workload can lead to poor nurse-patient communication and all effect on patient safety (Ross, Howard, Ilic, Watterson & Hodgson, 2023).

Finally, considering the importance of nurses with regard to patient safety, knowledge about their perceptions of the factors that influence patient safety could facilitate the development and implementation of better solutions. It is also possible that their perceptions could help identify less-known patient safety issues. Moreover, solutions based on nurses' views are likely to be more effective (Akram, Bibi, & Parveen, 2024). Therefore, the aim of this study is to investigate factors affecting patient safety as perceived by nurses.

SIGNIFICANCE OF STUDY

Patient safety is paramount in healthcare, as it directly impacts the well-being and lives of individuals seeking medical attention. Prioritizing patient safety ensures that individuals receive care without experiencing preventable harm, such as medical errors, infections, or adverse drug reactions. A strong emphasis on patient safety fosters trust between patients and healthcare providers, improves patient outcomes, and contributes to a positive and reassuring healthcare experience (Slawomirski & Klazinga, 2023). Patient safety has become a top priority for healthcare organizations worldwide. A strong patient safety environment is associated with a lower risk of adverse events and significant patient complications. Continuous training programs play a vital role in promoting patient safety by enhancing healthcare professionals' knowledge, skills, and communication, thereby reducing errors and misunderstandings.

Furthermore, fostering a positive patient safety culture can significantly improve the quality, performance, and productivity of healthcare organizations (Ali, Ademe, Shumiye & Hamza, 2024). By implementing evidence-based patient safety programs and prioritizing safety in daily practice, hospitals can effectively reduce medical errors and improve patient outcomes (Mistri, Badge, & Shahu, 2023). Understanding the factors that influence patient safety is essential, given the widespread occurrence and severity of harm resulting from medical errors. Research consistently indicates that adverse events are common in healthcare environments, resulting in patient injuries, disabilities, and fatalities. Approximately 10% of patients experience harm during their care, with over 3 million deaths attributed to unsafe practices each year. In low- to middle-income

countries, the mortality rate from unsafe care can reach 4% of the population. Notably, more than half of these incidents, affecting 5% of patients, are preventable, with a significant portion linked to medication errors. Also, up to 40% of patients may suffer harm in primary and outpatient care settings, with a potential for 80% of these incidents to be avoided (Slawomirski & Klazinga, 2023). A study conducted by Sayed, Mohamed & Mohamed, (2021), titled "Facilitators and Barriers Influencing Patient Safety as Perceived by Nurse Interns," examined perceptions at two faculties associated with Al-Azhar and Ain-Shams universities. The findings indicated that the most significant barrier to patient safety was attributed to "patient factors" at 39.2%, while the most notable facilitators were linked to "work environment factors" and "organizational and management factors," recorded at 56.8% and 56 %, respectively, in Ain Shams University hospitals. Conversely, at Al-Azhar University hospitals, the primary barrier was identified as "individual staff factors" at 41.5%, with "team factors" being the leading facilitators at 47.9%. Notably, there was no statistically significant difference between the two groups concerning the overall domains of patient safety factors.

As an investigator, my interest in patient safety stems from a deep-seated belief in the fundamental right of every individual to receive safe and effective healthcare. The knowledge that preventable harm occurs within healthcare systems is unacceptable, and I am driven to understand the root causes and factors of these events. By investigating factors affecting patient safety, I aim to identify systemic issues, human factors, and technical failures that contribute to harm. My goal is to use this knowledge later to develop and implement effective interventions that can improve patient safety practices, ultimately prevent future harm and enhance the quality of care for all.

METHODOLOGY

Aim of the Study

The present study aimed to investigate the factors affecting patient safety as perceived by nurses.

Research Questions

What are the factors affecting patient safety as perceived by nurses?

Research Design

A descriptive research design was utilized in the current study.

Setting

The study was conducted at King Khalid Hospital located in Najran region, affiliated to the Ministry of Health at Saudi Arabia, offers both free and paid healthcare services for a range of diseases, with a total capacity of (160 beds).

Sample

A convenient sample of (130) nurses having at least one year of experience, include male & female and at work during the period of data collection were composed the study sample.

Data Collection Tools

Two tools were developed by the investigator to collect data of the present study:

Tool (1): Personal characteristics and work-related data sheet: It was developed by the investigator and included age, gender, nationality, educational levels, work unit, years of experience in nursing profession, years of experience in the current unit, years of experience in the current hospital, type of shift work, nurse patient ratio and did you attend any training courses about patient safety before?

Tool (2): Nurses` Perception of Factors Affecting Patient Safety Questionnaire

It was a developed tool by the investigator guided by Ridberg, Roback & Nilsen, (2014); Livorsi et al, (2016) and Sayed, Mohamed & Mohamed, (2021). It used to measure the perception of nurses about factors affecting them regarding patient Safety. This questionnaire includes 58 items divided into six domains as follow; 1) Team factors (10 items), 2) Individual factors (10 items), 3) Patient factors (8 items), 4) Work environment factors (9 items), 5) Organizational and management factors (9 items), and 6) Staffing factors (12 items). As For Scoring System, nurse responses measured against three - point Likert scale ranging from (1) for “disagree”, (2) for “uncertain” and (3) for “agree”. The score of items was summed-up and converted into percentage scores.

Validity and Reliability

Content validity of the developed tools was done by three experts in nursing administration specialty at the Faculty of Nursing, Cairo University. They were asked to assess for its content coverage, appropriateness, clarity of sentence, sequence of items, length, format, and face validity. Reliability of the nurses' perception of factors affecting patient safety questionnaire was tested using Cronbach's alpha co-efficient analysis and the value was 0.75.

Procedure

Prior to data collection, official permission was obtained from the Research and Ethics Committee and the Vice Dean for Postgraduate Studies at the Faculty of Nursing, Cairo University. Subsequently, permission was obtained from the medical and nursing directors of the selected study hospital. Upon receiving the hospital directors' approval, the investigator contacted the manager of each department to obtain permission, then approached the participants, explained the nature and purpose of the study, invited them to participate voluntarily, and obtained their written informed consent. The two study tools were distributed by the investigator to the nurses either individually or in groups. The questionnaires were distributed to nurses working on different shifts in their clinical units during break time. The nurses were provided with instructions on how to complete the

questionnaires, which were collected on the following day. Completing the questionnaires took approximately 20–30 minutes. The investigator attended the participants' clinical units three days per week until the data collection process was completed. The data collection period lasted for six months from June 2025 to December 2025.

Ethical Considerations

Prior to data collection, official permission was obtained from the research ethical committee and vice dean of postgraduate studies at the Faculty of Nursing, Cairo University. Then, official permissions were obtained from medical and nursing director of the selected hospital to conduct the study. Participation in this study was entirely voluntary; each participant has the right to accept or refuse participation in the study. Informed consent was obtained after an explanation of the aim and nature of the study from the study participants. Anonymity and confidentiality are assured through the coding of the data, and each participant has the right to withdraw from the study at any time. Participants were assured that this data would not be reused in another research without permission. The data collected were used for research purposes only.

Statistical Analysis

Upon completion of data collection, the data were collected, scored, tabulated, and analyzed using the Statistical Package for the Social Sciences (SPSS) software, program version 25. Descriptive statistics were used to present the study data in the form of frequencies, percentages, mean scores, mean percentages, and standard deviations. Appropriate inferential statistical tests were used to examine the differences and relationships among the study variables. The level of statistical significance was set at $P \leq 0.05$.

RESULTS

Table (1) shows that more than half (52.3%) of the participants were aged between 30 to less than 40 years and the highest percentage (71.5%) of them were females. Nearly half (44.6%) of nurses holding a bachelor's degree and one-third (33.8%) of them worked in ICUs. Also, less than half (39.2%) of nurses reported that they work long day shifts and more than one-third (34.6%) of them had a 1:4 nurse-to-patient ratio, and the majority (93.1%) had not attended any patient safety courses.

Table1: Frequency and Percentage Distribution of Nurses Regards Their Personal Characteristics and Work-Related Data (N = 130)

Variable	N	%
Age group		
20 – <30 years	45	34.6
30 – <40 years	68	52.3
=> 40 years	17	13.1
Gender		
Male	37	28.5
Female	93	71.5
Level of education		

Diploma in nursing	29	22.3
Associate degree in nursing	12	9.3
Bachelor's degree in nursing	58	44.6
Postgraduate degree in nursing	31	23.8
Work unit		
Emergency unit	8	6.1
Intensive care unit	44	33.8
Outpatient department	34	26.3
Inpatient ward	28	21.5
Operating Theater unit	16	12.3
Type of shift work		
Morning only	50	38.4
long day	51	39.2
Night	29	22.4
Nurse – patient ratio in the unit		
1 Nurse: 1 Patient	10	7.7
1 Nurse: 2 Patients	36	27.7
1 Nurse: 3 Patients	36	27.7
1 Nurse: 4 Patients	45	34.6
1 Nurse: 5 Patients	3	2.3
Training attendance about patient safety		
No	121	93.1
Yes	9	6.9

Figure (1) shows that more than half (76.9%) of nurses were Saudi nurses followed by (6.4%) of them were Egyptian nurses.

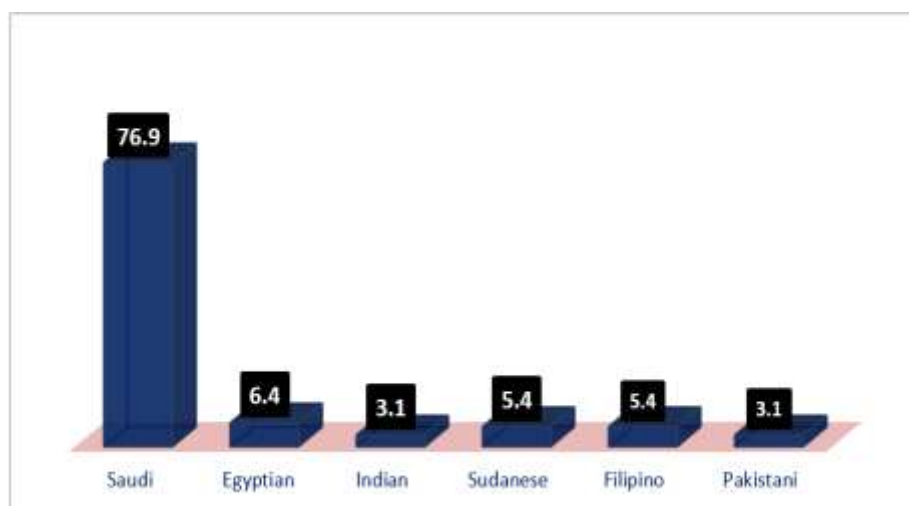


Figure 1: Percentage Distribution of Nurses Regards Their Nationality (N=130)

Figure (2) shows that more than half (59.2%) of nurses had 5 to less than 10 years of experience in the nursing profession.

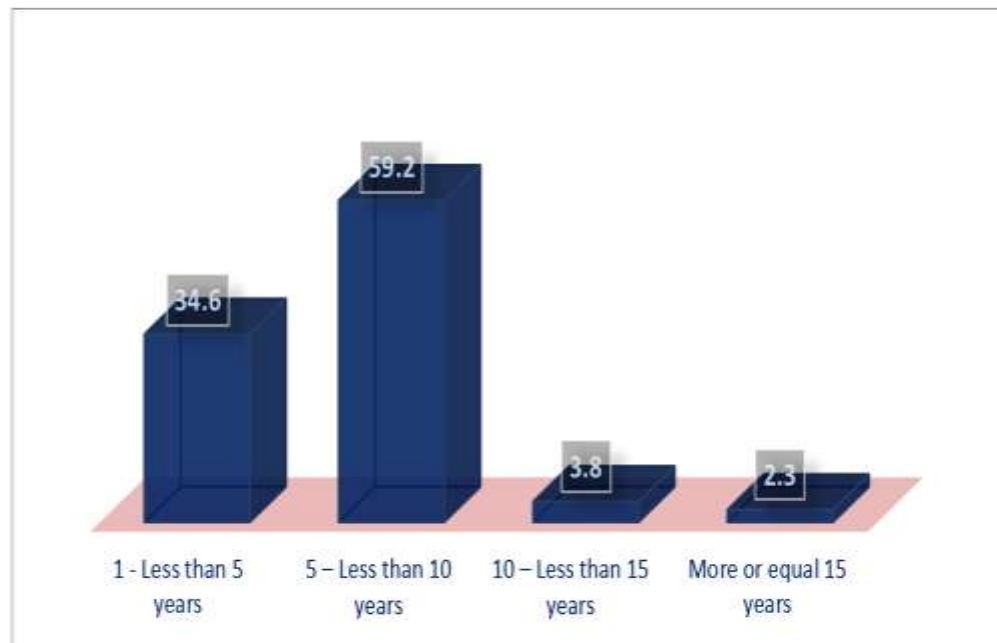


Figure 2: Percentage Distribution of Nurses Regards Their Years of Experience in Nursing Profession (N=130)

Figure (3) shows that more than one third (39.2%) of nurses had 5 to less than 10 years and 10 to less than 15 years of experience in the nursing current unit.

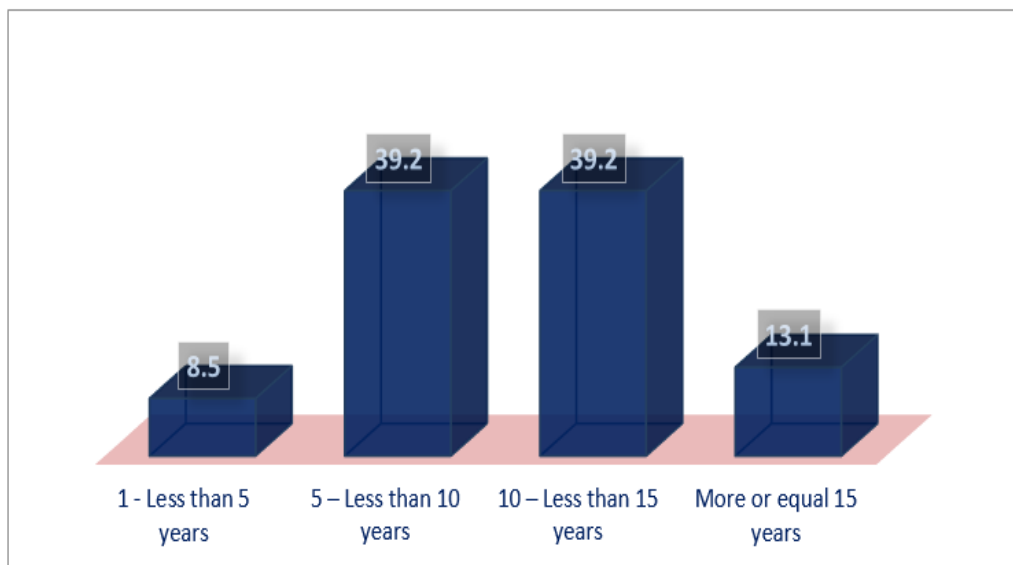


Figure 3: Percentage Distribution of Nurses Regards Their Years of Experience in Current Unit (N=130)

Figure (4) shows that more than half (63.8%) of nurses have 5 to less than 10 years of experience in the nursing current hospital.

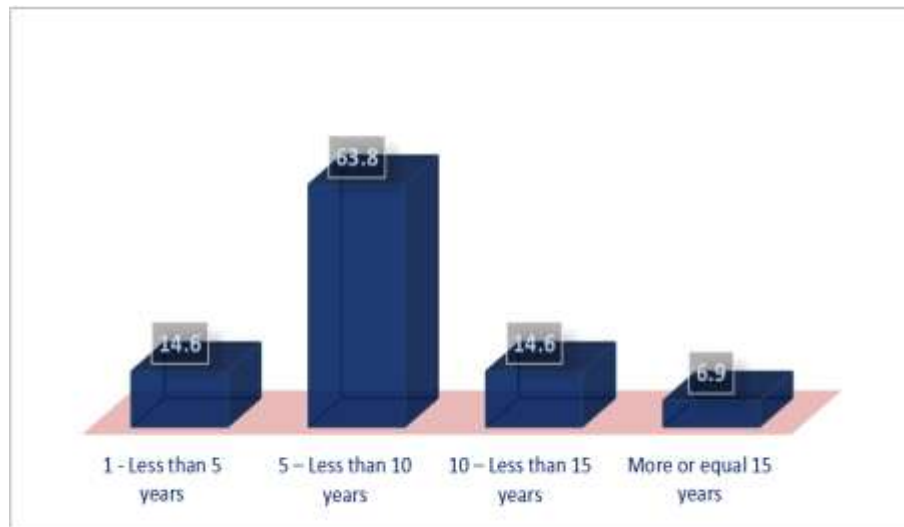


Figure 4: Percentage Distribution of Nurses Regards Their Years of Experience in Current Hospital (N=130)

Table (2) illustrates that, the highest loading factor for each patient safety domain obtained from principal component analysis. The teamwork domain shows the highest absolute loading (-0.755), indicating that it was the most influential factor contributing to the overall perception of patient safety among nurses.

Table2: Factor Loading Values For Patient Safety Domains

Domain	Highest Loading Factor
Teamwork factors	-0.755
Individual performance factors	0.621
Patient-related safety factors	-0.572
Work environment factors	0.602
Organizational factors	0.657
Staffing factors	0.643

Table (3) shows that, there is a statistically significant negative correlation [($r = -0.231$, $p = 0.008$)] between teamwork factors & individual performance factors. Also, there is a statistically significant negative correlation [($r = -0.251$, $p = 0.004$); ($r = -0.194$, $p = 0.027$)] between work-environment factors and individual performance factors and patient related safety factors, respectively. Moreover, there is a statistically significant negative correlation ($r = -0.264$, $p = 0.002$) between organizational factors and patient related safety factors. In addition, there is a statistically significant positive correlation ($r = 0.234$, $p = 0.007$) between work-environment and organizational factors. Furthermore, there is a statistically significant positive correlation ($r = 0.325$, $p = 0.000$) between staffing factors and organizational factors.

Table 3: Correlation between the Factors Affecting Patient Safety As Perceived By Nurses (N=130)

Domains		Teamwork factors	Individual performance factors	Patient related safety factors	Work environment factors	Organizational factors	Staffing factors
Teamwork factors	r						
	p						
Individual performance factors	r	-.231**					
	p	0.008					
Patient related safety factors	r	0.034	0.151				
	p	0.704	0.085				
Work environment factors	r	-0.009	-.251**	-.194*			
	p	0.921	0.004	0.027			
Organizational factors	r	-0.006	-0.007	-.264**	.234**		
	p	0.946	0.941	0.002	0.007		
Staffing factors	r	0.087	-0.143	-0.098	0.084	.325**	
	p	0.323	0.105	0.269	0.341	0	

**Correlation is significant at the 0.01 level.

*Correlation is significant at the 0.05 level.

Table (4a and 4b) reveals that, there is a statistically significant difference ($F=3.516$, $p=0.033$) across age groups of nurses and teamwork factors. Also, there is a statistically significant difference ($F=0.02$, $p=0.023$) between nurses' nationality and individual performance factors. Furthermore, there is a statistically significant difference ($F=3.38$, $p=0.020$) between work-environment factors and nurses' experience years in current hospital. Conversely, there are no statistically significant differences observed across nurses' educational level, experience years in current unit, experience years in nursing profession, shift work type, work unit and nurse-patient ratio across any patient safety factors ($p>.05$).

Table 4A: Difference Between Personal Characteristics and Work-Related Data and Patient Safety Factors Domains as Perceived By Nurses (N=130)

Personal characteristics and work-related data		Dimension	F-value	p-value
Age	Teamwork factors		3.516	.033*
	Individual performance factors		.661	.518
	Patient-related safety factors		.575	.564
	Work environment factors		.526	.592
	Organizational factors		2.821	.063
	Staffing factors		.864	.424
Nationality	Teamwork factors		2.724	2.724
	Individual performance factors		.023	.023*
	Patient-related safety factors		1.132	1.132
	Work environment factors		.347	.347
	Organizational factors		.727	.727

	Staffing factors	.604	.604
Educational level	Teamwork factors	.367	.367
	Individual performance factors	.777	.777
	Patient-related safety factors	.691	.691
	Work environment factors	.559	.559
	Organizational factors	.456	.456
	Staffing factors	.713	.713
Experience years in nursing profession	Teamwork factors	1.570	1.570
	Individual performance factors	.200	.200
	Patient-related safety factors	.699	.699
	Work environment factors	.554	.554
	Organizational factors	1.176	1.176
	Staffing factors	.322	.322
Experience years in current Unit	Teamwork factors	1.545	.206
	Individual performance factors	.655	.581
	Patient-related safety factors	.358	.784
	Work environment factors	.887	.450
	Organizational factors	1.831	.145
	Staffing factors	.303	.823
Experience years in current hospital	Teamwork factors	.846	.471
	Individual performance factors	.827	.481
	Patient-related safety factors	2.571	.057
	Work environment factors	3.381	.020*
	Organizational factors	1.211	.309
	Staffing factors	.501	.682

* Statistically significant difference at the 0.05 level.

Table 4B: Difference Between Personal Characteristics and Work-Related Data and Patient Safety Factors Domains As Perceived By Nurses (N=130)

Personal characteristics and work-related data	Dimension	F-value	p-value
Work unit	Teamwork factors	.199	.199
	Individual performance factors	.897	.897
	Patient-related safety factors	1.279	1.279
	Work environment factors	.284	.284
	Organizational factors	1.783	1.783
	Staffing factors	.154	.154
Type of shift work	Teamwork factors	.554	.576
	Individual performance factors	.702	.497
	Patient-related safety factors	.284	.754
	Work environment factors	.560	.572
	Organizational factors	1.584	.209
	Staffing factors	.062	.940
Nurse-patient ratio	Teamwork factors	.845	.499
	Individual performance factors	1.293	.276
	Patient-related safety factors	2.279	.064
	Work environment factors	1.685	.158
	Organizational factors	.423	.792
	Staffing factors	.750	.560

*Statistically significant association at the 0.05 level.

Table (5) reveals that, there is a statistically significant difference ($t=3.527$, $p=0.001$) between male and female nurses regarding Teamwork factors, with male nurse demonstrating a higher mean score ($M=29.95$, $SD=0.33$) compared to female nurses ($M=29.60$, $SD=0.78$). Conversely, no statistically significant gender-based differences were observed across the remaining five patient safety factors.

Table 5: Difference Between Factors Affecting Patients' Safety and Nurses' Gender (N =130)

Patient Safety Factors	Nurses' gender		t-value	df	p-value
	Male (n = 37) Mean $\pm$ SD	Female (n = 93) Mean $\pm$ SD			
Teamwork factors	29.95 $\pm$ 0.33	29.60 $\pm$ 0.78	3.527	127.563	0.001*
Individual performance factors	30.73 $\pm$ 1.15	30.71 $\pm$ 1.03	0.097	128	0.923
Patient-related safety factors	22.49 $\pm$ 0.61	22.48 $\pm$ 0.64	0.021	128	0.983
Work environment factors	28.46 $\pm$ 0.93	28.66 $\pm$ 0.67	-1.170	51.396	0.247
Organizational factors	26.49 $\pm$ 0.93	26.69 $\pm$ 0.64	-1.208	50.203	0.233
Staffing factors	35.51 $\pm$ 0.99	35.78 $\pm$ 0.55	-1.575	45.084	0.122

*Statistically significant difference at the 0.05 level.

DISCUSSION

Patient safety remains a fundamental cornerstone of contemporary nursing practice and healthcare delivery, serving as an essential indicator of overall system quality and universal health coverage because nurses comprise the largest dynamic workforce across healthcare settings, their central role in multidisciplinary care coordination, error prevention, and direct clinical interventions positions them as the primary guardians of patient outcomes (Anders, 2025).

The current study findings revealed that more than half of nurses aged between 30 to less than 40 years and more than half of them had 5 to less than 10 years of experience in nursing profession. This mid-career demographic represents a vital balance within healthcare settings, as these professionals are experienced enough to ensure safe, high-quality clinical practice while remaining adaptable to workplace changes. Furthermore, this group serves as an essential organizational backbone, bridging the gap between novice nurses and leadership through peer support and daily operational stability.

These findings are in agreement with Mohammadi, Rustaee & Bijani, (2024), who studied the factors influencing patient safety management as perceived by emergency department nurses and reported that the participating nurses had an average age of 36 years and a mean nursing experience of 11 years. However, the previous study finding contradicted by Yayehrad, Getachew, & Muluken (2024), who evaluated patient safety culture and its associated factors in regional public hospitals in Addis Ababa and reported a younger workforce, with more than half of the participating nurses aged under 29 years. Similarly, it is contradicted by Kaware et al. (2022), who assessed patient safety culture among nurses in Katsina public hospitals and found that a significant proportion (40.5%) had only 1 to 5 years of professional experience.

The finding of the current study revealed that the highest percentage of participants were female nurses, this finding can be attributed to a well-documented global trend, as nursing has historically been and continues to be a female-dominated profession worldwide. This pattern is largely driven by persistent societal norms that traditionally associate nursing with female-gendered caregiving roles.

This finding is in agreement with Abd El-Wahab, Mohamed & Mohamed (2021), who studied Facilitators and Barriers Influencing Patient Safety as Perceived by Nurse Interns and found that more than three quarters of the studied sample (93.6%) were females. However, this finding contrasts with Mohammadi et al. (2024), who studied the factors influencing patient safety management as perceived by emergency department nurses and observed a male-dominated sample (60.8%).

As regards level of education, the current study results revealed that nearly half of the study sample held bachelor's degree in nursing. From the investigator's point of view, the proportion of bachelor-prepared nurses reflects an advancing standard of academic preparation within clinical settings. This educational foundation equips nurses with formal training in evidence-based practice, systematic patient assessment, and critical analytical skills, which directly enhances their ability to recognize safety risks, make sound clinical judgments, and deliver safe, high-quality patient care. The previous finding is consistent with Groves et al., (2025), who studied nurse judgements of hospitalized patients' safety concerns are affected by patient, nurse and event characteristics who found that more than two thirds of the studied sample had advanced degree of bachelor's (63.6%). Conversely, the previous finding is contradicted by Awadh, Al-Farsi & Panchatcharam. (2025), who evaluated patient safety culture across healthcare institutions in Oman who reported that the nearly half participating healthcare personnel had a diploma degree.

Concerning nationality, the current study findings revealed that more than half of nurses were Saudi nurses. This representation of Saudi nurses reflects the successful implementation of national health workforce policies, which have significantly increased the recruitment and retention of national nursing professionals. Furthermore, having a strong national workforce paired with multinational healthcare professionals enhances cultural stability and patient rapport while fostering a rich exchange of diverse clinical experiences within healthcare settings. The previous finding is in agreement with Alshammari et al., (2024), who evaluated patient safety culture among nurses working at tertiary care hospitals in the Al Jouf region, Saudi Arabia, and reported that the majority of participants were Saudi nationals (68.6%). Conversely, the previous finding is inconsistent with Mariano et al., (2023), who evaluated turnover-attachment motive of Saudi Arabia nursing workforce and reported that the majority of the nursing staff were non-Saudi (92.3%), while Saudi nurses represented only 7.3%.

Regarding clinical experience, the current study demonstrated that approximately more than half of nurses had between 5 to less than 10 years of hospital experience, and more than one-third had 5 to less than 10 years and 10 to less than 15 years in their current unit. From the investigator's perspective, a nursing workforce with 5 to less than 10 years of hospital experience with 5 to less than 15 years of unit-specific represents an optimal

balance of clinical maturity, decision-making efficiency, and procedural autonomy. This sustained unit stability serves as a crucial bridge for specialized knowledge transfer and peer mentorship, providing a resilient safety net for patient care while reducing errors associated with high staff turnover.

The previous result is in agreement with Mohammadi et al., (2024), who reported an average work experience of 11.3 years among the studied nurses. Conversely, the previous findings are contradicted by Kaware et al., (2022), who reported a less experienced workforce, with nearly half having only 1 to 5 years of overall hospital experience and more than half serving in their current units for just 1 to 5 years.

Concerning work unit, the study findings showed that more than third of the studied sample worked in intensive care units, that highlights a sample heavily exposed to critical care dynamics and the demanding nature of these specialized units necessitates advanced technical skills and strict adherence to safety guidelines, directly influencing how nurses evaluate care delivery and unit practices. The previous finding is in agreement with Groves et al., (2025), who found that approximately half (52.5%) of the participants worked in an acute care unit. Conversely, the previous result is contradicted by Alsobou et al., (2025), who investigated the relationship between patient safety culture and attitudes toward incident reporting among registered nurses and reported that nearly half of nurses (43.3%) worked in medical units.

The current study findings revealed that the majority of nurses had not attended any patient safety courses, this reflects limited educational opportunities and weak organizational prioritization of patient safety competencies. Training may be insufficient, poorly promoted, or incompatible with nurses' workload. Without mandatory, continuous, and context-specific training embedded in institutional policy, improvements in safety culture will remain constrained.

The previous finding is supported by Sayed, Mohamed & Mohamed, (2021), who studied facilitators and barriers influencing patient safety as perceived by Nurse Interns and reported that more than half of studied sample did not receive any patient safety related training. Conversely, the previous finding is contradicted by Alshammari et al., (2024), who reported that a majority of the studied sample had received prior training on patient safety topics. Regarding type of work shift and nurse-to-patient ratio, the current study revealed that less than half of nurses worked long day shifts, with more than one-third (34.6%) maintaining a 1:4 nurse-to-patient ratio. From an investigator's perspective, the combination of long day shifts and a 1:4 nurse-to-patient ratio reflects a balanced operational framework within acute care environments. Long day shifts provide important continuity of care and minimize handoff-related communication errors across patient transitions. Furthermore, maintaining a 1:4 staffing ratio helps nurses to maintain clinical vigilance, adhere strictly to patient safety protocols, and deliver individual-centered care without compromising safety standards.

The previous finding is supported by Havaei et al. (2025), who studied the evidence for optimal minimum nurse-to-patient ratios in medical-surgical settings and concluded that

1:4 should be regarded as the minimum safe nurse-to-patient ratio in medical-surgical units, providing important preliminary evidence to inform the province's forthcoming nurse-to-patient ratio policy.

The findings of the current study demonstrated that teamwork factor showed the highest factor loading, identifying it as the single most influential domain driving nurses' overall perception regards factors affecting patient safety. From the investigator's perspective, this emphasizes that interprofessional trust, collaborative communication, and mutual support within clinical units serve as the structural backbone of hospital safety systems. In high-acuity nursing environments, effective teamwork buffers individual workload stressors and ensures seamless care coordination, directly reducing the likelihood of clinical errors.

The previous result is aligned with Awadh et al., (2025), who identified teamwork within units as the highest-scoring positive dimension, highlighting that healthcare professionals consistently view strong unit-level collaboration as the paramount foundation for maintaining patient safety. Conversely, the previous result is contradicted by AlMaani & Salama, (2021), who evaluated safety attitudes among healthcare staff in primary healthcare centers in Al-Ahsa, Saudi Arabia. They reported that job satisfaction rather than working conditions or administrative support emerged as the primary positive dimension.

The current study revealed a statistically significant negative correlation between teamwork and individual performance factors. Similarly, work-environment factors were negatively correlated with both individual performance and patient-related safety factors. Furthermore, organizational factors demonstrated a significant negative correlation with patient-related safety factors. Conversely, significant positive correlations emerged between work-environment and organizational factors, as well as between staffing factors and organizational factors. These findings reflect the dynamic and interconnected nature of patient safety within healthcare systems. Strong organizational support, effective leadership, and adequate staffing foster a positive environment that promotes teamwork and safe practices. However, when nurses experience stress, fatigue, or emotional burden, their ability to collaborate effectively and maintain safety standards may decline. Therefore, improving patient safety requires a balanced approach that strengthens organizational structures while simultaneously addressing individual well-being, ensuring that nurses are both supported and capable of delivering safe, high-quality care.

The previous findings are supported by Awadh et al., (2025), who reported strong positive correlation between organizational support, staffing adequacy, and overall unit safety culture across Omani healthcare settings. Conversely, the negative correlation observed between teamwork, work environment and individual performance factors of the current study is contradicted by Mohammadi et al., (2024), who found consistent positive correlations between unit teamwork, work-environment factors, and individual nurse performance, arguing that collaborative unit environments directly foster superior individual clinical execution rather than imposing performance constraints.

The current study findings revealed that there is a statistically significant difference observed across age groups of nurses and teamwork factors. From the investigator's view, older or more experienced nurses often rely on established communication styles and structured hierarchy, whereas younger nurses may prioritize peer-centered interaction leading to varying perception of teamwork. The previous finding is aligned with Al-Mugheed et al., (2022), who studied patient safety attitudes among doctors and nurses and demonstrated that age and clinical maturity significantly influence teamwork climate and patient safety perceptions among healthcare personnel.

Furthermore, current study findings revealed that there is a statistically significant difference between individual performance factors and nurses' nationality. This is due to nurses from different nationalities possess distinct training paradigms and clinical coping strategies, which shape their individual performance, autonomy, and response to patient safety protocols. This finding is supported by Falatah, Al-Harbi & Alhalal., (2022), who examined cultural competency, structural empowerment, and effective communication among multicultural nurses in Saudi Arabia and demonstrated that cultural competency and nationality significantly influence communication effectiveness and structural empowerment, directly shaping individual clinical performance and safety practices among diverse nursing staff.

Conversely, the previous finding contradicted by Al-Hasnawi, & Aljebory. (2020) who assessed relationship between nurses' performance and their demographic characteristics and concluded that there is a non-significant relationship between the individual performance and nurses' demographic data.

Additionally, current findings showed a statistically significant difference between work-environment factors and nurses' experience years in the current hospital. From the investigator's point of view, longer hospital experience fosters a deeper familiarity and adaptation to specific hospital and unit dynamics, organizational workflows, and safety cultures.

The previous finding is in agreement with Sadeghi, Naderi & Yusefi (2025), who studied how patient safety culture influences nurses' responsibility and indicated that nurses with longer experience in their current hospital develop a deeper structural alignment with the hospital's safety protocols and environmental dynamics compared to newly hired staff.

Conversely, the previous finding is contradicted by Lin, Zhang & Or, (2025), who assessed perceptions of patient safety culture among health care staff in general and specialized hospitals and indicated that experience in the current hospital did not directly create major difference in safety climate dimensions; instead, organizational design and hospital specialization played more predominant role than staff experience."

Moreover, the findings of the current study revealed a statistically significant gender-based difference in perceptions regarding teamwork factors, with male nurse demonstrating a higher mean score ($M=29.95$, $SD=0.33$) compared to female nurses.

From the investigator's point of view, this variation may arise from differing communication styles, team dynamics, or workplace delegation patterns commonly observed in clinical settings, where male nurses might perceive or experience higher levels of peer support and structural teamwork within acute care environments.

These findings are partially supported by Sadeghi, Naderi & Yusefi, (2025), who studied how patient safety culture influences nurses' responsibility and emphasized that gender influence communication openness and collaborative dynamics, which are core elements of perceived teamwork in acute care settings. Conversely, Alshammari et al., (2024) also confirmed significant gender-based difference in patient safety culture, but revealed an inverse finding, where female nurses reported significantly higher perception scores for teamwork within units compared to male nurses ($p < .05$).

CONCLUSION

The present study concluded that patient safety is influenced by the interaction of organizational, environmental, staffing, and individual factors. Teamwork factor was identified as the most influential patient safety domain, with significant correlations observed among several safety domains, highlighting their interdependent nature. Although most nurses had moderate professional experience, the majority had not received patient safety training. In addition, age, gender, and nationality were significantly associated with selected patient safety domains, whereas educational level, years of experience, and workplace were not. These findings emphasize the importance of strengthening teamwork, organizational support, and continuous patient safety education to enhance patient safety culture.

Recommendations

Based on the study findings, the following recommendations are proposed to enhance patient safety culture and improve the quality of care in the clinical setting:

I. At Hospital Administrators Level

- 1) Provide mandatory continuous education programs on patient safety for nurses.
- 2) Establish psychological and wellness support programs for nurses.
- 3) Promote a non-punitive "Just Culture" that encourages reporting of errors and near-misses.
- 4) Organizations should establish robust wellness and psychological support systems to actively mitigate nurse burnout and alleviate job stress

II. At Nursing Managers Level

- 1) Adopt supportive leadership that encourages teamwork and patient safety.
- 2) Ensure adequate nurse staffing according to patient needs.
- 3) Improve communication through regular safety meetings and team briefings.

III. At Nurses level

- 1) Participate regularly in patient safety training and professional development programs.
- 2) Enhance teamwork, communication, and adherence to patient safety practices.

IV. For Further Research

- 1) Conduct similar studies in different hospitals across Saudi Arabia.
- 2) Evaluate the effectiveness of educational programs on patient safety outcomes using longitudinal or interventional studies.

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