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RELATIONSHIP BETWEEN PSYCHOLOGICAL SAFETY, INTERPROFESSIONAL COLLABORATION, AND PATIENT-SAFETY CULTURE AMONG REGISTERED NURSES

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Psychological safety; Interprofessional collaboration; Patient-safety culture; Registered nurses; Patient safety; Nursing; Healthcare.

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Abstract

Background

Psychological safety and interprofessional collaboration are important organizational factors that may influence patient-safety culture. Registered nurses frequently communicate safety concerns, coordinate care, and collaborate with multidisciplinary healthcare teams. A supportive work environment may encourage nurses to speak up and participate in patient-safety activities.

Aim

To determine the relationship between psychological safety, interprofessional collaboration, and patient-safety culture among registered nurses.

Methods

*A quantitative, descriptive cross-sectional design was used among **235 registered nurses** at Jinnah Hospital, Lahore. Participants were recruited through convenience sampling. Data were collected using a structured self-administered questionnaire assessing demographic characteristics, psychological safety, interprofessional collaboration, and patient-safety culture. Data were analyzed using SPSS Version 27. Descriptive statistics and Pearson's correlation coefficient were used, with statistical significance set at $p < 0.05$.*

Results

The findings showed that 48.1% of nurses had moderate psychological safety, 51.5% reported moderate interprofessional collaboration, and 50.6% perceived a moderate patient-safety culture. Psychological safety was significantly positively correlated with interprofessional collaboration ($r = .582$, $p < .001$) and patient-safety culture ($r = .641$, $p < .001$). Interprofessional collaboration demonstrated the strongest association with patient-safety culture ($r = .683$, $p < .001$).

Conclusion

Psychological safety and interprofessional collaboration were significantly associated with patient-safety culture. Strengthening supportive communication, teamwork, speaking-up behaviors, and collaborative practice may contribute to improving patient safety.

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Introduction

Patient safety has emerged as a fundamental global priority in contemporary healthcare because patients increasingly receive care through complex systems involving multiple professionals, departments, technologies, and clinical processes. Patient safety refers to the prevention of avoidable harm and the reduction of unnecessary risks associated with healthcare delivery. The World Health Organization (WHO) reports that approximately one in ten hospitalized patients experiences harm, with at least half of this harm considered preventable. The burden is particularly substantial in low- and middle-income countries, where healthcare systems frequently experience limitations in staffing, infrastructure, resources, and safety-management mechanisms (World Health Organization [WHO], 2024, 2025). Patient safety is consequently no longer viewed exclusively as an issue of individual professional competence. Contemporary safety science emphasizes organizational systems, teamwork, communication, leadership, learning, and workplace relationships as important determinants of whether risks are identified and managed before they result in patient harm (WHO, 2024).

The recognition of patient safety issues is critical due to nursing's significant role in continuous patient monitoring and coordination. Through their daily activities, nurses identify patient safety issues; however, the presence of a safety issue does not create a safety solution. The inclination to address a safety concern is dependent upon the nurse's perception of their clinical unit. Recently, a lack of patient safety culture globally, particularly around communication, reporting, and teamwork, with an inadequate response to errors, has been noted by research (Kyriakeli et al., 2025). Similar research focusing on intensive care discovers a high degree of variability in nurses' perception of patient safety culture due to a high level of teamwork and organizational safety required for complex acute care (Chen et al., 2025). This awareness demonstrates that nursing patient safety and the safety of the social and organizational environments in which nurses work are inextricably linked.

Psychological safety is needed to understand the communication barriers experienced by healthcare professionals when performing their daily activities. When discussing psychological safety, we think of the trust within a team that enables members to bring their honest opinions and concerns to the team without fear of embarrassment, severe criticism, or unexplained team rejection. With the recent focus on healthcare research, psychological safety has been recognized as a significant element of effective healthcare teamwork. Clinical teams must be confident to bring their concerns in the face of silence, as it can result in patient harm. Through their systematic review, LaPlante et al. (2025) identified the hallmarks of healthcare teams, of which psychological safety is a significant component, and examined many other organizational and relational factors that assist in its development. Kumar (2024) added to the sentiment expressed by LaPlante et al. (2025) and other authors, that psychological safety is the foundation of bringing diverse healthcare professionals together to work cohesively and communicate effectively to provide safe and effective patient care. Therefore, psychological safety leads to trust and is an interpersonal barrier that either empowers nurses to participate in patient safety activities or prevents them from having the confidence to perform these activities.

Recent literature has shown that the relationship between psychological and patient safety is more complicated than previously known. Montgomery et al. (2025) conducted a systematic and narrative review of quantitative evidence on psychological safety and patient safety outcomes, and identified nine studies. Five of the studies showed a significant relationship. The evidence was still heterogeneous, and the overall evidence were insufficient to result in a clear causal relationship. The authors also noted a significant conceptual problem. Increased reporting of safety issues may be indicative of a safe environment, and may not be a reflection of worse patient safety. This issue relates to the field of nursing, because a safe environment in which nurses are able to report errors may show an increased number of reported incidents compared to a silent nursing work

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environment where nurses are afraid of being blamed or punished. Psychologically safe environments should not be equated to a climate of fewer reported errors. Rather, it should be the presence of the capacity for openness to criticism, and the engagement of the workforce for the collective defense of safety.

Another major part of modern patient safety practice involves interprofessional collaboration. Such collaboration brings together different groups of health care professionals through activities such as communication and coordination, shared decision-makings, and joint accountability for the outcomes of patients. The complicated nature of hospital care necessitates nurses working alongside medical practitioners, pharmacists, physiotherapists, laboratory staff, radiographers, respiratory therapists, and several other health care workers. It has been documented that the lack of cooperation between nurses and medical practitioners can be detrimental to the safety of the patients and the quality of the care offered as well as the efficiency of the health care system. Moloro et al. (2025), in their systematic review and meta-analysis, reported that suboptimal interprofessional collaboration can lead to medication errors and hospital-acquired infections. According to Leykum et al. (2025), trust, psychological safety, shared mental models, and collective sensemaking are some of the other crucial elements of effective health care team functioning. For this reason, interprofessional collaboration should be viewed as a patient safety imperative rather than just an ideal professional behavior.

The quality of interprofessional collaboration is impacted by organizational, cognitive, individual, and relational factors. Bonacaro et al. (2025) analyzed nurses and radiographers working in an acute care setting, and identified organizational, cognitive, individual, and relational factors as the main contributors to interprofessional collaboration. Alzate-Moreno et al. (2025) also showed interprofessional collaboration is essential as nurses and physicians continually engage with one another to make timely decisions and ensure the provision of safe care in the Intensive Care Unit. More recent studies suggest there is an impact of professional attitudes on collaborative practice. One study reported nurses possessed a more positive attitude towards interprofessional collaboration when compared to physicians, though it was noted that collaboration remained reliant on professional attitudes and structural factors (2025). All of this highlights collaboration is not only a matter of many professional groups existing, but rather if those groups can engage in constructive dialogue and if those professionals can make collaborative decisions.

The concepts of psychological safety and interprofessional collaboration are closely related. An example is a nurse who, because of professional hierarchy, has fear of criticism, or has had bad experiences, might not communicate vital information about a patient deteriorating. Psychological safety helps by eliminating these barriers and allows nurses to communicate their concerns and question organization decisions. Several recent studies provide evidence for the relationship. Ishii et al. (2024) found that interprofessional collaboration is a mediator of the relationship between the climate of safety and the organizational learning of safety. Leykum et al. (2025), in their study, emphasized psychological safety and trust as the main factors that support effective collaborative work. Therefore, psychological safety, by consensus, is the foundation for collaboration across professions. Effective collaboration, on the other hand, supports the shared safety environment.

Patient-safety culture captures the broad context of psychological safety and interprofessional collaboration. It is composed of shared perceptions, values, attitudes, and behaviors of leaders and colleagues, as well as communication, teamwork, error reporting, safety learning, and the response of the organization to safety concerns. Recent international studies indicate that patient-safety culture of nurses also varies across different healthcare settings and geographical regions; most notably in North America, East Asia and the Pacific, and the Caribbean (Kyriakeli et al., 2025). Labrague and Cayaban (2025) found a negative and significant association between patient-safety culture and missed nursing care, showing that a stronger safety culture was associated with a lower

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level of missed nursing care. This is of importance because missed nursing care may be an indicator that patient outcomes are adversely affected by the conditions of an organization. A positive safety culture can help nurses to prioritize care, voice concerns regarding workload and the organization, and seek help if the needs of patients exceed the resources available.

The interaction between teamwork and patient-safety culture is especially crucial in extreme risk conditions. Chen et al. (2025) studied perceptions of patient safety culture amongst emergency unit nurses and showed a lot of variation between studies. This shows how critical differentiating variables are in an organization and in the case of these studies, on a team, in terms of critical care safety. Recent research involving specialized nurses indicates that interprofessional collaboration and teamwork are important ways in which nurses help shape patient-safety culture (Glarcher & Vaismoradi, 2024). These findings shift the focus from placing most of the burden on the individual nurse. Applying a system thinking approach means understanding that the nurses' ability to ensure safety of patients is dependent on the organization's efforts in providing the requisite staffing, guidance and support, teamwork, open communication, opportunity to voice concerns and address them, and allowing the nurses to learn from the concerns raised.

There are many complexities faced by health care organizations in Pakistan, including high patient numbers, a shortage of workers, lack of resources, presence of institutional hierarchy, and various levels of capacity at institutions. The need for interprofessional communication and collaboration in Pakistan was illustrated by recent Pakistan research. In their 2025 study, Azfar et al. used a combination of methods to evaluate interprofessional communication and collaboration in Pakistan. They concluded that interprofessional communication and collaboration could be enhanced by instructional methods that use role play, as opposed to video or other methods of learning, to teach and enhance communication and collaboration for nursing and medical students. Although this research was completed with students, and not with practicing registered nurses, as the first study of its kind in Pakistan, these research findings provide evidence that deliberate efforts are needed in Pakistan to enhance interprofessional communication and collaboration. Within the framework of this research, the ability of health care professionals to cross disciplinary boundaries is enhanced by the ability to engage in collaborative learning.

More evidence shows professional hierarchy obstructs true interprofessional collaboration. Franco et al. (2025), when examining nurse–physician collaboration in Brazil and Germany, found that, although professionals want to collaborate, practitioner power imbalances and hierarchies restrict collaboration. This issue is relevant for Pakistan. Hierarchies impact nurses' willingness to discuss and confront senior healthcare professionals or when nurses feel obligated to stay quiet and avoid conflicts. Richards (2024) believes that in order to create safe workplaces for nursing, it is imperative to support nursing staff and provide them with psychological safety. Sources indicate that Pakistan is lacking a critical but important factor. Nurses' willingness to cite concerns is dependent on interacting staff, genuine leadership, and working culture.

There are many gaps in the current literature that provide a strong rationale for investigating the proposed relationship. First, most recent psychological safety literature addresses workforce outcomes, teamwork, speaking up or learning, rather than focusing on patient safety culture. Second, regarding the relationship between psychological safety and patient safety outcomes, recent literature has been largely unclear (Montgomery et al., 2025). Third, the majority of interprofessional collaboration research provides isolated teamwork interventions or professional skills rather than examining the relationship between psychological safety and patient safety culture. Fourth, most of the existing literature is from high income countries and resources from South Asian countries is especially limited. Fifth, recent Pakistani research was more focused on interprofessional education, teamwork skills, patient safety culture and safety attitudes and rarely studied the integrated relationship of

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psychological safety, interprofessional collaboration and patient safety culture among practicing RNs. These limitations present a major gap in the literature.

Psychological safety is complex and is shaped by various factors, including leadership, relationships, team dynamics, competence, and culture. One recent qualitative study of specialist nurses found that the psychological safety of emergency team members was fragile and was associated with a multitude of factors, including confidence, competence, interpersonal skills, leadership, collaboration, and even the organization's role (2026). From this perspective, one cannot consider psychological safety to be a solely psychological characteristic of the individual; rather, psychological safety is the result of the interactions between professionals as well as the organizational infrastructure. Recent studies, focused on interprofessional teamwork, have stated that collaboration relies on the presence of understood and shared competencies and collaboration is defined by the integration and synergy of the professions and their roles. Taken together, these studies advocate for an integrated perspective of psychological safety and interprofessional collaboration in the context of the patient safety culture.

The study strand looks at the integrated consideration of systems applied to patient safety, psychological safety, and the intervention of safety and interprofessional teamwork. Safety et al. was one of the first to examine psychological safety as the foundation of the ability and the encouraging environment required for staff to feel comfortable to speak, learn, and be challenged. In addition, safety et al. identified that patient-safety culture is the organizational environment that either stimulates or impedes the required and desired behavior. Recent research substantiates the importance of addressing these domains together. For example, Ishii et al. (2024) defined the role of interprofessional collaboration in the relationship between organizational learning and safety climate; meanwhile, La Plante et al. (2025) considered psychological safety as an essential component of an optimal healthcare team. Analyzing these constructs together may clarify the culture of patient safety better than any of these constructs on its own.

This study is necessary because registered nurses are in a distinctive position between patient care and monitoring, communication, coordination, advocacy, and more. Nurses are often the only direct connection between patients and other healthcare professionals. Nurses may ultimately decide whether safety issues are even identified by how effectively they can voice concerns and participate in interprofessional decision-making. New research that establishes the relationship between patient-safety culture and missed nursing care extends the importance of the nursing work environment to the whole of safe care (Labrague & Cayaban, 2025). A suboptimal work environment drives nurses to be silence, and poor collaboration among interdisciplinary teams may promote slower decision-making and care fragmentation. On the other hand, a strong patient safety culture is likely to promote nurses' communications of issues of concern, and reporting of safety concerns as well as active engagement in organizational learning.

This study will provide insight regarding the role of psychological safety in developing Interprofessional collaboration to enhance patient safety culture among registered nurses. The study can examine if there is a positive correlation among them. It can also examine if nurses, who have a higher comfort level in the psychological safety space, perceive better collaborative interprofessional relationships and a positive patient safety culture. Building patient safety requires more than adherence to clinical protocols. It demands team members who are able to communicate, challenge dangerous decisions, learn from mistakes, and create a coordinated effort to accept accountability for the outcomes of patients so they can collaborate to achieve the goal of providing safety to patients. This study aims to identify this and other factors of health care teams which include trust, psychological safety, and flexible mental models within a communication-based team approach (Leykum et al., 2025). Considering this evidence will enable nursing leadership to design and implement relevant strategies to improve hospital care.

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The results of this research may impact the development of education programs for clinicians and healthcare managers as well as legislation for ensuring patient safety. The author proposes that the presence of psychological safety may positively impact the collaboration of the interprofessional workforce and the culture of patient safety. Such a situation would mean that traditional methods of communication training used with nursing staff may need to be expanded to include empirically based approaches such as leadership, communication, respectful and safe team environments, psychological safety, mechanisms to encourage and support staff to speak up, and overall improvement in the quality of team interactions. Educational and practice strategies including simulation, role-play, and interdisciplinary rounds can be integrated into existing educational programs to reduce status barriers within professionally unequal teams and to encourage healthy debate. The recent study from Pakistan by Azfar et al. (2025) suggests that some improvements in interprofessional communication and teamwork skills may be possible using experiential learning, and this may provide a helpful foundation for future research. The organizational strategies could include strengthening systems for confidential reporting, a nonpunitive response to error, development of leadership at all levels, and fortifying the protection of nurses who speak up for patient safety.

Contemporary evidence shows that patient safety is recognized as a relational and organizational problem rather than an individual clinical problem. Psychological safety can allow nurses to speak up. Organizational safety culture may help facilitate collaboration among various professionals, while patient-safety culture may help create an environment that sustains that collaboration. Recent reviews and studies have shown the importance of each of the three aspects. However, there is limited literature on the relationship of these three areas among registered nurses, especially in Pakistan. Analyzing the relationships of psychological safety, interprofessional collaboration, and patient-safety culture of registered nurses helps fill a theoretical, empirical, and contextual gap. Safety of health care environments in Pakistan may be improved, and nurses may be emboldened to speak out and collaborate across professional constraints, learn with the organization, and reduce preventable harm to patients.

Methods

A quantitative, descriptive cross-sectional design was used to examine the relationship between psychological safety, interprofessional collaboration, and patient-safety culture among registered nurses at Jinnah Hospital, Lahore, Pakistan. The study population consisted of registered nurses involved in direct patient care across different clinical departments. A convenience sampling technique was used, and 235 registered nurses were recruited based on predefined eligibility criteria. Nurses were required to have at least six months of experience at the hospital, regular interaction with other healthcare professionals, and willingness to participate. Data were collected through a structured self-administered questionnaire consisting of four sections: demographic and professional characteristics, psychological safety, interprofessional collaboration, and patient-safety culture.

Data Collection Procedure

Following ethical approval and formal permission from the relevant hospital authorities, eligible registered nurses were approached during the data-collection period. The researcher explained the study purpose, objectives, procedures, voluntary nature of participation, confidentiality, and participants' right to withdraw at any time. Written informed consent was obtained before questionnaire distribution. Questionnaires were provided during suitable periods that did not interfere with routine patient care. Participants were given sufficient time to complete the questionnaires. Completed questionnaires were collected by the researcher and checked for completeness. To maintain anonymity and confidentiality, identification codes were used instead of participants' names. The collected

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questionnaires were then prepared for data coding and statistical analysis.

Data Analysis Procedure

The collected data were coded, entered, cleaned, and analyzed using the Statistical Package for the Social Sciences (SPSS), Version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize participant characteristics and study-variable levels. Pearson's correlation coefficient (r) was applied to determine the direction and strength of relationships among psychological safety, interprofessional collaboration, and patient-safety culture. Statistical significance was set at $p < 0.05$, and findings were presented using appropriate tables and figures.

Results

Demographic Analysis

Table 1: Demographic and Professional Characteristics of Registered Nurses (n=235)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	20–25	62	26.4
	26–30	78	33.2
	31–35	45	19.1
	36–40	30	12.8
	≥41	20	8.5
Gender	Male	48	20.4
	Female	187	79.6
Educational Qualification	Diploma/General Nursing	52	22.1
	BSN	128	54.5
	Post RN BSN	35	14.9
	MSN/MSc Nursing	20	8.5
Professional Experience	<5 years	91	38.7
	5–10 years	82	34.9
	11–15 years	40	17.0
	>15 years	22	9.4
Clinical Department	Medical	48	20.4
	Surgical	46	19.6
	ICU/Critical Care	55	23.4
	Emergency	42	17.9
	Other	44	18.7
Total		**235**	**100.0**

The table shows that the largest proportion of nurses (33.2%) were aged 26–30 years, followed by 26.4% aged 20–25 years. The majority of participants were female (79.6%), while 20.4% were male. More than half of the nurses (54.5%) held a BSN qualification. Regarding professional experience, 38.7% had less than five years of experience. The largest proportion of participants worked in ICU/critical care units (23.4%).

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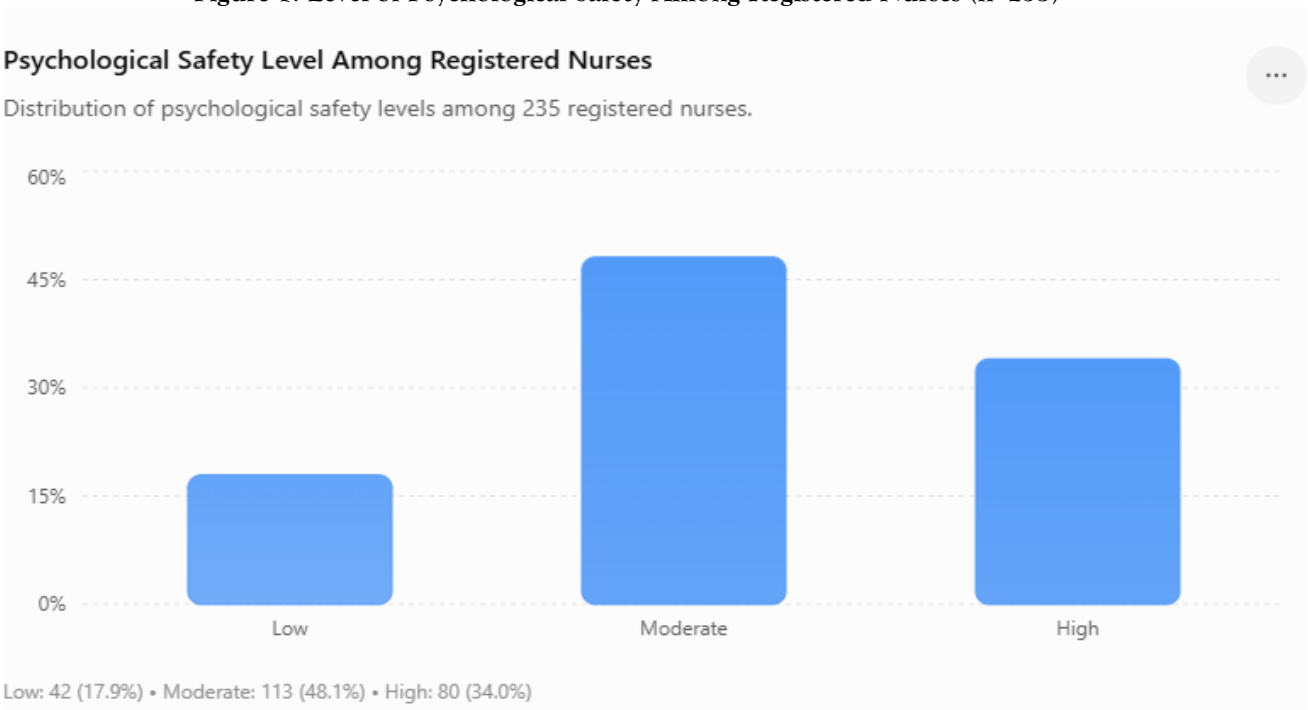
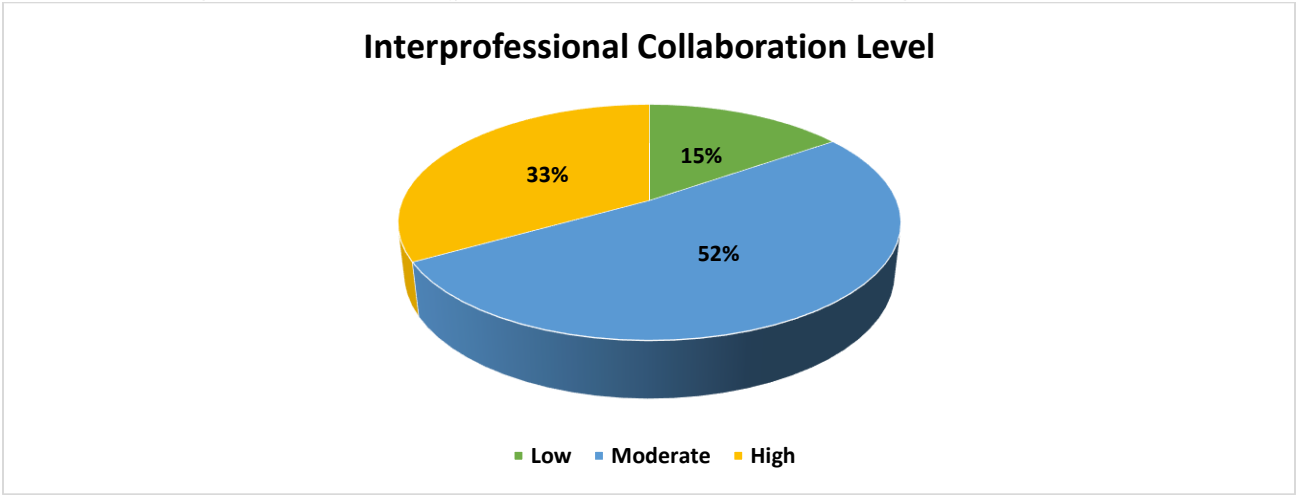
Figure 1: Level of Psychological Safety Among Registered Nurses (n=235)



Interpretation

The figure demonstrates that 48.1% of registered nurses had a moderate level of psychological safety. A high level of psychological safety was reported by 34.0% of participants. Only 17.9% of nurses reported a low level of psychological safety.

Figure 2: Level of Interprofessional Collaboration Among Registered Nurses



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Interpretation

The findings indicate that more than half of the nurses (51.5%) demonstrated a moderate level of interprofessional collaboration. One-third of the participants (33.2%) reported a high level of collaboration with other healthcare professionals. A smaller proportion (15.3%) demonstrated a low level of interprofessional collaboration.

Table 2: Level of Patient-Safety Culture Among Registered Nurses (n=235)

Patient-Safety Culture Level	**Frequency (n)**		**Percentage (%)**
Poor	38		16.2
Moderate	119		50.6
Good	78		33.2
Total	**235**		**100.0**
Measure	**Mean ± SD**	**Minimum**	**Maximum**
Patient-Safety Culture Score	**148.37 ± 18.52**	96	182

Interpretation

The table indicates that 50.6% of registered nurses perceived the patient-safety culture as moderate. A good patient-safety culture was reported by 33.2% of participants, whereas 16.2% perceived the safety culture as poor. The mean patient-safety culture score was 148.37 ± 18.52. These findings suggest that the overall patient-safety culture was moderate, indicating the presence of positive safety practices alongside areas requiring organizational improvement.

Table 3: Relationship Between Psychological Safety and Interprofessional Collaboration Among Registered Nurses (n=235)

Variables	**Pearson's r**	**p-value**	**Relationship**
Psychological Safety ↔ Interprofessional Collaboration	**0.582**	**<0.001**	Moderate positive, significant

Interpretation

The table demonstrates a moderate positive correlation between psychological safety and interprofessional collaboration ($r = 0.582$). The relationship was statistically significant ($p < 0.001$). This indicates that nurses reporting higher psychological safety also tended to report stronger interprofessional collaboration. The finding suggests that an environment where nurses feel comfortable expressing concerns and opinions may facilitate communication and teamwork with other healthcare professionals. Therefore, psychological safety appears to be an important factor associated with effective interprofessional collaboration.

Table 4: Relationship Between Psychological Safety, Interprofessional Collaboration, and Patient-Safety Culture Among Registered Nurses (n=235)

Variables	**Pearson's r**	**p-value**	**Relationship**
Psychological Safety ↔ Patient-Safety Culture	**0.641**	**<0.001**	Moderate-to-strong positive, significant
Interprofessional Collaboration ↔ Patient-Safety Culture	**0.683**	**<0.001**	Moderate-to-strong positive, significant

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Psychological Safety ↔ Interprofessional Collaboration	0.582	<0.001	Moderate positive, significant

Interpretation

The table shows a significant positive relationship between psychological safety and patient-safety culture ($r = 0.641$, $p < 0.001$). Interprofessional collaboration was also significantly and positively associated with patient-safety culture ($r = 0.683$, $p < 0.001$). Psychological safety and interprofessional collaboration were significantly and positively correlated ($r = 0.582$, $p < 0.001$). The strongest association was observed between interprofessional collaboration and patient-safety culture. Overall, the findings suggest that greater psychological safety and stronger interprofessional collaboration are associated with a more positive patient safety culture among registered nurses.

Discussion

This study focuses on psychological safety, interprofessional collaboration, and patient safety culture among 235 nurses at Jinnah Hospital Lahore. The demographic data revealed that 33.2% of the participants were between 26 and 30 years old, 79.6% were female, 54.5% had a BSN degree, and 38.7% had less than 5 years of experience. The younger nursing workforce may indicate more tertiary care participation by younger nurses. The many females may indicate a more junior/less-experienced workforce. More than half of the sample had a BSN, indicating a relatively higher educational level of the sample. The different clinical environments were represented by nurses employed in medical, surgical, intensive care, emergency, and other units.

About half of the participating nurses (48.1%) reported feeling a moderate level of psychological safety, while 17.9% reported a low level and 34.0% reported a high level. The mean score for psychological safety was 48.62 ± 7.84. This indicates that nurses perceived an average level of psychological safety, meaning that, for the most part, the workforce felt an average level of safety to communicate, ask for help, address concerns, and express themselves when needed. According to LaPlante et al. (2025), psychological safety is an important characteristic of an effective healthcare team. Barriers within communication and teamwork, and positive/near-miss learning and workforce outcomes, are associated with psychological safety. Their systematic review of 30 other studies also confirms psychological safety is an important element of healthcare team functioning.

The moderate psychological safety observed in the present study is likely attributable to the vast tertiary care hospital and its unique environment. Communication with peers is possible and is often constrained by a hierarchical structure. Psychological safety extends beyond the confines of casual communication. It requires the confidence to speak one's mind without the fear of embarrassment, rejection, blame, or other negative professional impacts. Montgomery et al. (2025) noted the existing literature pertaining to psychological safety and patient safety is diverse, concerning only five of nine studies, as the remaining four showed no significant correlation. Their study is relevant to this one, as it posits that psychological safety must be understood as a process involved in organizational structure and team dynamics, unlike a guarantee of improvement in safety outcomes.

Our study reported that 51.5% of registered nurses reported moderate interprofessional collaboration, 33.2% reported high collaboration, while 15.3% reported low collaboration. The mean interprofessional collaboration score was 72.45 ± 9.63. Collaboration was present, but there was clearly room to improve. Collaboration is contingent upon communication, but also respect, understanding of roles, joint decision-making, and control, as well as the timely and relevant sharing of clinical information. According to Moloro et al. (2025), interprofessional collaboration is of utmost importance in the provision of care to patients. They further indicated that the collaboration, or lack thereof, between nurses and doctors may result in adverse events and unsafe communication.

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This study showed moderate levels of interprofessional collaboration. It may be a result of the complex nature of multidisciplinary care in tertiary hospitals. Nurses most likely interact with physicians and other professionals. However, their workload, different scopes of practice, communication patterns and overall power differentials affect interactions. Contemporary literature indicates collaboration is not just co-location of professionals in the same clinical environment. It encompasses having an understanding, having respect for one another, making joint decisions and effective communication. Recently, interprofessional case discussions involving nurses in acute care settings have showed that planning and structured communication is an integral part of collaborative clinical processes.

In this study, mean patient safety culture scores were 148.37 ± 18.52. The authors found a moderate patient safety culture with 50.6% of participants, while 33.2% showed a good patient safety culture, and 16.2% showed a poor patient safety culture. These scores indicate that the study setting had a positive patient safety culture, however, some nurses did not appreciate the positive safety culture practices. The results are in line with findings from Lahore. These findings were from a study on the public tertiary care hospital doctors and nurses. These participants appreciated the organizational learning and continuous improvement and teamwork in units. However, the participants reported weak staffing and non-punitive responses to error. This is of importance to this study as staffing levels and the fear of being punished influence a nurse's ability to report safety concerns and engage in safety improvement.

The results about patient-safety culture also corroborate international data. In their systematic review and meta-analysis, Kyriakeli et al. (2025), about patient-safety culture of hospital nurses, reported substantial differences in safety culture perception across different health services and geographic regions. Their study suggests that numerous organizational dimensions shape patient-safety culture, whereas the others focus on none. The moderate level reached in our study could be related to similar problems rooted in communication, teamwork, adequate staffing levels, and leadership and the culture of reporting errors. The Lahore data demonstrating strong teamwork within units, but inadequate staffing levels and non-punitive response, is particularly instructive in interpreting the findings of this study.

A significant moderate positive correlation was found between psychological safety and interprofessional collaboration ($r = .582$, $p < .001$). Nurses reporting higher psychological safety indicated greater collaboration with the other professionals. This findings provides evidence that under the psychologically safe environment, nurses are more likely to talk, collaborate, and be involved in the process of making decisions. LaPlante et al. (2025) reported that presence of psychological safety is an important component of effective healthcare team and that communication, relationships, leadership, team process are interrelated to psychological safety. The relationship documented in the present study extends this evidence by providing specific data on the tertiary care hospital based in Pakistan.

There was a positive and significant association between psychological safety and patient-safety culture ($r = .641$, $p < .001$). Nurses who experienced greater psychological safety tended to be in a more positive patient-safety culture. Transparency, a willingness to speak, the asking of questions, and the ability to acknowledge errors contribute to the learning and safety of an organization. Montgomery et al. (2025) stated that the relationship between psychological safety and patient-safety outcomes poses no threat. This points out an important distinction between the present perception-based outcomes and objective-based clinical outcomes. There is a positive relationship between psychological safety and safety culture, but it is unable to identify causation.

The present study shows that the highest correlation is between interprofessional collaboration and patient-safety culture ($r = .683$, $p < .001$). In this correlation, effective collaboration is essential for a positive safety

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culture among registered nurses. Callabrelli et al. (2019) stated that inadequate collaboration between nurses and physicians increased patient safety risks. Results from Pakistan, specifically Lahore, reported positive perceptions of safety culture in units and supported the importance of safety culture to the broader safety of the environment.

The interrelated nature of psychological safety, interprofessional collaboration, and patient-safety culture suggests these are integrated dimensions of the clinical work environment. The results regarding these constructs showed moderate levels, demonstrating that the study setting has a starting point for safe practice, but areas that require improvement for the organization as a whole. The strong correlations reflect association rather than causation, due to the cross-sectional nature of the study. Psychological safety may influence a nurse's disposition to collaborate, and collaboration may afford safety and a sense of psychological safety through effectiveness and responsible communication. A positive patient-safety culture may create a supportive environment and influence the psychological safety of the staff by providing constructive responses to concerns and errors. Nursing leadership should focus on strategies that encourage speaking up, and enhance respectful communication, collaboration, and leadership within an environment of safety and responsiveness to the needs of the staff. Recent systematic research supports the investment of psychological safety as a strategy to enhance safe, high quality care that is dependable.

CONCLUSION:

The study concluded that registered nurses at Jinnah Hospital, Lahore demonstrated predominantly **moderate levels of psychological safety, interprofessional collaboration, and patient-safety culture**. Psychological safety was significantly and positively associated with interprofessional collaboration, indicating that nurses who perceived greater psychological safety tended to report stronger collaboration with other healthcare professionals. Psychological safety also demonstrated a significant positive relationship with patient-safety culture. Interprofessional collaboration showed the strongest positive association with patient-safety culture, suggesting that effective communication, teamwork, mutual respect, coordination, and shared decision-making are important components of a positive patient-safety environment. The findings highlight the importance of creating supportive clinical environments in which nurses can freely communicate concerns, participate in decision-making, report safety issues, and collaborate with other professionals without fear of blame or negative consequences. Strengthening psychological safety and interprofessional collaboration may contribute to the development of a stronger patient-safety culture within healthcare organizations.

RECOMMENDATIONS OF THE STUDY:

1. **Healthcare administrators should develop policies that promote psychological safety** by encouraging nurses to express concerns, ask questions, report errors, and provide constructive feedback without fear of punishment or humiliation.
2. **Nursing leaders should promote open and supportive communication** through regular staff meetings, safety briefings, feedback sessions, and opportunities for nurses to discuss clinical concerns.
3. **Interprofessional education and teamwork programs should be implemented** to improve communication, mutual respect, role clarity, shared decision-making, and coordination among nurses, physicians, and other healthcare professionals.
4. **A non-punitive approach to error reporting should be strengthened** so that nurses can report incidents and near misses without unnecessary blame. Reported incidents should be used for organizational learning and quality improvement.

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5. **Nurse managers should receive leadership training** focused on psychological safety, conflict management, communication, teamwork, and supportive responses to staff concerns.
6. **Healthcare institutions should strengthen patient-safety initiatives** through regular safety audits, incident-reporting systems, multidisciplinary safety meetings, and continuous quality-improvement activities.
7. **Adequate staffing and workload management should be prioritized**, as excessive workload and staffing shortages may negatively influence communication, teamwork, psychological safety, and patient safety.
8. **Future researchers should conduct multicenter studies** involving public and private hospitals from different regions of Pakistan to improve the generalizability of findings.
9. **Longitudinal and intervention-based studies should be conducted** to determine whether interventions designed to improve psychological safety and interprofessional collaboration can produce measurable improvements in patient-safety culture.
10. **Nursing education programs should incorporate psychological safety and interprofessional collaboration** into undergraduate and postgraduate curricula to prepare nurses for effective communication, speaking-up behaviors, and collaborative patient care.

REFERENCES

Alzate-Moreno, M., Calderón-Breñosa, B., Rodríguez-San Miguel, K., & Sarasa-Monreal, M. D. M. (2025). Interprofessional collaboration in the clinical sessions of an intensive care unit: Perception of nurses and doctors. *Enfermería Intensiva, 36*(1), 100488.

Azfar, S. M., Saeed, S., Masood, S., Azim, S. R., Baig, M., & Malik, M. G. R. (2025). Role play versus video-based learning for interprofessional communication and teamwork skills in nursing and medical students: A mixed-methods study in Pakistan. *BMC Medical Education, 25*, 704.

Bonacaro, A., Risoli, C., Bof, F., Carcaterra, Y., Cuzzi, C., Danieli, C., Guasconi, M., & Artioli, G. (2025). Interprofessional collaboration in acute care settings: Qualitative research among nurses and radiographers. *British Journal of Nursing, 34*(4), 232–240.

Chen, X., Pan, H., Li, F., Gong, G., Cui, L., Fang, F., & Zhu, R. (2025). Nurses' perceptions of patient safety culture in intensive care units: A systematic review and meta-analysis. *Nursing in Critical Care, 30*(5), e70138.

Espat, N. N., Kumar, S., Rhodes-Lyons, H. X., & Elkbuli, A. (2025). Enhancing healthcare outcomes through interprofessional collaboration: Challenges and future directions. *The American Journal of Surgery, 246*, 116283.

Franco, C. M., Bula, D., Toso, B. R. G. O., Giovanella, L., & Hämel, K. (2025). Nurse–physician interprofessional collaboration in the context of expanding nursing practice in primary health care: A comparative qualitative study of Brazil and Germany. *BMC Nursing, 24*, 259.

Glarcher, M., & Vaismoradi, M. (2024). A systematic integrative review of specialized nurses' role to establish a culture of patient safety: A modelling perspective. *Journal of Advanced Nursing*.

Ishii, K., Fujitani, K., & Matsushita, H. (2024). Interprofessional collaboration mediates the relationship between perceived organizational learning and safety climate in hospitals: A cross-sectional study. *Journal of Rehabilitation Medicine, 35*(3), 217–232.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Kausar, R., Janjua, K., Siddique, M., & Victor, G. (2023). Factors associated with nurses' attitude towards patient safety culture in an internationally accredited tertiary care hospital, Islamabad. *Journal of Islamabad Medical & Dental College*.

Kumar, S. (2024). Psychological safety: What it is, why teams need it, and how to make it flourish. *Chest, 165*(4), 942–949.

Kyriakeli, G., Georgiadou, A., Symeonidou, A., Tsimtsiou, Z., Dardavesis, T., & Kotsis, V. (2025). Patient safety culture among nurses in hospital settings worldwide: A systematic review and meta-analysis. *Joint Commission Journal on Quality and Patient Safety, 51*(5), 350–360.

Labrague, L. J., & Cayaban, A. R. (2025). Association between patient safety culture and missed nursing care in healthcare settings: A systematic review and meta-analysis. *Journal of Advanced Nursing, 81*(11), 7992–8004.

LaPlante, R. D., Reid Ponte, P., & Magny-Normilus, C. (2025). Essential elements and outcomes of psychological safety in the healthcare practice setting: A systematic review. *Applied Nursing Research, 83*, 151946.

Leykum, L. K., Khan, A., Abu-Rish Blakeney, E., & Cates Kennedy, K. (2025). Interprofessional collaboration: Creating effective teams within and across organizations. *Medical Clinics of North America, 109*(5), 1009–1027.

Moloro, A. H., Sabo, K. G., Lahole, B. K., Wengoro, B. F., et al. (2025). Prevalence of interprofessional collaboration towards patient care and associated factors among nurses and physicians in Ethiopia: A systematic review and meta-analysis. *BMC Nursing*.

Montgomery, A., Chalili, V., Lainidi, O., Mouratidis, C., Maliousis, I., Paitaridou, K., & Leary, A. (2025). Psychological safety and patient safety: A systematic and narrative review. *PLOS ONE, 20*(4), e0322215.

O'Donovan, R., & McAuliffe, E. (2025). Psychological safety in healthcare practice settings: Recent evidence and implications for teamwork and quality of care. *Nursing Outlook*.

Richards, A. (2024). Concerns about practice: Supporting staff by fostering a climate of psychological safety. *Nursing Management, 31*(5), 14–18.

Tan, A. S., et al. (2024). Interprofessional education and collaborative practice in healthcare: Recent evidence concerning communication, teamwork, and patient safety.

Attitudes of physicians and nurses toward interprofessional collaboration: A systematic literature review. (2025). *Systematic review of contemporary physician and nurse collaboration evidence*.

World Health Organization. (2024). *Global patient safety report 2024*. World Health Organization.