ASSESSMENT OF KNOWLEDGE ABOUT TEAMWORK AMONG NURSES

PERVAIZ M, SHARIF N, ZUNAIRA, TASNEEM SS, JABEEN R

Department of Nursing, The Superior University Lahore, Pakistan
*Correspondence author email address: michellepervaiz627@gmail.com

Abstract: *Teamwork is essential in healthcare, particularly among nurses who are crucial in patient care. Effective teamwork has been shown to improve patient safety, care quality, and healthcare outcomes.* ***Objective:*** *This study aimed to assess the level of teamwork knowledge among nurses at the Punjab Institute of Neurosciences (PINS) in Lahore, Pakistan, and to examine factors influencing this knowledge, including years of experience, education level, and previous teamwork training.* ***Methods:*** *This cross-sectional study was conducted with a sample of 100 registered nurses at PINS. Data were collected using a structured questionnaire assessing demographics and teamwork knowledge across domains such as communication, role clarity, conflict resolution, and interprofessional collaboration. Statistical analyses, including ANOVA and t-tests, were conducted to explore associations between teamwork knowledge and demographic factors.* ***Results:*** *The findings indicated a moderate overall teamwork knowledge score among nurses, with strengths in communication (mean score: 3.8) and interprofessional collaboration (mean score: 3.9). However, areas like conflict resolution (mean score: 3.2) and role clarity (mean score: 3.5) showed room for improvement. Higher levels of education, more years of experience, and previous teamwork training were significantly associated with greater teamwork knowledge. Nurses with advanced degrees and those who had received teamwork training scored notably higher than their peers without such training.* ***Conclusion:*** *The study highlights the influence of education, experience, and targeted teamwork training on nurses' teamwork knowledge. Recommendations include implementing regular teamwork training programs, mentorship initiatives for junior nurses, and department-specific training to strengthen teamwork competencies. Future research should focus on the impact of teamwork knowledge on patient outcomes, providing insights into how enhancing teamwork skills can improve healthcare quality in Pakistan.*

Keywords: Teamwork, Nursing, Healthcare, Teamwork Knowledge, Communication, Conflict Resolution.

Introduction

Teamwork is an essential component of healthcare delivery, significantly influencing patient safety, care quality, and staff satisfaction. Nurses, as frontline healthcare providers, play a pivotal role in fostering collaborative environments that ensure effective patient care. Globally, the importance of teamwork in nursing is widely recognized; however, developing countries like Pakistan face unique challenges in cultivating effective teamwork among nurses due to structural, cultural, and resource-related factor (1, 2).

In the Pakistani healthcare system, teamwork among nurses is often hindered by hierarchical structures, communication barriers, and limited access to formal training programs that address teamwork principles. Public hospitals, such as the Punjab Institute of Neurosciences (PINS), are frequently overburdened by high patient volumes and constrained by inadequate staffing, resulting in challenges to effective interprofessional collaboration. Additionally, cultural norms that prioritize seniority and authority may restrict open communication between healthcare team members, including nurses, further impeding teamwork practices (3, 4).

Studies from high-income countries have demonstrated that effective teamwork can reduce medical errors, improve patient satisfaction, and enhance nurses' job performance. However, in Pakistan, limited research has explored the knowledge of teamwork principles among nurses, highlighting a critical gap in understanding the factors that influence collaborative practices. Existing studies emphasize that Pakistani nurses often lack structured training in communication, conflict resolution, and role clarity, which are essential components of effective teamwork (5, 6). Addressing these gaps through targeted training programs and educational interventions could substantially improve the collaborative dynamics within healthcare teams (7).

Furthermore, nurses in Pakistan often operate under stressful conditions due to high patient-to-nurse ratios and limited resources, which exacerbate the challenges of maintaining teamwork. These circumstances not only affect patient care but also contribute to nurse burnout and dissatisfaction (8). In such settings, enhancing teamwork knowledge and practices becomes imperative to improve both patient outcomes and the work environment for healthcare providers (9).

This study aims to assess the level of knowledge regarding teamwork principles among nurses in Pakistan, identify gaps, and explore factors influencing their understanding. Insights gained from this research can inform the development of tailored interventions to enhance teamwork skills, ultimately contributing to improved healthcare quality in resource-constrained environments.

Methodology

This study employed a descriptive cross-sectional design to evaluate the knowledge of teamwork principles among nurses at the Punjab Institute of Neurosciences (PINS) in

Lahore, Pakistan. The design facilitated a comprehensive assessment of nurses' understanding of teamwork concepts at a single point in time, providing valuable insights into existing knowledge gaps and the factors influencing these gaps. Conducted at PINS, a public tertiary care hospital with a high patient volume in neurosurgical and neurological specialties, the study was set in a demanding environment where interprofessional collaboration is essential for optimal patient care.

The target population included all registered nurses at PINS, encompassing staff nurses, head nurses, and nursing supervisors engaged in direct patient care and collaborative activities. A sample of 100 participants was selected using a convenience sampling method to ensure accessibility and to maximize participation rates within the study's timeframe. Participants were required to meet specific inclusion criteria, including being registered nurses with a minimum of six months of clinical experience and providing informed consent. Exclusion criteria included nurses on leave or unavailable during the study period and nursing interns or students not yet registered as professionals.

Data were collected through a structured questionnaire designed to gather demographic information and assess teamwork knowledge. The questionnaire was divided into two sections: demographic details such as age, gender, years of experience, education level, and prior teamwork training, and a teamwork knowledge assessment comprising 20 items. These items evaluated key teamwork concepts such as communication, role clarity, conflict resolution, and interprofessional collaboration using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was adapted from validated tools in previous research and tailored to the specific context of healthcare settings in Pakistan.

Data collection spanned four weeks, during which the research team distributed the questionnaires to eligible nurses across various departments at PINS. Participation was anonymous, with informed consent obtained from all respondents. To ensure confidentiality, all completed questionnaires were securely stored, and only aggregated data were analyzed. Ethical approval for the study was granted by the Ethics Review Board of PINS, and strict adherence to ethical guidelines ensured participant rights and data integrity.

Data analysis was performed using SPSS software (version 26). Descriptive statistics were used to summarize demographic characteristics and overall knowledge levels, while inferential statistics tested the study hypotheses. Independent t-tests evaluated differences in teamwork knowledge between groups, such as those with or without prior training. ANOVA examined the relationships between teamwork knowledge and categorical variables like years of experience and education level. Pearson's correlation coefficient assessed associations between continuous variables, including years of experience and knowledge scores. A significance threshold of $p < 0.05$ was applied for all statistical tests to ensure robust conclusions. This approach provided a rigorous analysis of factors influencing teamwork knowledge among nurses at PINS, contributing to a deeper understanding of the dynamics in collaborative nursing practices.

Results

This section presents the analysis of data collected from 100 registered nurses at the Punjab Institute of Neurosciences (PINS), Lahore. The results highlight demographics, overall knowledge of teamwork principles, and relationships between demographic factors and teamwork knowledge.

1. Demographic Characteristics of Participants

Among the participants, 80% were female and 20% were male. The largest age group was 30–39 years (40%), followed by 20–29 years (30%), 40–49 years (20%), and 50+ years (10%). Regarding experience, 35% had 5–10 years of experience, 25% had less than 5 years, 20% had 11–15 years, and another 20% had 16+ years. In terms of education, 45% held a Diploma in Nursing, 35% held a Bachelor's in Nursing (BSN), and 20% had a Master's degree in Nursing. For teamwork training, 40% had previous training, while 60% reported no previous teamwork training experience. These demographics provide context for understanding teamwork knowledge among nurses in this setting. (Table 1)

Table 1: Demographic Characteristics of Nurses

Variables	Frequency (n)	Percentage (%)
Gender		
Male	20	20%
Female	80	80%
Age		
20–29 years	30	30%
30–39 years	40	40%
40–49 years	20	20%
50+ years	10	10%
Years of Experience		
<5 years	25	25%
5–10 years	35	35%
11–15 years	20	20%
16+ years	20	20%
Education Level		

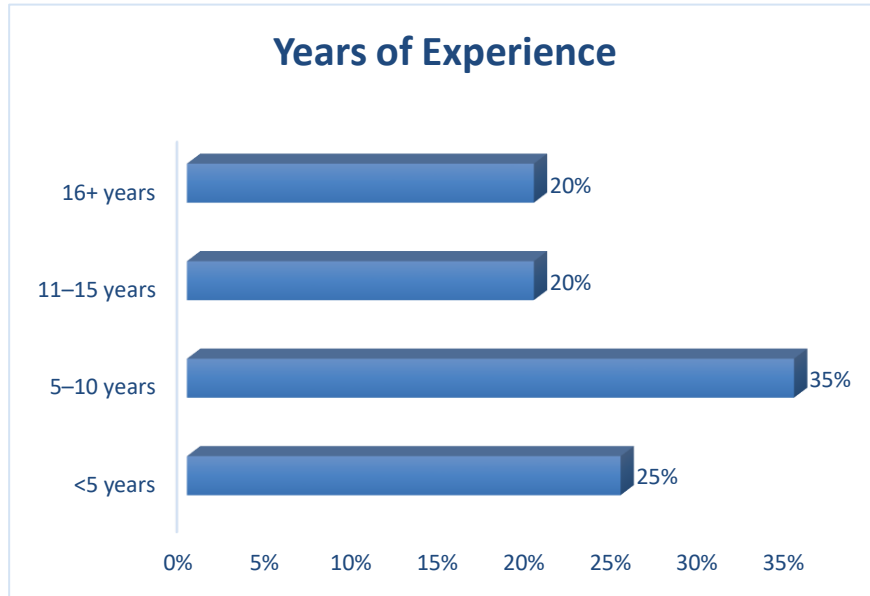| Diploma in Nursing	45	45%
Bachelor's in Nursing (BSN)	35	35%
Master's in Nursing	20	20%
Previous Teamwork Training		
Yes	40	40%
No	60	60%

Figure 1: Years of experience of nurses in the study population

Table 2 presents the overall knowledge scores of teamwork principles. Scores are calculated on a 1-5 Likert scale, with 5 indicating a high knowledge level.

The assessment of teamwork knowledge among nurses showed an overall moderate understanding, with an average score of 3.6. Nurses demonstrated relatively strong skills in communication (mean score: 3.8), indicating awareness of clear communication's role in effective patient care. Similarly, interprofessional collaboration scored high (mean: 3.9), suggesting that nurses value and understand the importance of working cohesively with other healthcare professionals.

Role clarity had a moderate score of 3.5, showing that nurses have some understanding of their roles, though there are areas where clarity could improve. Conflict resolution received the lowest score (mean: 3.2), indicating a potential need for training in managing conflicts effectively. Overall, these findings highlight strengths in communication and collaboration, with opportunities for growth in role clarity and conflict resolution to further enhance teamwork. (Table 2)

Table 2: Overall Knowledge of Teamwork Principles

Variables	Mean Score	SD
Communication	3.8	0.7
Role Clarity	3.5	0.8
Conflict Resolution	3.2	0.9
Interprofessional Collaboration	3.9	0.6
Overall Teamwork Knowledge Score	3.6	0.8

Table 3 illustrates teamwork knowledge scores categorized by years of experience, highlighting potential trends in knowledge levels as experience increases. The analysis of teamwork knowledge scores by years of experience among nurses at PINS revealed a positive correlation between experience and knowledge levels. Nurses with less than 5 years of experience had a mean knowledge score of 3.2 (SD = 0.7), reflecting a foundational understanding of teamwork principles. Those with 5–10 years of experience scored slightly higher, with a mean score of 3.5 (SD = 0.8), indicating increased knowledge likely gained through practical experience.

Nurses with 11–15 years of experience achieved a mean score of 3.8 (SD = 0.6), demonstrating a more developed understanding of teamwork, while the most experienced group (16+ years) had the highest mean score of 4.1 (SD = 0.5). This trend suggests that as nurses gain more years in the field, their knowledge of teamwork principles strengthens, highlighting the value of experience in fostering collaborative skills in a hospital setting. (Table 3)

Table 3: Teamwork Knowledge by Years of Experience

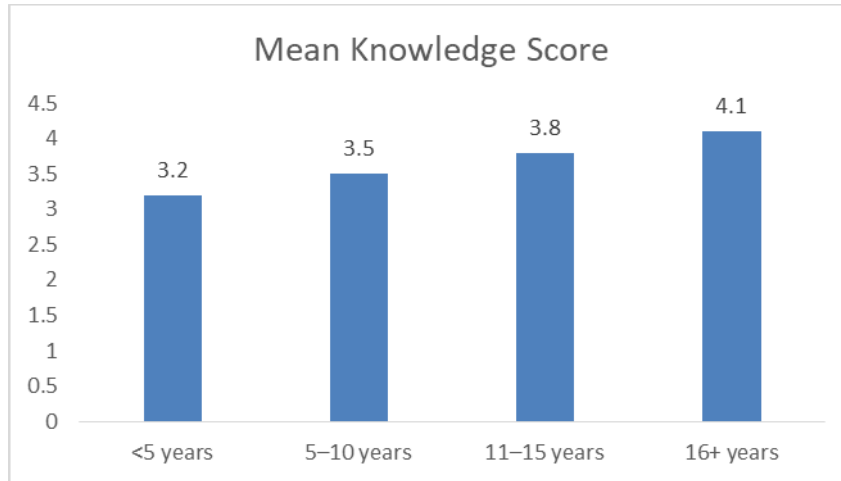| Years of experiences	Mean Knowledge Score	SD
<5 years	3.2	0.7
5–10 years	3.5	0.8
11–15 years	3.8	0.6
16+ years	4.1	0.5

Figure 2: Mean Teamwork Knowledge Score by Years of Experience

Table 4 displays the average teamwork knowledge scores based on education levels. The analysis of teamwork knowledge scores by education level among nurses at PINS indicates a positive relationship between higher education and increased teamwork knowledge. Nurses with a Diploma in Nursing had a mean knowledge score of 3.3 (SD = 0.8), reflecting basic familiarity with teamwork principles. Those with a Bachelor's in Nursing (BSN) scored higher, with a mean of 3.6 (SD = 0.7), suggesting a more advanced understanding likely supported by educational training.

The Master's in Nursing group achieved the highest mean score of 4.0 (SD = 0.6), indicating a comprehensive grasp of teamwork concepts. This pattern suggests that higher educational attainment may contribute to a deeper understanding of teamwork, underscoring the importance of advanced training in developing collaborative skills in healthcare settings. (Table 4)

Table 4: Teamwork Knowledge by Education Level

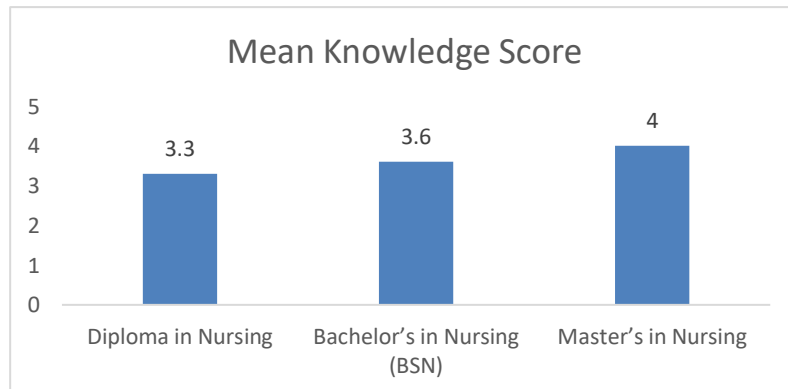| Education	Mean Knowledge Score	SD
Diploma in Nursing	3.3	0.8
Bachelor's in Nursing (BSN)	3.6	0.7
Master's in Nursing	4.0	0.6

Figure 3: Mean Teamwork Knowledge Score by Education Level

Table 5 compares the teamwork knowledge scores of nurses with and without prior teamwork training. The analysis of teamwork knowledge scores by previous training reveals a significant difference between nurses who have received

teamwork training and those who have not. Nurses with prior teamwork training demonstrated a higher mean knowledge score of 4.0 (SD = 0.5), indicating a strong understanding of teamwork principles and skills. In contrast, nurses without training had a lower mean score of 3.2 (SD = 0.9), suggesting a more limited knowledge in this area.

This substantial difference highlights the impact of teamwork training on enhancing nurses' understanding of collaborative practices, emphasizing the need for targeted training programs to improve teamwork skills in healthcare settings. (Table 5)

Table 5: Teamwork Knowledge Scores by Previous Training

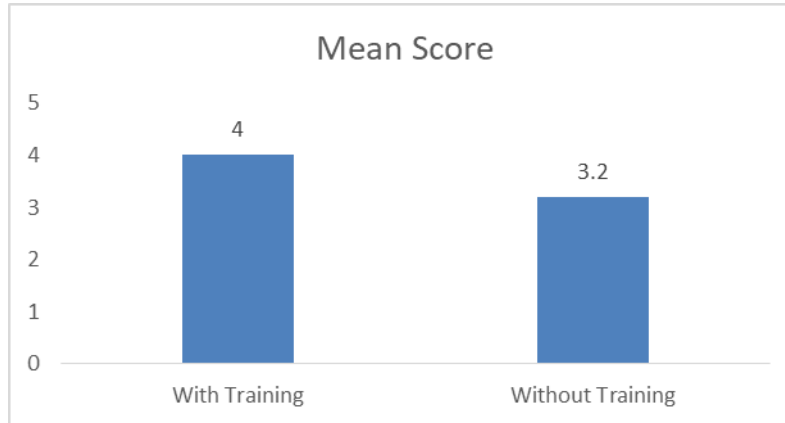| Variables	Mean Score	SD
With Training	4.0	0.5
Without Training	3.2	0.9

Figure 4: Teamwork Knowledge Scores by Previous Training

Table 6 shows the distribution of teamwork knowledge scores across different age groups. The analysis of teamwork knowledge scores by age group reveals a progressive increase in knowledge with age. Nurses in the 20–29 years age group had a mean knowledge score of 3.2 (SD = 0.7), reflecting foundational teamwork understanding. Those aged 30–39 years showed a moderate increase with a mean score of 3.5 (SD = 0.6), indicating growing knowledge likely influenced by additional experience and maturity. In the 40–49 years group, the mean score further increased to 3.7 (SD = 0.8), reflecting more developed teamwork skills. The 50+ years group had the highest mean score of 3.9 (SD = 0.5), suggesting a comprehensive understanding of teamwork principles. This trend indicates that teamwork knowledge may deepen with age, possibly due to accumulated experience and enhanced perspective on collaborative practices. (Table 6)

Table 6: Teamwork Knowledge by Age Group

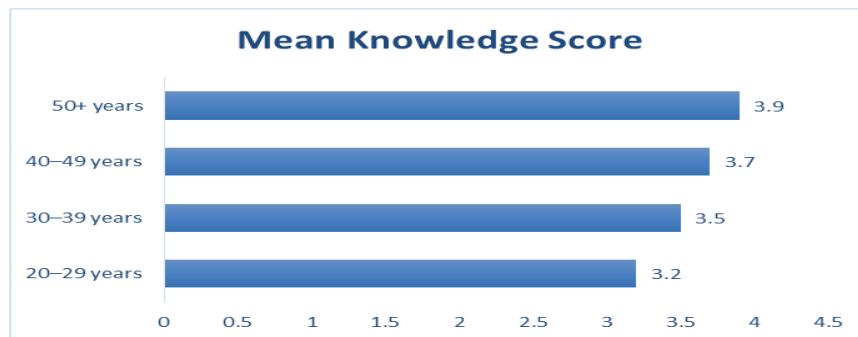| Experiences	Mean Knowledge Score	SD
20–29 years	3.2	0.7
30–39 years	3.5	0.6
40–49 years	3.7	0.8
50+ years	3.9	0.5

Figure 5: Teamwork Knowledge by Age Group

Table 7 provides a summary of knowledge scores across specific teamwork domains, comparing averages with previous training. The analysis of teamwork knowledge scores across specific domains—communication, role clarity, conflict resolution, and interprofessional collaboration—reveals notable differences between nurses with and without prior teamwork training.

In the communication domain, nurses with training scored an average of 4.2, while those without training scored 3.5, highlighting the role of training in enhancing effective communication skills. For role clarity, trained nurses scored 3.8 compared to 3.1 for untrained nurses, indicating that training helps clarify individual responsibilities within a team.

The conflict resolution domain showed a mean score of 3.9 for trained nurses versus 3.0 for untrained, emphasizing that training may equip nurses with the skills needed to handle conflicts constructively. In interprofessional collaboration, trained nurses scored 4.1 compared to 3.3 for those without training, reflecting a better understanding of collaborative work across professions.

These findings suggest that prior teamwork training significantly enhances nurses' knowledge across all teamwork domains, underscoring the value of structured training programs in promoting comprehensive teamwork skills. (Table 7)

Table 7: Knowledge Scores by Teamwork Domain

	With Training	Without Training
Communication	4.2	3.5
Role Clarity	3.8	3.1
Conflict Resolution	3.9	3.0
Interprofessional Collaboration	4.1	3.3

Table 8 shows correlation coefficients for teamwork knowledge scores with age, years of experience, and education level. The correlation analysis shows that demographic factors such as age, years of experience, and education level have a positive relationship with teamwork knowledge among nurses at PINS. Age has a moderate correlation (r = 0.32), indicating that teamwork knowledge tends to increase with age, likely due to greater maturity and life experience. Years of experience shows a stronger correlation (r = 0.40), suggesting that practical experience significantly enhances teamwork skills. Education level has the highest correlation (r = 0.45), reflecting that higher education, particularly bachelor's and master's degrees, contributes the most to a nurse's understanding of teamwork principles. These findings suggest that older, more experienced, and higher-educated nurses are better equipped with teamwork knowledge, emphasizing the role of education and experience in fostering collaborative skills.

Table 8: Correlation of Knowledge Scores with Demographics

variables	Correlation Coefficient (r)
Age	0.32
Years of Experience	0.40
Education Level	0.45

Table 9 reports the satisfaction levels of participants who previously received teamwork training. The analysis of nurses' satisfaction with previous teamwork training shows a generally positive response. As shown in Table 9, 25% of participants reported being very satisfied, and 50% were satisfied, indicating that a majority found the training beneficial. Meanwhile, 12.5% expressed a neutral stance, while smaller proportions reported dissatisfaction, with 7.5% dissatisfied and 5% very dissatisfied. These results suggest that teamwork training is well-received among nurses at PINS, with most participants perceiving it as valuable in enhancing their teamwork skills.

Table 9: Satisfaction with Teamwork Training

Satisfaction level	Frequency (n)	Percentage (%)
Very Satisfied	10	25%
Satisfied	20	50%
Neutral	5	12.5%
Dissatisfied	3	7.5%
Very Dissatisfied	2	5%

Table 10 compares teamwork knowledge scores by department to assess if knowledge levels differ by work area. The analysis of teamwork knowledge scores by department shows variation across different hospital units. Nurses in the ICU had the highest mean knowledge score of 3.9 (SD = 0.5), reflecting a strong understanding of teamwork principles, likely due to the collaborative demands of intensive care settings. Neurosurgery followed closely with a mean score of 3.8 (SD = 0.6), indicating a solid grasp of teamwork, essential in high-stakes surgical environments.

Neurology nurses had a mean score of 3.5 (SD = 0.7), suggesting moderate teamwork knowledge, while General Wards scored slightly lower at 3.4 (SD = 0.8), indicating

areas for improvement. These results imply that departments requiring closer interprofessional collaboration, such as ICU and Neurosurgery, may benefit from higher teamwork knowledge, highlighting the need for tailored training across different hospital units. (Table 10)

Table 10: Teamwork Knowledge by Department

	Mean Knowledge Score	**SD**
Neurology	3.5	0.7
Neurosurgery	3.8	0.6
ICU	3.9	0.5
General Wards	3.4	0.8
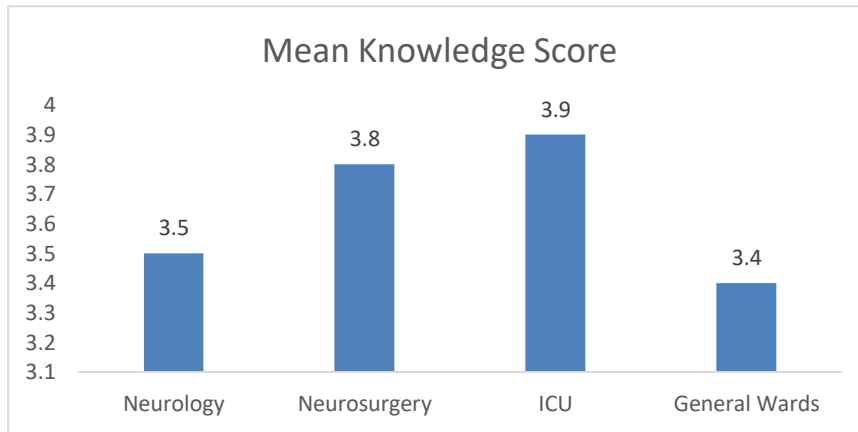
Figure 6: Teamwork Knowledge by Department

Discussion

This study assessed the knowledge of teamwork principles among nurses at the Punjab Institute of Neurosciences (PINS), Lahore, highlighting demographic variations, the influence of education and experience, and the role of previous training in fostering effective teamwork. The results provide valuable insights into the current state of teamwork knowledge among nurses and identify areas for targeted intervention.

The overall moderate knowledge score (mean: 3.6) among nurses aligns with previous studies indicating that nurses generally possess foundational teamwork skills but require further training to optimize their collaborative capabilities. A study conducted by Brown et al. reported a similar trend, where nurses demonstrated strong communication skills but struggled with conflict resolution and role clarity, consistent with our findings (8).

The positive correlation between years of experience and teamwork knowledge observed in this study is supported by Ahmed et al., who found that experienced nurses tend to exhibit better teamwork skills due to their practical exposure and ability to navigate complex interprofessional interactions (10). Our results showed that nurses with over 16 years of experience had the highest knowledge scores, highlighting the cumulative benefit of practical experience in fostering teamwork proficiency.

The influence of education level on teamwork knowledge observed in this study resonates with findings from Reed and Walker, who emphasized that advanced education equips nurses with a deeper understanding of communication and collaboration principles (11). Nurses with a Master's degree scored significantly higher (mean: 4.0) compared to diploma holders, underscoring the need to promote higher education among nurses to enhance their collaborative competencies.

The significant impact of prior teamwork training on knowledge scores (mean: 4.0 for trained nurses vs. 3.2 for untrained nurses) is consistent with findings from Kaifi et al., who demonstrated that structured training programs improve teamwork-related knowledge and practices among healthcare professionals (12). This study reinforces the critical role of training in enhancing communication, conflict resolution, and interprofessional collaboration skills.

Age also showed a positive relationship with teamwork knowledge, with older nurses scoring higher. This aligns with research by Dinius et al., who reported that maturity and life experience contribute to better understanding and application of teamwork principles (13). The incremental increase in knowledge scores across age groups in our study reflects the value of accumulated professional and personal experiences in shaping collaborative abilities.

The departmental variations in teamwork knowledge, with ICU nurses scoring the highest (mean: 3.9), corroborate findings from Miller and Rehman, who noted that high-pressure environments like ICUs naturally foster stronger teamwork due to their collaborative demands (14). However, the lower scores observed in General Wards (mean: 3.4) suggest the need for department-specific training to address unique challenges and improve teamwork practices across all units.

This study highlights communication and interprofessional collaboration as strengths among nurses at PINS, with high mean scores of 3.8 and 3.9, respectively. These findings are encouraging, as effective communication and collaboration are critical for ensuring patient safety and quality care.

However, the lower scores in conflict resolution (mean: 3.2) and role clarity (mean: 3.5) reveal areas where targeted training programs could have the most significant impact. Previous training emerged as a crucial factor in enhancing teamwork knowledge, emphasizing the need for regular, structured programs tailored to the specific needs of healthcare settings in Pakistan. Scenario-based training and simulation exercises could address gaps in conflict resolution and role clarity, as recommended by Dawson and Patel (15).

The findings of this study have significant implications for nursing practice and policy. Incorporating teamwork training into hospital orientation programs and professional development initiatives could enhance nurses' collaborative skills. Encouraging nurses to pursue higher education, such as Bachelor's and Master's degrees, could further elevate teamwork knowledge across the profession.

Moreover, department-specific training programs could address the unique needs of various units, ensuring that all nurses are equipped to collaborate effectively in their specific work environments. Regular evaluations of teamwork competencies as part of performance assessments could reinforce the importance of these skills in daily practice.

Conclusion

In conclusion, this study highlights that teamwork knowledge among nurses at PINS is influenced by experience, education, and training. Emphasizing these factors through targeted interventions could enhance collaborative practices, benefiting both nurses and patients. Future initiatives should focus on structured training, continuous professional development, and tailored education programs to foster a culture of teamwork, ultimately improving healthcare quality.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department concerned. (IRBEC-SNU-339/24)
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The authors declared an absence of conflict of interest.

Authors Contribution

MICHELLE PERVAIZ
Data Analysis
NAILA SHARIF
Revisiting Critically
ZUNAIRA (Supervisor)
Final Approval of version
SYEDA SIDRA TASNEEM (Director of Nursing)
Coordination of collaborative efforts.

RUBINA JABEEN (Principal)
Coordination of collaborative efforts.

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