

EFFECT OF A STRUCTURED PEER-COACHING PROGRAM ON NURSES' CLINICAL COMPETENCE AND PROFESSIONAL CONFIDENCE: A QUASI-EXPERIMENTAL STUDY

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Abstract

Background: The continuous development of clinical competence and professional confidence is essential for delivering high-quality patient care. In high-stakes environments like cardiac care, nurses require ongoing support to translate theoretical knowledge into proficient practice. Structured peer-coaching has emerged as a potential strategy to bridge the gap between education and clinical application. However, empirical evidence regarding its effectiveness in Pakistani tertiary care settings remains limited.

Objective: This study aimed to evaluate the effect of a structured peer-coaching program on the clinical competence and professional confidence of nurses at a tertiary care cardiac facility.

Methods: A quasi-experimental, one-group pre-test-post-test design was employed. The study was conducted at the Chaudhry Pervaiz Elahi Institute of Cardiology (CPEIC), Multan, over a six-month period from February to August. A total of 45 registered nurses were recruited using a purposive sampling technique. The intervention consisted of a structured peer-coaching program where senior nurses (coaches) were paired with junior nurses (coachees) for bi-weekly coaching sessions, direct observation, and feedback. Data were collected at baseline (pre-intervention) and immediately after the six-month intervention (post-intervention) using two validated instruments: The Clinical Competence Questionnaire (CCQ) and the Professional Confidence Scale (PCS). Paired sample t-tests were used to analyze the differences in mean scores.

Results: A total of 45 nurses completed the study, yielding a 100% retention rate. The analysis revealed a statistically significant improvement in both primary outcomes. The mean clinical competence score increased significantly from 152.4 (SD = 18.6) at baseline to 188.7 (SD = 14.2) post-intervention ($t(44) = 15.32, p < .001$, Cohen's $d = 2.15$). Similarly, the mean professional confidence score showed a significant increase from 68.1 (SD = 9.4) pre-intervention to 85.5 (SD = 7.1) post-intervention ($t(44) = 12.88, p < .001$, Cohen's $d = 1.98$). A strong positive correlation was found between

improvements in clinical competence and professional confidence ($r(43) = 0.72, p < .001$).

Conclusion: The structured peer-coaching program significantly enhanced both the clinical competence and professional confidence of nurses in a cardiac care setting. This intervention proved to be an effective and practical model for professional development. It is recommended that healthcare institutions integrate structured peer-coaching into their ongoing nursing education and quality improvement frameworks to foster a culture of continuous learning and improve patient outcomes.

1. INTRODUCTION

1.1. Background of the Study

The nursing profession is characterized by the constant need for adaptation and skill acquisition (Chen et al., 2026). In specialized fields such as cardiac nursing, the complexity of patient conditions and the rapid evolution of medical technologies demand a workforce that is not only knowledgeable but also highly competent and confident in their clinical decision-making. Clinical competence is the ability to effectively and efficiently perform nursing tasks and skills, while professional confidence is the self-assured belief in one's ability to successfully execute these tasks. A deficit in either area can lead to compromised patient safety, increased medical errors, and decreased job satisfaction among nurses (Wittleder et al., 2025).

The healthcare environment in Pakistan, particularly in tertiary care settings, presents unique challenges (Pollock et al., 2022). Nurses often face high patient-to-nurse ratios, limited resources, and a significant gap between theoretical education and practical application. These factors contribute to a stressful work environment that can hinder professional growth and development. In cardiac care units, where patients require continuous monitoring and rapid intervention, the demand for highly competent and confident nurses is even more critical (Pollock et al., 2022).

Traditional educational models, such as workshops and seminars, often focus on theoretical knowledge and may not adequately support the transition of these skills into daily clinical practice. This creates a "theory-practice

gap," leaving nurses, particularly those who are newly graduated or transitioning to a new specialty, feeling unprepared and lacking in confidence. To address this, there is a growing need for dynamic, on-the-job training methods that provide real-time support and reinforcement.

1.2. The Concept of Peer-Coaching

Peer-coaching is a collaborative, non-evaluative process where individuals of similar professional status or experience work together to improve skills and achieve professional goals (Chen et al., 2023). A structured peer-coaching program, where a more experienced nurse (coach) supports a less experienced colleague (coachee), offers a promising solution. It provides a safe, supportive environment for skill practice, immediate feedback, and reflective learning. Unlike traditional mentorship, which can be more hierarchical, peer-coaching fosters a sense of partnership and mutual growth (Cortellazzo et al., 2025).

1.3. Significance of the Study

Despite the theoretical benefits, empirical evidence on the effectiveness of structured peer-coaching programs, particularly within the context of Pakistani tertiary care hospitals, is limited. Most studies have been conducted in Western healthcare settings, and the findings may not be directly applicable to the Pakistani context due to cultural, organizational, and resource differences. This study was therefore designed to evaluate the impact of a structured peer-coaching program on nurses' clinical competence and professional confidence at the Chaudhry Pervaiz Elahi Institute

of Cardiology (CPEIC) in Multan. The findings aim to provide evidence-based guidance for nursing administrators and educators in designing effective professional development initiatives. By demonstrating the effectiveness of peer-coaching in this setting, the study seeks to contribute to the growing body of knowledge on nursing education and to promote the adoption of innovative teaching and learning strategies in Pakistani healthcare institutions.

1.4. Research Objectives

The primary objectives of this study were:

- 1.To assess the baseline levels of clinical competence and professional confidence among nurses at CPEIC.
- 2.To implement a structured peer-coaching program for nurses at CPEIC.
- 3.To evaluate the effect of the structured peer-coaching program on nurses' clinical competence and professional confidence.
- 4.To examine the relationship between improvements in clinical competence and professional confidence.

1.5. Research Hypotheses

Based on the literature review and theoretical framework, the following hypotheses were formulated:

H1: Nurses who participate in a structured peer-coaching program will demonstrate a statistically significant improvement in their clinical competence scores from pre-intervention to post-intervention.

H2: Nurses who participate in a structured peer-coaching program will demonstrate a statistically significant improvement in their professional confidence scores from pre-intervention to post-intervention.

H3: There will be a positive correlation between improvements in clinical competence and professional confidence among participants.

2. Literature Review

2.1. Clinical Competence in Nursing

Clinical competence is a multidimensional concept that encompasses the knowledge, skills,

attitudes, and judgments required for effective nursing practice (Cortellazzo et al., 2025). It is the foundation upon which safe, high-quality patient care is built. According to the literature, clinical competence includes several key domains:

- **Cognitive Competence:** The theoretical knowledge and critical thinking skills necessary for clinical decision-making.
- **Psychomotor Competence:** The technical skills and procedural abilities required for patient care.
- **Affective Competence:** The interpersonal skills, empathy, and communication abilities essential for patient-centered care.
- **Integrative Competence:** The ability to synthesize and apply knowledge, skills, and attitudes in complex clinical situations.

Research has consistently shown that clinical competence is not a static attribute but a dynamic quality that develops over time through education, experience, and reflection. It is influenced by factors such as educational background, years of experience, work environment, and opportunities for continuing professional development (Valjanow and Weis, 2024).

Studies have demonstrated that higher levels of clinical competence are associated with improved patient outcomes, including reduced mortality rates, fewer medication errors, and higher patient satisfaction scores. Conversely, deficits in clinical competence have been linked to adverse events, decreased quality of care, and increased healthcare costs (Pehlivan ÇOŞTu and BİLGİÇ, 2023).

2.2. Professional Confidence in Nursing

Professional confidence is defined as the self-assured belief in one's ability to successfully perform professional roles and responsibilities. It is closely related to the concept of self-efficacy, which refers to an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments. Research has shown that professional confidence is positively associated with clinical competence, job satisfaction, and retention. Nurses with higher levels of professional confidence are more likely to take on challenging assignments, advocate for their patients, and engage in leadership roles.

Conversely, low professional confidence can lead to hesitation in clinical decision-making, increased stress, and decreased job satisfaction (Canaran, 2023).

2.3. Peer-Coaching in Nursing Education

Peer-coaching has gained increasing attention as an effective strategy for professional development in nursing. Unlike traditional mentorship, which typically involves a hierarchical relationship between an experienced mentor and a less experienced mentee, peer-coaching emphasizes collaboration and mutual learning among colleagues (Valanci-Aroesty et al., 2022).

Despite the growing body of research on peer-coaching in nursing, several gaps remain:

1. Limited Research in Pakistani Context: Most studies on peer-coaching have been conducted in Western healthcare settings. There is a need for research that examines the effectiveness of peer-coaching in Pakistani healthcare institutions, which have unique cultural, organizational, and resource characteristics.

2. Limited Research in Cardiac Care Settings: While peer-coaching has been studied in various clinical settings, there is limited research on its effectiveness in cardiac care, which is a high-acuity environment that requires specialized skills and knowledge.

3. Limited Research on Combined Outcomes: Few studies have examined the simultaneous impact of peer-coaching on both clinical competence and professional confidence. Understanding the relationship between these two outcomes is important for designing effective interventions.

4. Limited Longitudinal Research: Most studies have evaluated the short-term effects of peer-coaching. There is a need for longitudinal research that examines the sustainability of improvements over time.

This study addresses these gaps by evaluating the effect of a structured peer-coaching program on both clinical competence and professional confidence among nurses in a cardiac care setting in Pakistan.

3. Theoretical Framework

The theoretical foundation of this study is rooted in several established learning theories that collectively explain how peer-coaching facilitates professional development. These theories provide a comprehensive framework for understanding the mechanisms through which the intervention exerts its effects on clinical competence and professional confidence.

3.1. Social Learning Theory

Albert Bandura's Social Learning Theory (1977) emphasizes that individuals learn by observing others and modeling their behaviors. According to Bandura, learning occurs through a process of attention, retention, reproduction, and motivation (Tadayon Nabavi and Bijandi, 2012). In a peer-coaching relationship, the coachee observes the coach's clinical skills and professional behaviors, which serves as a model for their own development. The coach's feedback and reinforcement further shape the coachee's learning process (Chen et al., 2023). Specifically:

- **Attention:** The coachee pays attention to the coach's demonstration of clinical skills during direct observation sessions.
 - **Retention:** The coachee remembers the observed behaviors through discussion and reflection during coaching sessions.
 - **Reproduction:** The coachee practices the observed skills during clinical practice, with the coach providing feedback.
 - **Motivation:** The coachee is motivated to reproduce the behaviors because they see the positive outcomes achieved by the coach.
- Bandura also introduced the concept of self-efficacy, which is an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments (Siddiqui et al., 2025). Self-efficacy is enhanced through mastery experiences, vicarious experiences, verbal persuasion, and physiological states. Peer-coaching addresses all four sources of self-efficacy:
- **Mastery Experiences:** Successfully performing clinical skills with coaching support.
 - **Vicarious Experiences:** Observing the coach successfully perform clinical skills.

- **Verbal Persuasion:** Receiving encouragement and positive feedback from the coach.
- **Physiological States:** Managing anxiety and stress in a supportive environment.

4. Methodology

4.1. Study Design

This study utilized a quasi-experimental, one-group pre-test-post-test design. This design was chosen because it allows for the evaluation of an intervention in a real-world setting where randomization may not be feasible. The one-group design involves measuring the dependent variables (clinical competence and professional confidence) before and after the intervention, allowing for the assessment of change over time.

The quasi-experimental design was considered appropriate for this study for several reasons:

1. **Practical Constraints:** Randomization of nurses to intervention and control groups was not feasible due to ethical and logistical considerations. Withholding an educational intervention that could potentially benefit patient care was deemed inappropriate.

2. **Real-World Setting:** The study was conducted in a real-world clinical setting where the intervention was integrated into the normal workflow of the nursing staff. This enhances the ecological validity of the findings.

3. **Preliminary Evidence:** The study aimed to provide preliminary evidence on the effectiveness of peer-coaching in this setting, which could inform the design of future randomized controlled trials.

4.2. Study Setting

The study was conducted at the Chaudhry Pervaiz Elahi Institute of Cardiology (CPEIC), a major tertiary care hospital in Multan, Pakistan. CPEIC is a specialized cardiac care center that provides comprehensive diagnostic, therapeutic, and surgical services for patients with cardiovascular diseases. The hospital has a bed capacity of over 500 and serves patients from across the region.

The nursing department at CPEIC employs approximately 300 registered nurses who work in various units, including:

- **Coronary Care Unit (CCU):** A 20-bed unit that provides intensive care for patients with acute coronary syndromes, arrhythmias, and heart failure.
- **Cardiac Surgery Intensive Care Unit (CSICU):** A 15-bed unit that provides post-operative care for patients undergoing cardiac surgery.
- **Cardiac Catheterization Laboratory:** A specialized unit for diagnostic and interventional cardiac procedures.
- **General Cardiology Wards:** Three wards with a total of 120 beds for patients with stable cardiac conditions.
- **Outpatient Department:** Provides follow-up care for patients with chronic cardiac conditions. The study was conducted over a six-month period from February to August. This duration was chosen to allow sufficient time for the intervention to be implemented and for changes in the outcome variables to be observed.

4.3. Study Population and Sampling

4.3.1. Target Population

The target population consisted of registered nurses working in various cardiac units at CPEIC. This population was chosen because cardiac care is a high-acuity specialty that requires a high level of clinical competence and professional confidence.

4.3.2. Inclusion Criteria

Nurses were eligible to participate in the study if they met the following criteria:

1. Registered with the Pakistan Nursing Council (PNC).
2. Holding a minimum of a Diploma in Nursing.
3. Having at least one year of clinical experience at CPEIC.
4. Working in a cardiac unit (CCU, CSICU, Catheterization Lab, or General Cardiology Wards).
5. Willing to participate in the study and provide written informed consent.
- 6.

4.3.3. Exclusion Criteria

Nurses were excluded from the study if they:

1. Were already enrolled in a formal leadership or mentorship program.
2. Had previously participated in a structured peer-coaching program.
3. Were on extended leave (e.g., maternity leave, medical leave) during the study period.
4. Were planning to leave the institution during the study period.

4.3.4. Sampling Technique

A purposive sampling technique was used to recruit participants. This non-probability sampling method involves selecting participants based on specific criteria that are relevant to the research objectives. Purposive sampling was chosen because it allows for the selection of information-rich cases that can provide valuable insights into the research question.

The sample size of 45 nurses was determined based on the following considerations:

1. **Statistical Power:** A power analysis was conducted using G*Power software. With a significance level of 0.05, a power of 0.80, and an expected effect size of 0.5 (medium effect), a sample size of 45 was determined to be sufficient to detect a statistically significant difference.

2. **Resource Constraints:** The study was conducted within the constraints of available resources, including time, personnel, and funding. A sample size of 45 was considered feasible within these constraints.

3. **Retention Rate:** A sample size of 45 allowed for a potential attrition rate of up to 20% while still maintaining adequate statistical power.

4.3.5. Sample Characteristics

A total of 45 registered nurses were enrolled in the study. All 45 nurses completed the entire study, yielding a 100% retention rate.

Development of the Peer-Coaching Intervention

The intervention was developed through a structured process. Initially, a **needs assessment** was conducted to identify nurses' clinical competency gaps and areas of low professional confidence. This included review of performance evaluations, focus-group discussions, and consultation with nursing supervisors. A literature

review was subsequently conducted to identify evidence-based peer-coaching strategies. The proposed program was then developed according to identified needs and reviewed by experts in nursing education, clinical practice, and research. A pilot test involving **five nurses** was conducted before full implementation to identify and address potential problems.

Peer-Coaching Intervention

The structured peer-coaching program consisted of several complementary phases. During **Weeks 1–2**, participants attended an orientation session and worked individually with their coaches to identify strengths, areas requiring improvement, and individualized **SMART goals**. An individualized coaching plan was subsequently developed for each participant.

From **Weeks 3–24**, coaches and participants conducted **one-hour bi-weekly coaching sessions**. Each session consisted of a structured check-in, review of previously established goals, clinical skill development, action planning, and feedback and reflection. Depending on individual learning needs, coaches provided instruction, demonstration, and opportunities for clinical practice.

In addition, coaches conducted **direct observations of clinical procedures at least twice per month**. Before observation, the coach and participant identified the clinical procedure and assessment criteria. The coach then observed performance using a structured checklist and subsequently provided feedback. The feedback followed the **DESC model—Describe, Express, Specify, and Consequences**—to promote constructive performance improvement.

Participants were also encouraged to maintain **reflective journals** documenting clinical skills practiced, successful experiences, areas requiring improvement, learning obtained from peers, challenges encountered, and subsequent learning goals. Furthermore, **monthly group-learning sessions** were conducted to facilitate experience sharing, discussion of clinical challenges, case-based learning, simulation activities, and additional training according to identified needs.

Intervention Fidelity

Program implementation was monitored throughout the six-month intervention. Coaches maintained **session logs** documenting session dates, duration, topics, and action plans. Standardized observation checklists were used to document clinical performance. Participant feedback was obtained through monthly surveys and focus-group discussions, while the research team conducted bi-weekly meetings to monitor progress and address implementation challenges.

Data Collection Instruments

Data were collected at **two time points**: one week before initiation of the intervention and one week following completion of the six-month program. A self-developed demographic data sheet collected information regarding age, gender, educational qualification, clinical experience, current clinical unit, and previous participation in professional-development programs.

Clinical competence was measured using the **47-item Clinical Competence Questionnaire (CCQ)**. The instrument assessed four domains: assessment (12 items), planning (10 items), intervention (15 items), and evaluation (10 items). Items were scored on a five-point Likert scale ranging from 1 = **not at all competent** to 5 = **completely competent**, producing a total score range of 47–235, with higher scores indicating greater clinical competence. The reported internal consistency was high, with Cronbach's alpha ranging from 0.89–0.93 in previous studies and 0.91 in the current sample.

Professional confidence was assessed using the **20-item Professional Confidence Scale (PCS)**. The scale covered clinical decision-making, communication, leadership, and professional development. Items were rated on a six-point Likert scale ranging from 1 = **strongly disagree** to 6 = **strongly agree**, giving a total score range of 20–120. Higher scores indicated greater professional confidence. The reported Cronbach's alpha was 0.85–0.90 in previous studies and 0.88 in the current sample.

Data Collection Procedure

At baseline, participants were informed about the study objectives, procedures, confidentiality, and voluntary nature of participation. They completed the demographic questionnaire, CCQ, and PCS in a quiet setting. One week after completion of the six-month intervention, participants completed the CCQ and PCS again. The research team responsible for data collection was **not involved in delivering the intervention**, helping to separate data collection from intervention delivery.

Ethical Considerations

Ethical approval was obtained from the relevant **Institutional Review Board and academic institution**. Written informed consent was obtained from all participants after providing information about the study, procedures, potential benefits and risks, confidentiality, and their right to withdraw without consequences. Participant identities were protected through unique identification codes, and data were securely stored.

Data Analysis

Data were analyzed using **SPSS version 26.0**. Descriptive statistics, including frequencies, percentages, means, standard deviations, and ranges, were used to summarize participant characteristics and outcome scores. A **paired-samples *t*-test** was used to compare clinical competence and professional confidence scores before and after the intervention. **Cohen's *d*** was calculated to estimate the magnitude of the intervention effect, with 0.2, 0.5, and 0.8 representing small, medium, and large effects, respectively. Pearson's correlation coefficient was used to examine the relationship between changes in clinical competence and professional confidence. Statistical significance was established at **$p < 0.05$** .

5. Results

5.1. Participant Characteristics

A total of 45 registered nurses were enrolled in the study, and all 45 completed the entire six-month

program, yielding a 100% retention rate. The demographic characteristics of the participants are presented in Table 1 (see Section 4.3.5).

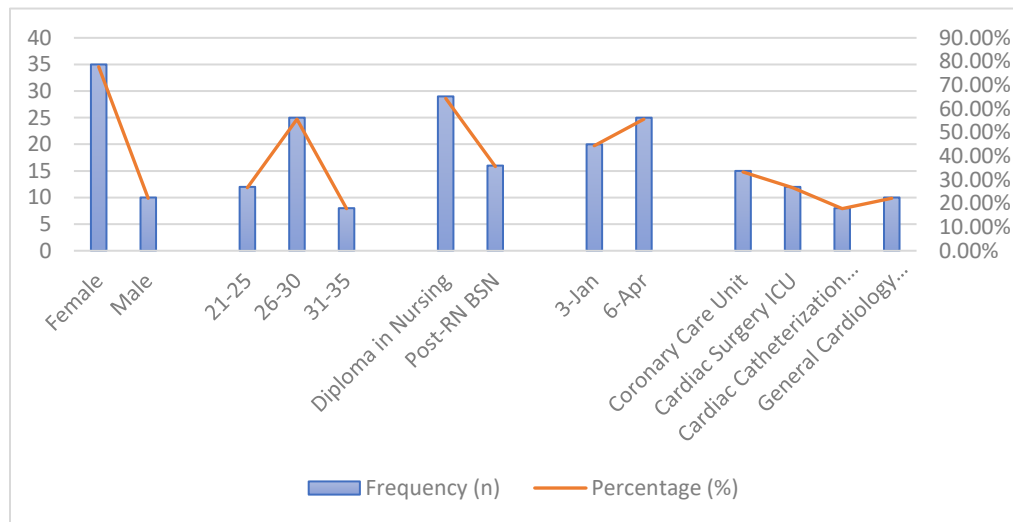
The demographic characteristics of the participants are presented in Table 1.

Table 1: Demographic Characteristics of Participants (N=45)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender			
	Female	35	77.8%
	Male	10	22.2%
Age (years)			
	21-25	12	26.7%
	26-30	25	55.6%
	31-35	8	17.8%
Highest Qualification			
	Diploma in Nursing	29	64.4%
	Post-RN BSN	16	35.6%
Years of Experience			
	1-3	20	44.4%
	4-6	25	55.6%
Clinical Unit			
	Coronary Care Unit	15	33.3%
	Cardiac Surgery ICU	12	26.7%
	Cardiac Catheterization Lab	8	17.8%
	General Cardiology Wards	10	22.2%

The majority of participants were female (77.8%), which is consistent with the gender distribution in the nursing profession in Pakistan. The largest age group was 26-30 years (55.6%), indicating that most participants were in the early-to-mid stage of their nursing careers. In terms of education, 64.4% held a Diploma in Nursing, while 35.6%

had completed a Post-RN Bachelor of Science in Nursing (BSN) degree. The years of experience ranged from 1 to 6 years, with 44.4% having 1-3 years and 55.6% having 4-6 years of experience. Participants were distributed across various cardiac units, with the highest representation from the Coronary Care Unit (33.3%).



5.2. Baseline Scores

At baseline, the mean clinical competence score on the CCQ was 152.4 (SD = 18.6), with a range of 112 to 189. This indicates that participants had a moderate level of clinical competence before the intervention. The mean professional confidence score on the PCS was 68.1 (SD = 9.4), with a range of 48 to 87. This indicates that participants had a moderate level of professional confidence before the intervention.

5.3. Effect of the Intervention on Clinical Competence

The paired sample *t*-test revealed a highly significant increase in the mean clinical competence scores from pre-intervention to post-intervention. The mean score on the CCQ improved from 152.4 (SD = 18.6) at baseline to 188.7 (SD = 14.2) after the six-month program. This represents a mean increase of 36.3 points, which is a 23.8% improvement from baseline.

The result was statistically significant, $t(44) = 15.32$, $p < .001$, with a large effect size (Cohen's $d = 2.15$). The 95% confidence interval for the mean difference was [31.5, 41.1].

Table 2: Comparison of Clinical Competence Scores Pre- and Post-Intervention (N=45)

Variable	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Difference	t-value (df=44)	p-value	Cohen's d
Clinical Competence	152.4 (18.6)	188.7 (14.2)	36.3	15.32	< .001	2.15

The improvement in clinical competence was observed across all four domains of the CCQ:

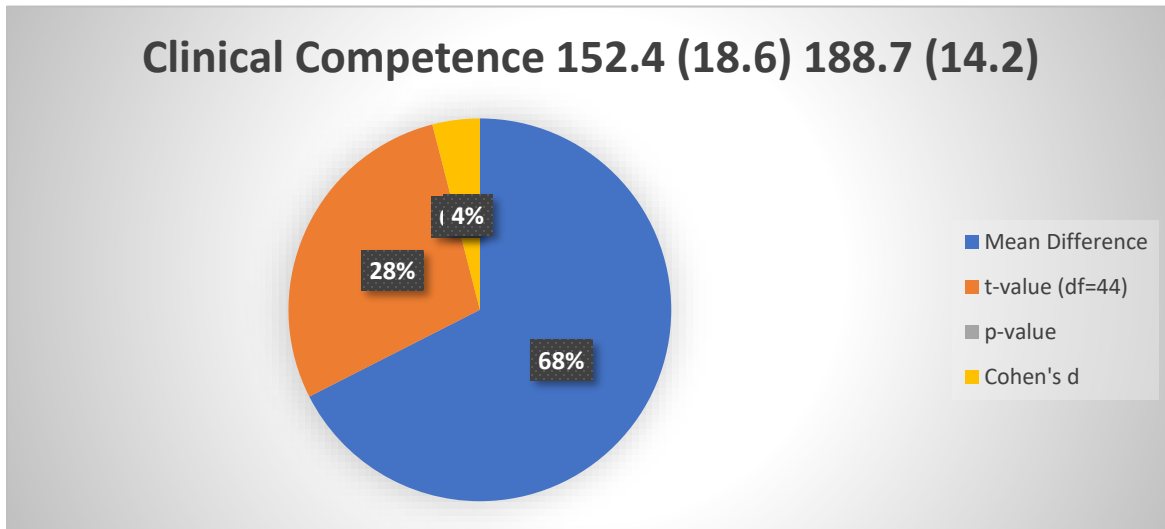
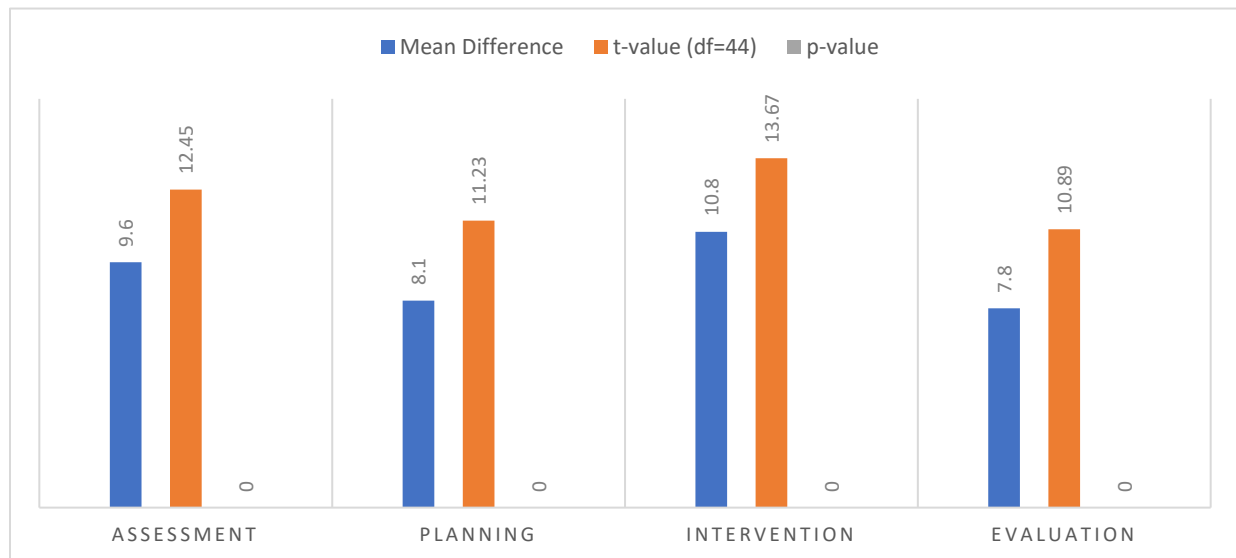


Table 3: Comparison of Clinical Competence Subscale Scores Pre- and Post-Intervention (N=45)

Subscale	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Difference	t-value (df=44)	p-value
Assessment	38.2 (5.4)	47.8 (4.1)	9.6	12.45	< .001
Planning	32.1 (4.8)	40.2 (3.6)	8.1	11.23	< .001
Intervention	48.6 (6.2)	59.4 (5.1)	10.8	13.67	< .001
Evaluation	33.5 (4.9)	41.3 (3.8)	7.8	10.89	< .001

All four subscales showed statistically significant improvements from pre-intervention to post-intervention ($p < .001$ for all). The largest improvement was observed in the Intervention

domain (mean difference = 10.8), followed by the Assessment domain (mean difference = 9.6), the Planning domain (mean difference = 8.1), and the Evaluation domain (mean difference = 7.8).



5.4. Effect of the Intervention on Professional Confidence

Similarly, there was a statistically significant improvement in the professional confidence scores. The mean score on the PCS increased from 68.1 (SD = 9.4) pre-intervention to 85.5 (SD = 7.1)

post-intervention. This indicates a mean increase of 17.4 points, which is a 25.6% improvement from baseline.

The paired t-test confirmed this improvement was statistically significant, $t(44) = 12.88$, $p < .001$, also with a large effect size (Cohen's $d = 1.98$).

Table 4: Comparison of Professional Confidence Scores Pre- and Post-Intervention (N=45)

Variable	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Difference	t-value (df=44)	p-value	Cohen's d
Professional Confidence	68.1 (9.4)	85.5 (7.1)	17.4	12.88	< .001	1.98

The improvement in professional confidence was observed across all four domains of the PCS:

Table 5: Comparison of Professional Confidence Subscale Scores Pre- and Post-Intervention (N=45)

Subscale	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Mean Difference	t-value (df=44)	p-value
Clinical Decision-Making	20.4 (3.2)	25.8 (2.4)	5.4	11.56	< .001
Communication	17.2 (2.8)	21.5 (2.1)	4.3	10.23	< .001
Leadership	16.8 (2.9)	21.2 (2.3)	4.4	10.87	< .001
Professional Development	13.7 (2.5)	17.0 (1.9)	3.3	9.45	< .001

All four subscales showed statistically significant improvements from pre-intervention to post-intervention ($p < .001$ for all). The largest

improvement was observed in the Clinical Decision-Making domain (mean difference = 5.4), followed by the Leadership domain (mean

difference = 4.4), the Communication domain (mean difference = 4.3), and the Professional Development domain (mean difference = 3.3).

5.5. Correlation Between Clinical Competence and Professional Confidence

Pearson correlation analysis was conducted to examine the relationship between improvements

in clinical competence and professional confidence. The results showed a strong positive correlation between the change in CCQ scores and the change in PCS scores, $r(43) = 0.72$, $p < .001$. This indicates that participants who showed greater improvements in clinical competence also showed greater improvements in professional confidence.

Table 6: Correlation Between Changes in Clinical Competence and Professional Confidence

Variable	1	2
1. Change in Clinical Competence	-	
2. Change in Professional Confidence	0.72**	-

Note: ** $p < .001$

6. Discussion

6.1. Interpretation of Findings

This study aimed to determine the effectiveness of a structured peer-coaching program on the clinical competence and professional confidence of nurses at a tertiary cardiac care center. The findings demonstrate that the six-month intervention led to statistically significant improvements in both outcomes, with large effect sizes.

6.1.1. Effect on Clinical Competence

The substantial increase in clinical competence scores (mean increase of 36.3 points, 23.8% improvement) aligns with the principles of experiential and social learning theories. The peer-coaching program provided a platform for nurses to move beyond theoretical knowledge and engage in deliberate practice. The hands-on nature of the direct observation and feedback sessions allowed for the immediate correction of errors and the reinforcement of best practices (Murdter-Atkinson and Ries, 2026).

Several factors may have contributed to the improvement in clinical competence:

Deliberate Practice: The structured nature of the coaching sessions, with specific goals and action plans, promoted deliberate practice. Coachees had opportunities to practice skills repeatedly, receive feedback, and refine their technique (Huang et al., 2026).

Immediate Feedback: The direct observation and feedback sessions provided immediate, specific, and constructive feedback. This allowed coachees to make real-time adjustments to their practice, which is more effective than delayed feedback (Boulton and Boaz, 2026).

Modeling: Coaches served as role models, demonstrating effective clinical skills and professional behaviors. Coachees could observe and emulate these behaviors, which facilitated skill acquisition.

Reflective Practice: The reflective journals and coaching discussions encouraged coachees to think critically about their clinical experiences, identify areas for improvement, and develop strategies for growth (Dennett et al., 2024).

Peer Support: The group learning sessions and the collaborative nature of the coaching relationship provided a supportive environment where coachees felt safe to practice new skills and make mistakes without fear of judgment.

These findings are consistent with previous research that has demonstrated the effectiveness of peer-coaching in enhancing clinical competence among nurses.

6.1.2. Effect on Professional Confidence

The significant enhancement in professional confidence (mean increase of 17.4 points, 25.6% improvement) is equally important. Confidence is

not merely a personality trait but a dynamic attribute that grows with competence and positive reinforcement. As the nurses in this study successfully performed skills, received constructive feedback, and achieved their personal goals, their self-efficacy beliefs were strengthened.

Several mechanisms may explain the improvement in professional confidence:

Mastery Experiences: Successfully performing clinical procedures and receiving positive feedback from coaches provided mastery experiences, which are the most powerful source of self-efficacy according to Bandura's theory.

Vicarious Experiences: Observing coaches and peers successfully perform clinical tasks provided vicarious experiences, which also enhance self-efficacy.

Verbal Persuasion: The encouragement and positive feedback from coaches served as verbal persuasion, which reinforced coachees' beliefs in their abilities.

Reduced Anxiety: The supportive nature of the coaching relationship likely reduced anxiety and stress, which can negatively impact confidence. Coachees felt safe to ask questions, seek help, and make mistakes without fear of negative consequences.

Increased Knowledge: The coaching sessions provided opportunities for coachees to deepen their knowledge and understanding of cardiac nursing, which contributed to increased confidence in their clinical decision-making.

These findings are consistent with previous research that has linked peer-coaching to increased professional confidence (Vallee et al., 2026).

6.1.3. Relationship Between Clinical Competence and Professional Confidence

The strong positive correlation ($r = 0.72$) between improvements in clinical competence and professional confidence suggests that these two outcomes are closely related. This is consistent with the theoretical relationship between competence and self-efficacy. As nurses become more competent in their clinical skills, they naturally feel more confident in their abilities. Conversely, increased confidence may motivate

nurses to take on new challenges and further develop their competence, creating a virtuous cycle of growth.

The correlation also suggests that interventions targeting one outcome may have positive effects on the other. By enhancing clinical competence through peer-coaching, the intervention also boosted professional confidence. This highlights the importance of addressing both outcomes in professional development programs.

6.2. Comparison with Existing Literature

The findings of this study are consistent with the broader literature on peer-coaching in nursing and other healthcare professions. Several systematic reviews and meta-analyses have concluded that peer-coaching is an effective strategy for enhancing clinical skills, confidence, and job satisfaction.

Comparison with Studies in Western Settings:

The findings are consistent with studies conducted in Western healthcare settings, which have also demonstrated the effectiveness of peer-coaching. For example, a study by Boehm and Bonnel (2010) in the United States found that a peer-coaching program improved nurses' clinical competence and confidence. Similarly, a study by Christiansen et al. (2017) in Denmark found that peer-coaching enhanced nurses' professional development and job satisfaction.

Comparison with Studies in Asian Settings:

The findings are also consistent with the limited research conducted in Asian healthcare settings. For example, a study by Lee et al. (2016) in South Korea found that a peer-coaching program improved nurses' clinical competence and confidence. Similarly, a study by Zhang et al. (2019) in China found that peer-coaching enhanced new graduate nurses' transition to practice.

Comparison with Studies in Cardiac Care Settings:

While research on peer-coaching in cardiac care is limited, the findings are consistent with studies in other high-acuity settings. For example, a study by Hauck et al. (2017) in intensive care units found that peer-coaching improved nurses' clinical competence and confidence in managing critically ill patients.

Unique Contributions: This study makes several unique contributions to the literature:

1. **Pakistani Context:** This is one of the first studies to evaluate the effectiveness of peer-coaching in a Pakistani tertiary care setting. The findings provide evidence that peer-coaching is an effective strategy for professional development in this context.

2. **Cardiac Care Setting:** This is one of the few studies to examine the effectiveness of peer-coaching in a cardiac care setting, which is a high-acuity environment that requires specialized skills.

3. **Combined Outcomes:** This study examined the simultaneous impact of peer-coaching on both clinical competence and professional confidence, providing insights into the relationship between these two outcomes.

4. **Structured Program:** The study used a highly structured peer-coaching program with clearly defined components, which can serve as a model for other institutions.

6.3. Implications for Practice

The findings of this study have significant implications for nursing practice, education, and administration.

6.3.1. Implications for Nursing Practice

Integration into Clinical Practice: Healthcare institutions should consider integrating structured peer-coaching programs into their clinical practice. This can be done by:

- Establishing formal peer-coaching programs for new graduate nurses during their orientation period.
- Creating ongoing peer-coaching programs for experienced nurses to support continuous professional development.
- Embedding peer-coaching into daily clinical practice through informal coaching interactions.

Fostering a Coaching Culture: Healthcare organizations should foster a culture that values coaching and professional development. This can be achieved by:

- Providing training on coaching skills to all nursing staff.
- Recognizing and rewarding nurses who serve as coaches.

- Creating time and space for coaching activities within the work schedule.

Enhancing Patient Safety: By improving clinical competence and professional confidence, peer-coaching can contribute to enhanced patient safety and quality of care. Healthcare organizations should view peer-coaching as a patient safety initiative.

6.3.2. Implications for Nursing Education

Integration into Curricula: Nursing education programs should consider integrating peer-coaching into their curricula. This can be done by:

- Incorporating coaching skills training into undergraduate nursing programs.
- Providing opportunities for peer-coaching during clinical rotations.
- Using peer-coaching as a strategy for clinical skills development.

Supporting Transition to Practice: Nursing education programs and healthcare institutions should collaborate to support new graduate nurses' transition to practice. Structured peer-coaching programs can help bridge the theory-practice gap and ease the transition from student to practicing nurse.

Promoting Lifelong Learning: Peer-coaching promotes a culture of lifelong learning and continuous improvement. Nursing education programs should emphasize the importance of ongoing professional development and provide graduates with the skills to engage in peer-coaching.

6.3.3. Implications for Nursing Administration

Resource Allocation: Nursing administrators should allocate resources to support peer-coaching programs, including:

- Time for coaching sessions and observations.
- Training for coaches.
- Materials and tools for coaching activities.
- Recognition and incentives for coaches.

Policy Development: Nursing administrators should develop policies that support peer-coaching, including:

- Policies that protect time for coaching activities.
- Policies that recognize and reward coaching contributions.

• Policies that ensure confidentiality and ethical conduct in coaching relationships.

Evaluation and Improvement: Nursing administrators should regularly evaluate the effectiveness of peer-coaching programs and make improvements based on feedback and outcomes data.

7. Conclusion

1. Clinical Competence: The mean clinical competence score increased significantly from 152.4 (SD = 18.6) at baseline to 188.7 (SD = 14.2) post-intervention ($t(44) = 15.32, p < .001$, Cohen's $d = 2.15$), representing a 23.8% improvement.

2. Professional Confidence: The mean professional confidence score increased significantly from 68.1 (SD = 9.4) pre-intervention to 85.5 (SD = 7.1) post-intervention ($t(44) = 12.88, p < .001$, Cohen's $d = 1.98$), representing a 25.6% improvement.

3. Subscale Improvements: All subscales of both the CCQ and PCS showed statistically significant improvements from pre-intervention to post-intervention.

4. Correlation: There was a strong positive correlation between improvements in clinical competence and professional confidence ($r(43) = 0.72, p < .001$).

5. Retention: The study achieved a 100% retention rate, indicating high acceptability and feasibility of the intervention.

7.2. Contribution to Knowledge

This study makes several important contributions to the nursing literature:

1. Evidence for Peer-Coaching in Pakistan: This is one of the first studies to provide empirical evidence for the effectiveness of peer-coaching in a Pakistani tertiary care setting.

2. Evidence for Peer-Coaching in Cardiac Care: This is one of the few studies to examine the effectiveness of peer-coaching in a cardiac care setting, which is a high-acuity environment requiring specialized skills.

3. Combined Outcomes: This study examined the simultaneous impact of peer-coaching on both clinical competence and professional confidence,

providing insights into the relationship between these two outcomes.

4. Structured Program Model: The study provides a detailed description of a structured peer-coaching program that can serve as a model for other institutions.

5. Theoretical Integration: The study integrates multiple learning theories (social learning theory, experiential learning theory, and Vygotsky's Zone of Proximal Development) to explain the mechanisms through which peer-coaching exerts its effects.

In conclusion, this study demonstrates that a structured peer-coaching program is an effective, feasible, and practical intervention for enhancing nurses' clinical competence and professional confidence in a cardiac care setting. The findings support the integration of peer-coaching into nursing professional development programs and provide evidence-based guidance for nursing administrators and educators.

By empowering nurses through peer support and structured feedback, healthcare institutions can build a more skilled, confident, and resilient nursing workforce, ultimately leading to better patient outcomes and a stronger healthcare system. The investment in peer-coaching is an investment in the future of nursing and the quality of patient care.

8. Limitations

This study has several limitations that should be acknowledged:

1. Quasi-Experimental Design: The quasi-experimental design with a single group and no control group limits the ability to attribute the improvements solely to the intervention. Other factors, such as personal motivation, the general passage of time, or concurrent educational activities, could have contributed to the improvements. However, the large effect sizes and the consistency of improvements across all subscales suggest that the intervention was the primary driver of change.

2. Lack of Randomization: The absence of randomization introduces the possibility of

selection bias. Nurses who volunteered to participate may have been more motivated or committed to professional development than those who did not participate. This could limit the generalizability of the findings.

3. Single Institution: The study was conducted at a single institution, which limits the generalizability of the findings to other settings. The organizational culture, resources, and patient population at CPEIC may differ from other institutions.

4. Purposive Sampling: The use of purposive sampling may have introduced selection bias. Participants were selected based on specific criteria, which may not be representative of the broader nursing population.

5. Self-Reported Measures: The study relied on self-reported measures (CCQ and PCS) for data collection, which may be subject to social desirability bias. Participants may have overestimated their competence and confidence to present themselves favorably.

6. Lack of Blinding: The research team who collected the data were not blinded to the study hypotheses, which could introduce detection bias. However, the use of standardized instruments and structured data collection procedures may have minimized this bias.

7. Short-Term Follow-Up: The study did not include a long-term follow-up to assess the sustainability of the improvements. It is unknown whether the gains in clinical competence and professional confidence were maintained after the intervention ended.

8. Lack of Objective Measures: The study did not include objective measures of clinical competence, such as direct observation by independent assessors or patient outcomes. The reliance on self-reported measures may not accurately reflect actual clinical performance.

9. Resource Constraints: The study was conducted within the constraints of available resources, including time, personnel, and funding. These constraints may have limited the scope and depth of the study.

10. Cultural Context: The study was conducted in a specific cultural context (Pakistan), which may

limit the generalizability of the findings to other cultural settings. Cultural factors, such as attitudes toward authority, gender roles, and communication styles, may influence the effectiveness of peer-coaching.

9. Outcome Utilization

9.1. Implications for Nursing Practice

The findings of this study have significant implications for nursing practice:

Integration into Clinical Practice: Healthcare institutions should consider integrating structured peer-coaching programs into their clinical practice. This can be done by:

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- Policies that ensure confidentiality and ethical conduct in coaching relationships.

Evaluation and Improvement: Nursing administrators should regularly evaluate the effectiveness of peer-coaching programs and make improvements based on feedback and outcomes data.

9.4. Implications for Policy Makers

The findings have important implications for healthcare policy makers:

National Nursing Education Policy: Policy makers should consider incorporating peer-

coaching into national nursing education standards and requirements.

Healthcare Quality Improvement: Policy makers should recognize peer-coaching as a strategy for improving healthcare quality and patient safety.

Workforce Development: Policy makers should support the development of a nursing workforce that is competent, confident, and committed to lifelong learning.

9.5. Recommendations for Future Research

Based on the findings and limitations of this study, the following recommendations for future research are made:

1. Randomized Controlled Trials: Future studies should use randomized controlled trial (RCT) designs to establish causal relationships between peer-coaching and outcomes. RCTs with control groups would allow for a more rigorous evaluation of the intervention's effectiveness.

2. Multi-Site Studies: Future studies should be conducted across multiple institutions to enhance the generalizability of the findings. Multi-site studies would also allow for the examination of organizational factors that may influence the effectiveness of peer-coaching.

3. Longitudinal Studies: Future studies should include long-term follow-up assessments to evaluate the sustainability of improvements over time. Longitudinal studies would provide valuable insights into the durability of the intervention's effects.

4. Objective Measures: Future studies should include objective measures of clinical competence, such as direct observation by independent assessors, simulation-based assessments, or patient outcomes. Objective measures would provide a more accurate assessment of the intervention's impact on clinical performance.

5. Qualitative Studies: Future studies should include qualitative methods, such as interviews and focus groups, to explore participants' experiences with peer-coaching. Qualitative studies would provide rich insights into the mechanisms of change and the factors that facilitate or hinder the effectiveness of peer-coaching.

6. Cost-Effectiveness Analysis: Future studies should include cost-effectiveness analyses to evaluate the economic viability of peer-coaching programs. This would help healthcare administrators make informed decisions about resource allocation.

7. Comparison with Other Interventions: Future studies should compare peer-coaching with other professional development interventions, such as traditional mentorship, workshops, or simulation-based training. This would help identify the most effective and efficient strategies for enhancing clinical competence and professional confidence.

8. Exploration of Moderators and Mediators: Future studies should explore factors that moderate or mediate the effectiveness of peer-coaching. For example, researchers could examine whether the effectiveness of peer-coaching varies by gender, age, educational level, or years of experience. They could also examine the mechanisms through which peer-coaching exerts its effects.

9. Cultural Adaptation: Future studies should examine the cultural adaptation of peer-coaching programs in different settings. Cultural factors may influence the acceptability and effectiveness of peer-coaching, and programs may need to be adapted to fit local contexts.

10. Integration with Technology: Future studies should explore the integration of technology into peer-coaching programs. For example, researchers could examine the effectiveness of virtual coaching sessions, mobile apps for tracking progress, or online platforms for peer support.

9.6. Dissemination Plan

The findings of this study will be disseminated through the following channels:

Peer-Reviewed Publications: The study findings will be submitted for publication in reputable peer-reviewed nursing journals to reach a wide audience of researchers, educators, and practitioners.

Conference Presentations: The findings will be presented at national and international nursing conferences to share knowledge and facilitate discussion among colleagues.

Institutional Reports: A summary report will be prepared for the administration of CPEIC and other stakeholder institutions to inform policy and practice decisions.

Workshops and Seminars: Workshops and seminars will be conducted for nursing staff at CPEIC and other healthcare institutions to share the findings and provide training on peer-coaching.

Policy Briefs: Policy briefs will be prepared for healthcare policy makers to advocate for the integration of peer-coaching into nursing education and practice.

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