Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research

Journal homepage: https://www.jampbr.com

DOI: 10.22034/jampbr.2025.564433.1055

The Effect of Care Interventions Based on Peplau's Model on Stress and Quality of Life in Patients with Cardiac Ischemia

Mohsen Mohammadi[1], Ali Hasanpour Dehkordi[1*], Shahriar Salehi Tali[1*], Somayeh Zamani Fard[2], Aida Hassanpour Dehkordi[3]

[1]Community-Oriented Nursing Midwifery Research Center, Nursing and Midwifery School, Shahrekord University of Medical Sciences, Shahrekord, Iran

[2]School of Medicine, Shahrekord University of Medical Sciences, Shahrekord, Iran

[3]School of Psychology, Shahrekord University of Medical Sciences, Shahrekord, Iran

Article info
Received: 05.11.2025
Accepted: 12.12.2025
Available Online: 12.12.2025
Checked for Plagiarism: Yes

Keywords:
Peplau model, quality of life, stress, ischemic heart disease, CCU

A B S T R A C T

Background: Ischemic heart disease remains one of the leading causes of mortality worldwide, and the stress and anxiety experienced during hospitalization in coronary care units can considerably diminish patients' quality of life. This study investigated the impact of nursing interventions based on Peplau's interpersonal relations model on stress levels and quality of life among patients with ischemic heart disease admitted to cardiac intensive care units.

Methods: A quasi-experimental, two-group design was employed involving 70 patients diagnosed with ischemic heart disease and hospitalized in the CCUs of hospitals in Shahrkord in 2023. Participants were selected consecutively through convenience sampling according to predefined inclusion criteria from two units. These units were then randomly assigned to intervention and control groups using simple randomization. The intervention group received routine care in addition to nursing interventions structured according to the phases of Peplau's model orientation, working, and termination.

Results: The mean age of patients in the intervention and control groups was 52.83±9.90 and 55.09±8.90 years, respectively. The intervention group demonstrated significant reductions in stress levels immediately and three months after the intervention compared to the control group ($p<0.001$). Likewise, quality of life scores showed substantial improvement in the intervention group at both follow-up assessments ($p<0.001$). In contrast, the control group exhibited no significant changes in stress ($p=0.735$) or quality of life ($p=0.1408$).

Conclusions: Nursing care guided by Peplau's interpersonal relations model effectively reduced stress and improved quality of life among patients with ischemic heart disease. These findings highlight the potential of the Peplau model as a valuable framework for enhancing the quality of nursing care in cardiac intensive care settings.

Corresponding Author: **Shahriar Salehi Tali (Sh.salehitali@yahoo.com)*
Corresponding Author: **Ali Hasanpour Dehkordi (alihassanpourdehkordi@gmail.com)*
1 Email: mohsenmohammadi2784@gmail.com - ORCID: 0009-0006-9172-0960
[2] Email: zamanifard117@gmail.com
[3] Email: Ayda hnp97@yahoo.com

Introduction

Cardiovascular diseases are the most prevalent and significant causes of mortality worldwide and remained the leading cause of death until 2020 (1). Among them, ischemic heart disease (IHD) is the most common cardiovascular condition, responsible for millions of deaths annually (2). IHD occurs when the myocardium receives inadequate oxygen due to an imbalance between oxygen supply and demand (3). Globally, cardiovascular diseases continue to pose major health challenges, with their prevalence steadily increasing so much so that at least one in every three deaths is attributed to cardiovascular causes (4,5). Although mortality rates from cardiovascular diseases have declined in developed countries over recent decades (6), both mortality and the overall burden of IHD have risen sharply in developing and newly industrialized nations, especially within the Eastern Mediterranean Region (EMR) (7).

For instance, in 2023 in the United States, 2267 out of 3824 cardiac-related deaths approximately 59% were attributed to IHD (8). Globally, IHD prevalence reached nearly 248.9 million individuals in 2023, while in Iran, approximately 11.5 million deaths were due to IHD, reflecting increases of about 79.3% and 61.2%, respectively, compared with 1990 (9-11). A similar and even more pronounced upward trend is seen across the Middle East and North Africa (12). Although high-income countries have witnessed a decline in cardiovascular mortality, low and middle-income countries (LMICs), particularly those in the EMR, account for nearly 50% of global cardiovascular deaths and about 80% of the global disease burden indicating a rapidly escalating epidemic (13).

The Coronary Care Unit (CCU) is one of the most critical hospital settings, receiving a broad spectrum of cardiovascular patients who require continuous, specialized monitoring and therapeutic interventions (14,15). Patients with ischemic heart disease often experience numerous complications including chest pain, exercise intolerance, maladaptive coping, heightened stress, and psychological distress leading to substantial reductions in quality of life (16). Stress is widely recognized not only as a risk factor for cardiovascular disease onset and progression (17-19) but also as a serious complication among hospitalized cardiac patients.

Defined as a pervasive, unpleasant sensation accompanied by physical symptoms, stress affects approximately 70-80% of patients with myocardial infarction (20). Prior studies support the prevalence of stress in this population; for example, Gholi et al. found that 41% of patients awaiting coronary artery bypass graft surgery experienced elevated stress levels (21), and Jace Wall et al. reported that 43% of ICU patients suffered varying degrees of stress (22). McNamara further showed that high stress levels in cardiac patients could triple the risk of sudden death (23). Additionally, Afrasiabirad identified family, cultural, and economic stressors as major contributors to psychological distress among cardiac patients, many of which may be modifiable through improved hospital and personal management strategies (17).

Excessive stress in CCU patients not only jeopardizes their clinical status but also diminishes both the quantity and quality of life. As a result, designing innovative preventive and therapeutic measures has become a critical priority in global health (24,25). Given the profound impact of cardiovascular diseases on patients' daily functioning, comprehensive care must address physical, psychological, and social dimensions, including quality of life (26). Nurses, who constitute the largest segment of the healthcare workforce, play a central role in delivering this holistic care making strong communication skills an essential part of their professional competence (27,28). Enhancing these competencies requires the application of specialized nursing knowledge and the integration of evidence-based theoretical frameworks (29).

Nursing theories serve as foundational tools that guide nurses in improving clinical practice and ensuring standardized, effective care delivery (30). Establishing structured communication patterns facilitates more meaningful and therapeutic nurse patient interactions (31). Peplau's interpersonal theory, which centers on the therapeutic relationship between nurse and patient, conceptualizes nursing as a purposeful, human-centered interaction and offers a robust framework for effective communication in clinical settings (32,33).

As a pioneering theorist, Hildegard Peplau revolutionized the understanding of nurse patient interaction, transforming it from a perceived secondary task into a core therapeutic intervention. She proposed that dynamic interpersonal exchanges significantly influence clinical outcomes and contribute to the emotional growth of both nurse and patient (34). According to Peplau, the central purpose of nursing is to support individuals in identifying and managing their emotional challenges. Initially, she defined four phases orientation, identification, exploitation, and resolution (1952) and later refined them into three phases in 1989: orientation, working, and termination. Peplau emphasized that the therapeutic relationship should continue until the patient's concerns are fully resolved (34). Despite its theoretical importance, research focused on applying Peplau's theory has declined over the past two decades (35).

Although the benefits of the Peplau model are well documented conceptually, empirical evidence is essential for evaluating its effectiveness in specific clinical environments. Patients in the CCU face

intense psychological and physiological stressors that require targeted interventions. This study addresses this gap by examining how the Peplau model can be adapted and implemented in a high-stress cardiac intensive care context. Therefore, the objective of this study was to evaluate the effects of nursing interventions based on Peplau's interpersonal theory on stress and quality of life among patients with ischemic heart disease hospitalized in the CCU.

Literature Review

Cardiac ischemia is one of the most prevalent and life-threatening cardiovascular conditions worldwide, with significant physical, psychological, and social consequences for affected individuals. Patients diagnosed with ischemic heart disease often experience high levels of stress, anxiety, fear of death, and emotional distress associated with the unpredictability of symptoms and the possibility of recurrent cardiac events. Furthermore, their quality of life is frequently diminished due to limitations in daily activities, decreased functional capacity, dependency on medical care, and changes in social and occupational roles. In recent years, scholars have emphasized the importance of holistic and theory-based nursing interventions, especially those addressing psychosocial dimensions of illness. Among these frameworks, Hildegard Peplau's Interpersonal Relations Model has received increasing attention due to its strong emphasis on therapeutic communication and patient-centered care.

Peplau's model conceptualizes the nurse patient relationship as a dynamic and therapeutic process that unfolds through four phases: orientation, identification, exploitation, and resolution. These stages guide nurses in establishing trust, assessing patient needs, facilitating emotional expression, encouraging patient participation, and promoting self-care behaviors. According to Peplau, anxiety and stress decrease when patients feel understood, supported, and actively involved in their care. Several empirical studies have shown that interventions grounded in this interpersonal framework can significantly improve psychological outcomes and enhance quality of life, especially among patients with chronic or life-altering illnesses.

A study by Ahmadi et al. (2019) evaluated the effects of Peplau-based educational and supportive interventions on anxiety levels among patients with coronary artery disease. The results demonstrated a significant reduction in anxiety in the intervention group compared with controls. The authors concluded that effective therapeutic communication and structured emotional support played a central role in creating a sense of safety and reducing psychological distress. Similarly, Farahani et al. (2020) reported that Peplau-based nursing interventions led to a notable decrease in stress and an increase in self-efficacy among hospitalized cardiac patients. Their findings highlighted the importance of structured communication strategies in empowering patients and promoting adaptive coping mechanisms.

International studies have also confirmed the value of Peplau's model in cardiac care. Elliot (2018), in a clinical trial involving patients with stable angina, found that interpersonal-oriented interventions resulted in improved quality of life scores and reduced symptom-related anxiety. The study emphasized that consistent emotional support, accurate information about disease processes, and the opportunity for patients to express concerns contributed to improved psychological adjustment. Similarly, Jackson et al. (2021) examined adherence behaviors among patients with ischemic heart disease and found that Peplau-based counseling sessions significantly improved adherence to medication regimens and cardiac rehabilitation guidelines. These findings suggest that therapeutic relationships built on trust and open communication can positively influence long-term health behaviors.

Within the domestic context, several researchers have examined the effectiveness of Peplau-based interventions in heart disease populations. Mahmoudi et al. (2021) conducted a quasi-experimental study on patients recovering from angioplasty and found that counseling and educational sessions based on Peplau's framework significantly reduced perceived stress and improved various dimensions of quality of life. According to the authors, patients who engaged in the structured communication process were better able to understand their disease, manage uncertainty, and navigate the emotional challenges associated with recovery.

Other studies have explored the effects of Peplau-based interventions on broader psychological outcomes. Sedighi et al. (2022) investigated the use of Peplau's interpersonal model among patients with heart failure and reported improvements in depression, anxiety, and overall psychological well-being following the intervention. Their findings underscored the role of the nurse as counselor, educator, and supportive partner functions central to Peplau's theoretical vision. These psychological benefits are particularly significant, given that emotional distress and stress are known to exacerbate cardiac symptoms and worsen disease prognosis.

Collectively, the existing body of research demonstrates that Peplau's Interpersonal Relations Model provides an effective framework for reducing stress and enhancing quality of life among patients with cardiac ischemia. The improvements can be attributed to several mechanisms: improved communication between nurses and patients, increased emotional support, enhanced patient

awareness of disease processes, improved coping and problem-solving abilities, and greater active engagement in treatment and self-care behaviors. Furthermore, interventions based on this model help foster trust and psychological safety, leading to reduced anxiety and increased patient satisfaction.

Despite its positive outcomes, some studies have noted methodological limitations, including small sample sizes, limited follow-up periods, and insufficient control of confounding psychological variables. These limitations suggest the need for further research employing larger samples, randomized controlled designs, and longitudinal follow-ups to assess the sustained effects of Peplau-based interventions on stress and quality of life. Additionally, given that cardiac ischemia is influenced by complex interactions between physical, psychological, and social factors, integrating Peplau's model with other holistic care approaches may further enhance patient outcomes.

In conclusion, prior research provides strong evidence supporting the effectiveness of care interventions grounded in Peplau's interpersonal model for improving psychological well-being and quality of life in patients with cardiac ischemia. By emphasizing therapeutic communication, collaboration, and emotional support, this model offers a comprehensive and patient-centered approach that aligns well with the complex needs of cardiac patients. Continued exploration and clinical implementation of these interventions may lead to more effective cardiac nursing practices and improved patient outcomes.

Materials and Methods

This study employed a quasi-experimental, two-group design and was conducted on 70 patients with ischemic heart disease admitted to the Coronary Care Units (CCUs) of Hajar Hospital, Shahrekord in 2023. After obtaining the required ethical codes and permissions (Ethics Committee Approval Code: IR.SKUMS.REC.1403.028), the researcher proceeded with participant recruitment. Eligible subjects were consecutively selected from two units based on predetermined inclusion criteria and subsequently, the units were randomly allocated into intervention and control groups using simple randomization. We selected the samples that met the inclusion criteria in the study in two sections, CCU1 and CCU2, and then randomly divided the two sections with a red card (intervention) and a blue card (control) that were taken from the box by the patients in the section without prior notice.

Participants were confirmed to have ischemic heart disease diagnosed by a specialist physician and were sufficiently literate to complete questionnaires. They had adequate vision and hearing to allow effective communication and accurate questionnaire completion. Subjects showed no signs of dementia and demonstrated willingness to participate in the study. All were aged over 18 years, had not previously participated in any self-care educational programs, and had a minimum stress score of 13 according to the specified questionnaire.

Subjects were excluded if they had a comorbid condition, lacked cooperation, experienced deterioration in their condition or an acute episode that prevented communication with the nurse, or in the event of patient death.

Based on the study by Moradi et al. (36), and considering the mean±standard deviation in the intervention group (28.1±9.85) and in the control group (45.1±10.68), with an error margin of 1% and a power of 90%, the sample size was calculated to be 33 per group. Accounting for a 20% attrition rate, 35 patients per group were ultimately enrolled.

$$n = \frac{(S_1^2 + S_2^2)\,(Z_{1-\alpha/2} + Z_{1-\beta})^2}{(\bar{x}_1^2 - \bar{x}_2^2)^2}$$

In the control group, participants received standard care, which included clear instructions on medication use, the scheduling of follow-up visits, and home-based health education. In contrast, the intervention group received the same routine care in addition to individualized therapeutic communication based on Peplau's model, implemented across four sequential phases.

The Peplau therapeutic communication intervention consisted of four stages orientation, problem identification, utilization, and termination administered step-by-step with patients in the intervention group (Table1). Upon completion of the intervention, all educational materials were compiled into booklets and pamphlets and provided to the control group.

Phase One) Orientation: A 40-60-minute session was conducted in which the researcher introduced themselves, explained the study objectives, ensured confidentiality, and obtained informed consent along with baseline data. Information regarding the disease, treatment process, potential complications, necessary care, and warning signs was presented in simple language. Patients were also familiarized with the physical environment of the ward and the healthcare team to establish trust in the nurse patient relationship.

Phase Two) Problem Identification: This phase consisted of two 30-40-minute sessions the first held immediately after the orientation phase and the second conducted the following day. Through greeting, eye contact, calm communication, and simplified language, patients were encouraged to discuss their problems, fears, concerns, and emotional difficulties. The researcher invited patients to articulate all their questions about their illness and CCU hospitalization, as well as their expectations from the healthcare team. Comprehensive physical and psychological information was obtained through interview and

communication. Based on this assessment, nursing diagnoses were formulated, and individualized care plans validated by a psychologist and field experts were developed and implemented.

Phase Three) Utilization: This phase was carried out in two 40-minute sessions: the first on the final day of hospitalization and the second one day after discharge, coordinated with the patient. Care plans were executed according to each patient's specific problems, supported by brochures and educational pamphlets. Implementation accuracy and progress toward independence were evaluated, and professional assistance was provided as needed. Necessary modifications to the care plan were made to address stress management and enhance quality of life. Additionally, a psychologist conducted a telephone session addressing emotional regulation, stress management, and strategies for improving daily living.

Phase Four) Termination: One week after discharge, the termination phase was completed in a 20-30-minute telephone session. The focus was on assisting patients in making stress-free decisions, resolving ongoing issues, and monitoring behavioral and emotional changes. Continuous communication with patients and their families was maintained through telephone follow-ups, distribution of educational materials, and responding to questions via messaging platforms. From the end of the intervention through three months afterward, patients were contacted every two weeks to assess adherence to activity and dietary recommendations, recognition of cardiac warning signs, and compliance with treatment and medication instructions.

Results

The study sample comprised cardiac ischemic patients admitted to the CCU of Shahrekord hospitals, who were allocated into an intervention group receiving care based on the Peplau model and a control group. As shown in Table 1, the two groups were comparable in terms of key demographic and clinical characteristics.

Table 1. Baseline Characteristics of the Study Population

Variable	Subcategory	Intervention Group (Count)	Intervention Group (%)	Control Group (Count)	Control Group (%)	P-value
Gender	Male	28	80.0%	23	65.7%	0.179
	Female	7	20.0%	12	34.3%	
Marital Status	Single	0	0.0%	3	8.6%	0.77
	Married	35	100.0%	32	91.4%	
Educational Level	Middle School and below	10	28.6%	17	48.6%	0.54
	Between Middle School and Diploma	5	14.3%	8	22.9%	
	Above Diploma	20	57.1%	10	28.6%	
Economic Status	Poor	5	14.3%	9	25.7%	0.505
	Moderate	16	45.7%	15	42.9%	
	Good	13	37.1%	11	31.4%	
	Excellent	1	2.9%	0	0.0%	
Occupation	Unemployed	2	5.7%	4	11.4%	0.249
	Housewife	6	17.1%	10	28.6%	
	Retired	6	17.1%	2	5.7%	
	Self-employed	7	20.0%	3	8.6%	
	Employee	14	40.0%	16	45.7%	
Ejection Fraction	15 to 30	0	0.0%	4	11.4%	0.095
	35 to 45	14	40.0%	15	42.9%	
	More than 50	21	60.0%	16	45.7%	
Type of Cardiac Disease	Unstable Angina (U.A.)	3	8.6%	3	8.6%	0.246

	NSTEMI	14	40.0%	11	31.4%	
	STEMI Anterior	11	31.4%	10	28.6%	
	STEMI Inferior	5	14.3%	2	5.7%	
	STEMI Extensive	0	0.0%	5	14.3%	
	STEMI Lateral	0	0.0%	1	2.9%	
	STEMI Post and RV	2	5.7%	3	8.6%	
	Hypothyroidism	6	17.1%	3	8.6%	0.612
	Diabetes	5	14.3%	3	8.6%	
	Hyperlipidemia	3	8.6%	1	2.9%	
	Hypertension	1	2.9%	3	8.6%	
Medical History	Previous Myocardial Infarction	1	2.9%	4	11.4%	
	Smoking	3	8.6%	3	8.6%	
	Family History	4	11.4%	7	20.0%	
	Diabetes, Hypertension, and Pre-eclampsia	9	25.7%	9	25.7%	
No History		3	8.6%	2	5.7%	

Table 2. Comparison of Mean and Standard Deviation of Age

Variable	Intervention Group	Control Group	P-value
Age	52.83 ± 9.90	55.09 ± 8.90	0.322

In the intervention group, 80.0% of participants were male, compared to 65.7% in the control group, with no statistically significant difference (p=0.179). Marital status was also similar between groups; all participants in the intervention group were married, while 91.4% of those in the control group were married (p=0.77). Educational status did not differ significantly: in the intervention group, 28.6% had an education level below middle school, 14.3% held a diploma or lower, and 57.1% had education above the diploma level. Corresponding values in the control group were 48.6%, 22.9%, and 28.6%, respectively (p=0.54).

Regarding economic status, 14.3% of participants in the intervention group were classified as having weak economic status, 45.7% moderate, 37.1% good, and 2.9% excellent. In the control group, these proportions were 25.7%, 42.9%, 31.4%, and 0%, respectively (p=0.505). Similarly, occupational distribution including unemployment, homemaking, retirement, self-employment, and formal employment did not differ significantly between the two groups (p=0.249).

Clinical characteristics were also comparable. Left ventricular ejection fraction was similarly distributed, although a higher proportion of participants in the intervention group had an ejection fraction above 50% (60.0% vs. 45.7%), a difference that approached but did not reach statistical significance (p=0.095). The distribution of cardiac diagnoses including unstable angina, NSTEMI, and different STEMI subtypes was likewise similar (p=0.246).

Analysis of comorbidities such as hypothyroidism, diabetes, hyperlipidemia, hypertension, prior myocardial infarction, smoking, and family history of cardiac disease revealed no significant differences between the two groups (p=0.612). The mean age of participants was 52.83±9.90 years in the intervention group and 55.09±8.90 years in the control group, demonstrating no significant difference (p=0.322).

Overall, the lack of statistically significant differences in baseline demographic, socioeconomic, and clinical variables supports the internal validity of the study. This comparability indicates that any subsequent differences in stress or quality of life can be attributed with greater confidence to the Peplau-based nursing intervention rather than to pre-existing group disparities.

Tables 3–6 summarize the changes in stress scores, overall quality of life, emotional well-being, and physical functioning across the three measurement points (pre-intervention, immediately post-intervention, and three months' post-intervention) for both study groups.

Table 3. Comparison of the mean stress score in the two intervention and control groups before the intervention, immediately, and three months after the intervention.

Group	Before Intervention (Mean ± SD)	Immediately After Intervention (Mean ± SD)	Three Months After Intervention (Mean ± SD)	Within-Group P-value**
Control	25.97 ± 2.49	4.90 ± 25.26	7.66 ± 25.83	0.7359
Intervention	28.57 ± 4.93	5.55 ± 10.57	7.59 ± 9.20	< 0.0001
Between-Group P-value:	0.07	< 0.001	< 0.001	

Table 4. Comparison of the mean Quality of Life in the two intervention and control groups before the intervention, immediately, and three months after the intervention.

Group	Before Intervention (Mean ± SD)	Immediately After Intervention (Mean ± SD)	Three Months After Intervention (Mean ± SD)	Within-Group P-value**
Control	67.94 ± 8.36	17.34 ± 75.97	18.70 ± 80.14	0.1408
Intervention	15.97 ± 62.91	19.37 ± 117.31	20.62 ± 119.49	< 0.0001
Between-Group P-value:	0.104	< 0.001	< 0.001	

Table 5. Comparison of the mean Emotional Dimension Quality of Life in the two intervention and control groups before the intervention, immediately, and three months after the intervention.

Group	Before Intervention (Mean ± SD)	Immediately After Intervention (Mean ± SD)	Three Months After Intervention (Mean ± SD)	Within-Group P-value**
Control	37.11 ± 4.47	6.79 ± 38.54	7.74 ± 39.05	0.3318
Intervention	34.42 ± 6.39	9.11 ± 55.31	8.97 ± 54.74	< 0.0001
Between-Group P-value:	0.188	< 0.001	< 0.001	

Table 6. Comparison of the mean Physical Dimension Quality of Life in the two intervention and control groups before the intervention, immediately, and three months after the intervention.

Group	Before Intervention (Mean ± SD)	Immediately After Intervention (Mean ± SD)	Three Months After Intervention (Mean ± SD)	Within-Group P-value**
Control	36.45 ± 6.04	10.28 ± 38.28	11.64 ± 41.05	0.0918
Intervention	28.65 ± 11.02	12.72 ± 62	13.40 ± 64.06	< 0.0001
Between-Group P-value:	0.456	< 0.001	< 0.001	

Discussion

In the control group, the mean perceived stress score was 25.97±2.49 at baseline, 25.26±4.90 immediately after the intervention, and 25.83±7.66 three months later. These fluctuations were not statistically significant (p=0.7359). In contrast, the intervention group demonstrated a substantial reduction in stress levels, with scores dropping from 28.57±4.93 at baseline to 10.57±5.55 immediately post-intervention and 9.20±7.59 at the three-month follow-up (p<0.0001). Between-group comparisons showed no significant difference at baseline (p=0.07), but highly significant differences emerged both immediately after the intervention and at three months (p<0.001 for both time points).

Regarding overall quality of life, the control group began with a mean score of 67.94±8.36, which increased to 75.97±17.34 immediately after the intervention and to 80.14±18.70 at three months; however, these changes were not statistically significant (p=0.1408). In contrast, the intervention group experienced marked improvements, with mean scores rising from 62.91±15.97 at baseline to 117.31±19.37 immediately post-intervention and 119.49±20.62 three months later (p<0.0001). Although the baseline difference between groups was not significant (p=0.104), significant between-

group differences emerged in both post-intervention assessments ($p<0.001$).

In the emotional dimension of quality of life, control group scores were 37.11±4.47 at baseline, 38.54±6.79 immediately after the intervention, and 39.05±7.74 at three months' changes that were not statistically significant ($p=0.3318$). The intervention group, however, demonstrated significant improvements, with emotional scores increasing from 34.42±6.39 at baseline to 55.31±9.11 immediately after the intervention, and 54.74±8.97 at three months ($p<0.0001$). Between-group comparisons showed no significant baseline differences ($p=0.188$), but significant differences appeared immediately after the intervention and at the three-month follow-up ($p<0.001$).

For the physical domain of quality of life, mean scores in the control group were 36.45±6.04 at baseline, 38.28±10.28 immediately afterward, and 41.05±11.64 at three months, with no statistically significant changes ($p=0.0918$). Conversely, patients in the intervention group reported significant physical improvement, with scores increasing from 28.65±11.02 at baseline to 62±12.72 immediately post-intervention and 64.06±13.40 after three months ($p<0.0001$). Baseline comparisons showed no significant group differences ($p=0.456$), while both subsequent assessments demonstrated significant advantages for the intervention group ($p<0.001$).

The present study aimed to investigate the effect of care interventions based on Peplau's Interpersonal Relations Model on stress and quality of life in patients with cardiac ischemia. The hypothetical findings indicated that patients who received the Peplau-based intervention demonstrated a significant reduction in perceived stress and substantial improvements in various domains of quality of life compared with the control group receiving routine care. These results support the central premise of Peplau's theory: that a structured, therapeutic nurse–patient relationship can positively influence psychological and functional outcomes. The implications of these findings are multifaceted and contribute to the growing body of evidence supporting theory-based nursing interventions in cardiac care.

The reduction in stress observed among participants in the intervention group aligns with previous studies demonstrating the therapeutic benefits of nurse patient communication and emotional support. Peplau emphasized that anxiety and stress are central emotional responses to illness, especially in conditions such as cardiac ischemia, where symptoms may be frightening, unpredictable, and life-threatening. In the current study, sessions delivered during the orientation and identification phases allowed patients to verbalize fears, express concerns, and clarify misconceptions about their illness. This emotional ventilation, combined with structured education about cardiac ischemia, likely contributed to lower stress scores at the post-test and follow-up assessments. The exploitation phase, which emphasized coping strategies such as relaxation exercises and cognitive reframing, may have further empowered patients to regain a sense of control over their symptoms, ultimately leading to reduced stress.

The improvement in quality of life observed among the intervention group is also consistent with existing literature demonstrating that psychosocial interventions can enhance emotional well-being, physical functioning, and social engagement in cardiac patients. Quality of life is a complex construct influenced by both physical and psychological factors. In the present study, the Peplau-based intervention appears to have influenced several dimensions of quality of life, including physical functioning, emotional well-being, and social role performance. One possible explanation for this improvement is that the intervention helped patients develop greater confidence in managing their symptoms, increasing their motivation and ability to resume daily activities. The educational components of the sessions likely reduced uncertainty and fear, while the supportive relationship fostered by the nurse may have reinforced positive health behaviors.

An additional finding worth noting is the sustained improvement observed at the three-month follow-up. This suggests that the intervention had durable effects, likely due to the combination of in-person sessions and follow-up telephone calls. The latter may have reinforced key messages, maintained engagement, and provided ongoing emotional support. Long-term improvement is particularly important in managing cardiac ischemia, a chronic condition requiring continuous self-care, symptom monitoring, and treatment adherence. By strengthening patients' self-efficacy, the Peplau-based intervention may have facilitated better adherence to lifestyle modifications and medication regimens, which in turn contributed to improved well-being.

The differences observed between the intervention and control groups highlight the limitations of routine cardiac care, which often emphasizes biomedical treatment while devoting less attention to psychological or relational aspects of care. While routine care addresses essential clinical needs, it may not adequately support patients in coping with emotional distress or adapting to life with a chronic cardiac condition. The findings of this study underscore the importance of integrating structured communication-based interventions into routine cardiac nursing practice. The interpersonal relationship between nurse and patient should not be viewed as merely supportive but as a therapeutic modality capable of producing measurable

improvements in psychological and functional outcomes.

Another important implication of the findings relates to the theoretical foundation provided by Peplau's model. Theory-based interventions offer a structured framework for clinical practice and ensure that care is not delivered in an ad hoc or fragmented manner. Peplau's four-phase model provided a clear roadmap for the intervention in the present study, guiding the progression of sessions and ensuring consistency across participants. The success of the intervention demonstrates the value of grounding nursing practice in established theories, particularly in complex conditions like cardiac ischemia where psychological factors play a critical role.

Despite the promising results, it is important to consider the hypothetical nature of the findings and the potential limitations that might affect real-world applications. For instance, the success of Peplau-based interventions depends heavily on the communication skills and interpersonal competencies of the nurses delivering them. Variability in skill levels among nurses could affect the consistency and effectiveness of the intervention. Additionally, the time and resources required for training and implementation may pose challenges in busy clinical settings. However, the strong outcomes observed in this study suggest that investment in communication training could yield long-term benefits for patient outcomes and satisfaction.

Another potential limitation is the cultural context in which the intervention is delivered. While Peplau's model has universal applicability, the ways in which patient's express emotions, seek support, or engage in interpersonal interactions may vary across cultures. Therefore, adapting the intervention to cultural norms and patient preferences is crucial. Nevertheless, the core principles of trust-building, empathy, and collaborative problem-solving remain relevant across diverse patient populations.

The results of this study also have implications for future research. Further studies could examine the mechanisms through which Peplau-based interventions exert their effects, such as changes in self-efficacy, social support, or coping behaviors. Additionally, exploring the effectiveness of such interventions in different subgroups of cardiac patients for example, those with recurrent ischemic episodes, heart failure, or comorbid anxiety disorders would provide deeper insight into the generalizability of the findings.

Finally, the findings highlight the importance of adopting a holistic approach to cardiac care. Cardiac ischemia is not merely a physical condition but one that profoundly affects emotional well-being, daily functioning, and quality of life. By addressing the psychological and relational dimensions of care, nurses can play a crucial role in enhancing patient outcomes. The present study demonstrates that Peplau's Interpersonal Relations Model provides an effective and practical framework for delivering such holistic care.

In conclusion, the hypothetical results of this study suggest that Peplau-based care interventions significantly reduce stress and enhance quality of life among patients with cardiac ischemia. The success of the intervention underscores the importance of therapeutic communication, emotional support, and patient–nurse collaboration in managing chronic cardiac conditions. Integrating such theory-based interventions into routine practice could represent an important step toward improving both psychological and clinical outcomes for cardiac patients.

Conclusion

The findings of this study support the first hypothesis, showing that care interventions based on the Peplau model significantly reduce stress in patients with cardiac ischemia, with effects that persist over time in the intervention group. By emphasizing therapeutic communication, shared goals, and patient-centered care, this model effectively meets patients' psychological needs, thereby lowering stress and anxiety outcomes not observed in the control group.

The interventions also significantly improved the second hypothesis outcome: quality of life across physical and emotional-social dimensions. Patients in the intervention group experienced notable and sustained improvements immediately after the intervention and at three months, unlike the control group.

Overall, the results highlight the importance of adopting patient-centered approaches such as Peplau's interpersonal relationship model in caring for cardiac patients, as these interventions enhance trust, improve disease awareness, reduce psychological distress, and ultimately contribute to improved quality of life

Acknowledgements

Cardiac ischemia, a condition characterized by reduced blood flow to the heart muscle, remains one of the leading causes of morbidity and mortality worldwide. Patients suffering from cardiac ischemia frequently experience high levels of psychological distress, including anxiety, fear of recurrent cardiac events, uncertainty about treatment outcomes, and lifestyle limitations. These emotional and psychosocial challenges often contribute to increased stress levels, delayed recovery, and diminished quality of life. In recent years, the integration of holistic, patient-centered care approaches into cardiac nursing has gained significant attention as a means of addressing these multidimensional patient needs. Among the various theoretical frameworks available to guide nursing practice, Peplau's Interpersonal Relations Model

stands out for its emphasis on therapeutic communication, collaborative care, and the development of a supportive nurse patient relationship.

Peplau's model highlights the importance of interpersonal processes and identifies the phases of nursing interaction orientation, identification, exploitation, and resolution as key components in facilitating patient adaptation and emotional stability. By fostering trust, providing education, reducing fear, and encouraging patient participation, interventions based on Peplau's theory have the potential to improve both psychological outcomes and health-related behaviors. Previous research suggests that therapeutic communication and structured interpersonal support may reduce stress levels, enhance coping ability, and contribute to improved treatment adherence in cardiac patients. However, there remains a need for more comprehensive studies specifically focusing on individuals with cardiac ischemia, who often endure significant psychological strain alongside their physical symptoms.

This study aims to examine the effectiveness of care interventions grounded in Peplau's Interpersonal Relations Model on reducing stress and enhancing quality of life among patients with cardiac ischemia. By evaluating outcomes such as perceived stress, emotional well-being, and overall life satisfaction, this research seeks to identify whether a structured interpersonal approach can serve as a valuable complementary intervention in cardiac care. The findings may provide essential insights for nursing practice and contribute to the development of evidence-based psychosocial support strategies for this high-risk patient population.

This article is derived from a Master's thesis in Intensive Care Nursing. The researchers extend their sincere gratitude to all the participants in the study, particularly the patients from the CCU departments of Shahrekord hospitals in the year 2024, for their wholehearted cooperation. We also wish to express our appreciation to the esteemed officials of Shahrekord University of Medical Sciences for their invaluable financial and moral support throughout this research.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this study.

Disclosure Statement

No potential conflict of interest reported by the authors.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

References

[1] Rahmani R, Ahmadian Yazdi R, Motahedian E, Rahimi A. (**2013**), To assess the effect of planed meeting on the physiologic indicators of the patients who suffer from Acute Coronary Syndrome. Iran J Crit Care Nurs. 2013;6(1):57-64.

[2] Karami H, Shirvani Shiri M, Rezapour A, Sarvari Mehrabadi R, Afshari S. (2021), The association between diabetic complications and health-related quality of life in patients with type 2 diabetes: A cross-sectional study from Iran. Quality of Life Research;30(7): 63-74.

[3] Yazdanyar A, Newman AB. (2009), The burden of cardiovascular disease in the elderly: morbidity, mortality, and costs. Clinics in geriatric medicine;25(4):563-77

[4] Gundugurti PR, Bhattacharyya R, Koneru A. (2022), Management of psychiatric disorders in patients with cardiovascular diseases. Indian J Psychiatry; 64(Suppl 2): S355-S65.

[5] Zipes DP. (2018), Braunwald's heart disease e-book: A textbook of cardiovascular medicine: Elsevier Health Sciences

[6] Roth GA, Johnson C, Abajobir A, Abd-Allah F, Abera SF, Abyu G, et al. Global, regional, and national burden of cardiovascular diseases for 10 causes, 1990 to 2015. (2017), Journal of the American college of cardiology;70(1): 1-25.

[7] Rosen HE, Bari I, Paichadze N, Peden M, Khayesi M, Monclús J, et al., (2022), Global road safety 2010-18: an analysis of global status reports. Injury.

[8] Azizova TV, Grigoryeva ES, Hamada N. (2023), Dose rate effect on mortality from ischemic heart disease in the cohort of Russian Mayak Production Association workers. Scientific Reports;13(1):1926.

[9] Talkhi N, Emamverdi Z, Jamali J, Salari M. (2023), Clustering of the causes of death in Northeast Iran: a mixed growth modeling. BMC Public Health;23(1):1-12.

[10] Koolaji S, Tehrani YS, Azadnajafabad S, Moghaddam SS, Shahin S, Ghamari A, et al., (2023), A 30-year trend of ischemic heart disease burden in a developing country; a systematic analysis of the global burden of disease study 2019 in Iran. International Journal of Cardiology;379: 127-33.

[11] Chaves SS, Nealon J, Burkart KG, Modin D, Biering-Sørensen T, Ortiz JR, et al., (2023), Global, regional and national estimates of influenza-attributable ischemic heart disease mortality. E Clinical Medicine; 55

[12] Mendis S, Puska P, Norrving Be, Organization WH. (2011), Global atlas on cardiovascular disease prevention and control: world health organization

[13] Sarrafzadegan N MN. (2019), Cardiovascular Disease in Iran in the Last 40 Years: Prevalence, Mortality, Morbidity, Challenges and Strategies for cardiovascular prevention arch Iran Med; 22(4):204-10.

[14] Lotfizadeh M, Khaledifar A, Heidari F, Khademi A. (2022), The relationship between acute cardiac attack and LDL-C serum levels in cardiac and CCU inpatients in Hajar hospital: Replying to a paradox. Journal of Shahrekord University of Medical Sciences; 24(3):139-44.

[15] Muhammad EH, Fadhil AA, Al-Taee MM, Jabr HS, Ihsan M, Alwaily ER. (2022), Patient Safety Culture from Perspective of Nurses Working in ICU and CCU Wards of Al-Najaf Al-Ashraf Hospital. Journal of Evidence-based Care;12(3).

[16] Celano CM, Daunis DJ, Lokko HN, Campbell KA, Huffman JC. (2016), Anxiety disorders and cardiovascular disease. Current psychiatry reports. 2016; 18:1-11.

[17] Afrasiabi-Rad, HasanZadeh S, Koushavar H, HasanZadeh S. (2001), Measuring hospital stress on cardiac patients in Shahid Madani Heart Hospital. Medical of tabriz nuiversity of medical sciences; 35(49):11-6.

[18] Far A, Lotfi L, Hasan M, Taban-Sadeghi T, Zadeh F, Hosseini H, et al., (2016), Investigation of the association between stress and its correlates with coronary heart disease in patients attending hospitals in Yazd (2012). Toloo Behdesht Yazd; 14(6):125-36.

[19] Rosengren A, Hawken S, Ôunpuu S, Sliwa K, Zubaid M, Almahmeed WA, et al., (2004), Association of psychosocial risk factors with risk of acute myocardial infarction in 11 119 cases and 13 648 controls from 52 countries (the INTERHEART study): case-control study. The Lancet ;364(9438):953-62.

[20] Karlsen HR, Saksvik-Lehouillier I, Stone KL, Schernhammer E, Yaffe K, Langvik E. (2021), Anxiety as a risk factor for cardiovascular disease independent of depression: a prospective examination of community-dwelling men (the MrOS study). Psychology health; 36(2):148-63.

[21] Goli B, Jaafari-pooyan E, Moradi A, Safi-arian R, Moradi M, Darabi F., (2021), Prevalence of anxiety, depression and stress in CABG candidate patients and factors affecting it at Farshchian cardiovascular Hospital in Hamadan. Iranian Journal of Health Education Health Promotion; 9(2):212-215.

[22] Jaiswal P, Mascarenhas S, Patil D, Pandit U., (2017), Psychological assessment in ICU survivors using DASS-21 scale. Scholars Journal of Applied Medical Sciences; 5(4c):1374-9.

[23] Mc Namara K, Alzubaidi H, Jackson JK. (2019), Cardiovascular disease as a leading cause of death: how are pharmacists getting involved? Integrated pharmacy research practice:8:1.

[24] Dar T, Radfar A, Abohashem S, Pitman RK, Tawakol A, Osborne MT. (2019), Psychosocial Stress and Cardiovascular Disease. Curr Treat Options Cardiovasc Med;21(5):23.

[25] Suls J. (2018), Toxic affect: Are anger, anxiety, and depression independent risk factors for cardiovascular disease? Emotion Review;10(1):6-17

[26] MH H., (2007), The efficacy of home walking exercise program on functional performance and quality of life in patients with heart failure. J Gorgan Univ Med Sci;9(1):49-54.

[27] Negarandeh R, Bahabadi AH, Mamaghani JA. (2014), Impact of regular nursing rounds on patient satisfaction with nursing care. Asian Nursing Research. 2014;8(4):282-5.

[28] Stayt LC. (2007), Nurses' experiences of caring for families with relatives in intensive care units. Journal of Advanced Nursing;57(6):623-30

[29] Deane WH, Fain JA., (2016), Incorporating Peplau's theory of interpersonal relations to promote holistic communication between older adults and nursing students. Journal of Holistic Nursing ;34(1):35-41.

[30] cheraghi F, khatiban M, borzou R, hosayni P, vatandost S. (2017), Application of Peplau's theory of Interpersonal Relations in Nursing Practice: A systematic review study. SJNMP; 3 (2) :1-11

[31] Fathidokht H, Mansour-Ghanaei R, Darvishpour A, Maroufizadeh S., (2024), The effect of communication using Peplau's theory on satisfaction with nursing care in hospitalized older adults in cardiac intensive care unit: A quasi-experimental study. J Educ Health Promot. 2024 Jan 22; 12:426.

[33] Alishahi B. (2017), Effects of peplau's theory of interpersonal relations on stress of hemodialysis patients'. Nursing Midwifery Journal. 2017;15(1):1-9.

[34] Peplau HE. (1952), Interpersonal relations in nursing. AJN The American Journal of Nursing; 52(6):765.

[35] Hagerty TA, Samuels W, Norcini-Pala A, Gigliotti E. (2017), Peplau's Theory of Interpersonal Relations: An Alternate Factor Structure for Patient Experience Data? Nurs Sci Q. Apr;30(2):160-167.

[36] Moradi S, Fallahi-Khoshknab M, Rahgoi A, Vahedi M. (2023), The effect of Therapeutic Communication based Peplau's theory on anxiety and Resilience of patients admitted to the corona ward of Khatam Al-Anbia Hospital in Tehran. IJNR. 2023;18(2): 17-27.

[37] Maroufizadeh S, Zareiyan A, Sigari N. (2014), Psychometric properties of the 14, 10 and 4-item "Perceived Stress Scale" among asthmatic patients in Iran. Payesh;13(4):457-65.

[38] Höfer S, Lim L, Guyatt G, Oldridge N. (2004), The MacNew Heart Disease health-related quality of life instrument: a summary. Health Qual Life Outcomes; 2:3.
[39] Asadi-Lari M, Javadi HR, Melville M, Oldridge NB, Gray D. (2003), Adaptation of the MacNew quality of life questionnaire after myocardial infarction in an Iranian population. Health Qual Life Outcomes. 2003; 1:23.
[40] Christoffersen M, Frikke-Schmidt R, Schnohr P, Jensen GB, Nordestgaard BG, Tybjærg-Hansen A. (2014), Visible age-related signs and risk of ischemic heart disease in the general population: a prospective cohort study. Circulation;129(9):990-8
[41] Takahara M, Iida O, Soga Y, Kodama A, Terashi H, Suzuki K, et al. (2020), Heterogeneity of Age and Its Associated Features in Patients with Critical Limb Ischemia. Ann Vasc Dis. 2020;13(3):300-7.
[42] Zarea K, Maghsoudi S, Dashtebozorgi B, Hghighizadeh MH, Javadi M. (2014), The Impact of Peplau's Therapeutic Communication Model on Anxiety and Depression in Patients Candidate for Coronary Artery Bypass. Clin Pract Epidemiol Ment Health; 10:159-65.
[43] Hosieni F, Ravari A, Akbari A. (2017),The Effect of Communicating with Patients Using Peplau Model on Patients' Satisfaction with the Provided Nursing Cares at the Cardiac Intensive Care Unit. IJN; 29 (104) :36-45.
[44] Moradi S, Fallahi-Khoshknab M, Rahgoi A, Vahedi M. (2023), The effect of Therapeutic Communication based Peplau's theory on anxiety and Resilience of patients admitted to the corona ward of Khatam Al-Anbia Hospital in Tehran. IJNR. 2023;18(2): 17-27.
[45] Su XE, Wu SH, He HF, Lin CL, Lin S, Weng PQ. (2024), The effect of multimodal care based on Peplau's interpersonal relationship theory on postoperative recovery in lung cancer surgery: a retrospective analysis. BMC Pulm Med;24(1):59.
[46] Naderi Samani S, Hasanpour Dehkordi A, Salehi Tali S. (2024), The effect of therapeutic communication based on Peplau's model on body image and pain among cancer patients undergoing radiotherapy in the Parsian hospital of Shahrekord. J Multidiscip Care;12(4):159-65.
[47] Gohari S, Manzari ZS, Behnam Vashani H. (2024), The Effect of Peplau's Model Application on Sleep Quality of Women Waiting for Breast Biopsy Results. Journal of Midwifery and Reproductive Health;12(1):4057-66.
[48] Sarami B, Myrfendereski S, Tali SS, Hasanpour-Dehkordi A, Reisi H. (2023), The effect of implementing Peplau's theory of interpersonal communication on the quality of life of patients with acquired immunodeficiency syndrome. Epidemiological Review/Przegląd Epidemiologiczny. 2023; 77(1).