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ORIGINAL RESEARCH

Application of Perioperative Comprehensive Care in Coronary Heart Disease Patients Undergoing Coronary Stent Implantation: A Study on the Collaboration of Cardiology Operating Room Nursing

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Objective: To evaluate the application effect of perioperative comprehensive care in patients with coronary heart disease undergoing coronary stent implantation.

Methods: This retrospective cohort study included 150 patients who underwent coronary stent implantation at our hospital between January 2023 and January 2024. Based on documented perioperative nursing protocols, patients were categorized into an observation group (n=83), which received comprehensive nursing care (including psychological support, structured preoperative preparation, intraoperative coordination, enhanced postoperative management, and complication prevention), and a control group (n=67), which received standard institutional perioperative care. To minimize selection bias, propensity score–based inverse probability weighting was applied using baseline covariates. Outcomes assessed included anxiety levels, postoperative complication rates, length of hospital stay and recovery time, patient satisfaction, and changes in lipid profiles.

Results: After weighting, baseline characteristics were well balanced between groups (standardized mean differences < 0.1). The observation group exhibited significantly lower state and trait anxiety scores at 24 hours postoperatively ($P < 0.001$). Rates of hematoma/bleeding, radial artery spasm/occlusion, arrhythmia, and fever were significantly lower in the observation group ($P < 0.05$). Hospital stay and postoperative recovery time were significantly reduced in the observation group ($P < 0.001$), and patient satisfaction scores were markedly higher ($P < 0.001$). Additionally, the observation group showed greater improvements in lipid profiles, with significant reductions in total cholesterol and LDL-C levels and an increase in HDL-C ($P < 0.05$).

Conclusion: Comprehensive perioperative nursing care significantly improves clinical outcomes in patients undergoing coronary stent implantation, by alleviating psychological stress, reducing postoperative complications, shortening hospitalization and recovery time, and enhancing patient satisfaction. These findings support the integration of structured nursing interventions into standard perioperative protocols to optimize patient recovery and long-term cardiovascular management.

Keywords: coronary heart disease, coronary stent implantation, perioperative comprehensive care, cardiology, intraoperative nursing, complications

Introduction

Coronary heart disease (CHD), one of the most prevalent cardiovascular diseases globally, poses a significant threat to human health and life.[1] With the advancement of medical technology, percutaneous coronary intervention (PCI) has emerged as a crucial treatment modality for CHD, particularly for patients with acute coronary syndrome and stable angina.[2] This procedure involves physically widening narrowed coronary arteries, restoring blood flow, and effectively alleviating myocardial ischemia. Despite the significant improvement in CHD treatment and reduced mortality rates due

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to stent implantation technology, the success of the surgery is influenced not only by the surgical technique but also by the patient's preoperative psychological state and the quality of postoperative care.[3,4]

PCI may lead to various complications, including vascular injury, bleeding, arrhythmias, and even acute stent thrombosis.[5] Additionally, patients often experience high levels of psychological stress preoperatively, and symptoms of anxiety and depression are common during and after the procedure. These factors may affect surgical outcomes and the patient's recovery process.[6] Therefore, enhancing the quality of intraoperative and postoperative care and implementing comprehensive and targeted nursing measures are crucial.[7] Perioperative comprehensive care has recently gained attention as a holistic, patient-centered model integrating physical, psychological, and emotional support throughout the treatment continuum. It includes not only basic physiological care but also incorporates psychological, social, and cultural aspects of care aimed at reducing patient psychological stress, improving patient adaptation to surgery, and optimizing postoperative recovery.[8,9] Studies have shown that comprehensive care significantly reduces complications in cardiac surgery patients, shortens hospital stays, and improves long-term health outcomes. However, further research is needed on the implementation and specific effects of comprehensive care for PCI.[10]

Currently, there exists a research gap regarding the real-world effectiveness of structured perioperative comprehensive care in PCI patients—particularly its impact on psychological outcomes, postoperative recovery, and complication prevention. Although some studies have shown the general benefits of integrated care models in cardiac surgery, the specific benefits of nursing-led, comprehensive perioperative protocols in coronary stenting procedures remain underexplored.

Therefore, the motivation of this study is to bridge this gap by evaluating the application of perioperative comprehensive nursing care in CHD patients undergoing PCI. This study aims to observe its impact on psychological stress, complication rates, recovery processes, lipid profiles, and patient satisfaction. Through a retrospective analysis of clinical data from 150 patients, we aim to provide empirical evidence for refining perioperative nursing strategies and demonstrate the value of integrating psychological and intraoperative nursing collaboration in cardiac interventions.

Materials and Methods

This study follows the principles outlined in the Declaration of Helsinki and has been approved by the Ethics Committee of Quanzhou First Hospital. Informed consent to participate was obtained from all of the participants in the study.

General Information

This retrospective cohort study analyzed medical records of 150 coronary heart disease patients who underwent coronary stent implantation at our hospital from January 2023 to January 2024. Through systematic screening of electronic health records, two distinct cohorts were identified based on documented perioperative care protocols:

Observation group (n=83): Patients who received comprehensive nursing care (including psychological intervention, structured preoperative preparation, and enhanced postoperative management) as recorded in nursing notes. Control group (n=67): Patients who received standard perioperative care according to institutional protocols.

Inclusion Criteria: Angiographically confirmed coronary artery disease with stent implantation via radial approach; Complete perioperative documentation including nursing records and laboratory reports; Age 45–75 years at procedure date.

Exclusion Criteria: Severe liver or kidney dysfunction or other major organ failure; history of myocardial infarction or cerebrovascular accident within the past six months; presence of mental illness or cognitive impairment preventing clear expression of consent to participate in the study; participation in other clinical trials or interventional treatment studies; known allergy to materials or drugs used in nursing interventions; presence of uncontrolled severe complications such as active bleeding or severe infection during preoperative assessment; pregnancy or lactation; patients who had undergone coronary stent implantation before the start of the study.

Surgical Procedure

All patients in both groups underwent successful percutaneous coronary intervention (PCI) via coronary stent implantation. The procedure was performed under local anesthesia with the patient in a supine position. A 21-gauge puncture

needle was used to access the radial artery approximately 2 cm proximal to the radial styloid process. A 6F arterial sheath and a 5F angiographic catheter were inserted through the access site.

Following arterial access, an intravenous dose of 100–150 U/kg of unfractionated heparin was administered for anticoagulation. Coronary angiography was performed to assess the coronary anatomy. Based on angiographic findings, appropriate sizes of balloon catheters and coronary stents were selected and delivered via a guiding catheter over a guidewire. Once the stent position was confirmed, it was deployed under fluoroscopic guidance. Subsequently, the guiding catheter and guidewire were withdrawn.

After the procedure, the arterial sheath was removed 2–3 hours postoperatively. The puncture site was compressed with a pressure bandage for approximately 8 hours to achieve hemostasis. Continuous monitoring of electrocardiogram (ECG), blood pressure, and heart rate was conducted postoperatively. All patients received low-molecular-weight heparin for 48 hours to maintain anticoagulation.

Data Collection and Interventions

Clinical data were extracted from electronic medical records and categorized as follows: Nursing interventions were classified as either standard care or comprehensive care, based on nursing shift reports and intervention checklists.
Control group (Standard Care): Patients received routine perioperative nursing care as documented in nursing records, including:

(1) Preoperative Care: The assigned nurse initiated communication with patients, introduced them to the ward environment, explained hospital visitation protocols, and demonstrated the use of call buttons. Additionally, they explained the surgical procedure, assisted patients with various examinations, and documented the results to ensure adequate preoperative preparation.
(2) Intraoperative Care: Operating room nurses accompanied patients throughout the procedure, providing encouragement and reassurance in a supportive manner, guiding patients to cooperate correctly during surgery, and assisting surgeons as needed.
(3) Postoperative Care: The responsible nurse continuously monitored patients' cardiac rhythms for 24 to 48 hours, administered antibiotics and anticoagulants as prescribed, reinforced postoperative pain management and drainage care, inquired about patients' experiences, and attempted to meet their needs as much as possible.
(4) Post-discharge Care: The responsible nurse conducted regular follow-up calls to patients, encouraged them to engage in rehabilitation exercises, and reminded them to attend scheduled follow-up appointments.

Observation Group (Comprehensive Care + Standard Care): In addition to standard care, the following comprehensive nursing interventions were implemented (as documented in nursing records):

(1) Psychological Intervention Measures: Psychological intervention was a crucial nursing measure in this study, directly impacting the effectiveness of care. During the perioperative period of coronary stent implantation, patients received a series of psychological interventions, including providing basic psychological support, implementing personalized psychological therapy, organizing patient support groups, and mobilizing social and family support. The aim was to alleviate preoperative tension in patients and their families, reduce patient preoperative and intraoperative fears and anxieties, and ensure optimal cooperation during surgery.
(2) Preoperative Preparation Measures: Before surgery, patients underwent comprehensive physical assessments, including monitoring vital signs such as heart rate and blood pressure, to assess the suitability of interventional treatment. Predictions of potential complications were made, and corresponding emergency plans were developed. All necessary preoperative examinations, such as electrocardiography, blood tests, and imaging studies, were completed. Iodine allergy tests were conducted, skin preparation was performed, and patients adhered to fasting and water restriction regulations for at least 8 hours before surgery.
(3) Intraoperative Management Measures: During the surgical procedure, efforts were made to establish a stable intravenous route for patients, maintain a supine position, and, when necessary, use restraint straps to secure limbs.

Patient attention was diverted through conversation to alleviate their tension and fear. Patient condition changes were closely monitored intraoperatively, close cooperation with the surgical team was maintained to ensure timely supply of surgical instruments, and patient needs were promptly addressed.

(4) Postoperative Recovery Measures: After surgery, patients' puncture sites were closely monitored for bleeding and received local compression dressing if necessary. Patients were required to strictly remain in bed for 24 hours postoperatively, avoiding strenuous activities, ensuring the punctured limb remained elevated and immobile for at least 8 hours. Vital signs were monitored, and efforts were made to ensure good air circulation, appropriate temperature, and humidity in the hospital room. A high-calorie, high-quality protein, and high-vitamin semi-fluid diet were provided to reduce gastrointestinal reactions.

(5) Complication Management Measures: For patients with local hematomas, local physiotherapy and hot compresses were applied to promote absorption. For patients with urinary retention, abdominal massage, hot compresses, and acupuncture were performed. Patients with abnormal temperature increases or suspected infections received physical cooling or drug therapy, and antibiotics were administered as needed.

(6) Continued Post-discharge Care: Emphasis was placed on improving patients' self-management abilities after coronary stent implantation to reduce the occurrence of postoperative cardiovascular events and improve prognosis. Patients were educated about coronary heart disease and its symptoms, developed action plans, and adjusted their attitudes toward life, actively managing their personal health. Patients were instructed to adhere to medical advice, monitor blood pressure regularly, attend follow-up appointments, and take medications as prescribed. Lifestyle improvements, such as maintaining a low-salt, low-fat diet, quitting smoking and limiting alcohol consumption, maintaining a regular lifestyle, and engaging in moderate exercise, were encouraged.

Outcome Measures

Primary outcomes included hospital length of stay, calculated from admission to discharge orders documented in the electronic medical record, and major procedure-related complications defined as hematoma requiring intervention, radial artery spasm or occlusion, arrhythmia, and vagal reflex.

Secondary outcomes were categorized into four domains: psychological status, metabolic profiles, postoperative recovery metrics, and patient-reported outcomes. Psychological status was assessed using the State-Trait Anxiety Inventory (STAI) extracted from psychiatric consultation records, with state anxiety (a 20-item scale reflecting transient stress before surgery) derived from preoperative nursing assessments and trait anxiety (a 20-item baseline measure of general anxiety tendency) obtained from initial psychological screening upon admission.

Metabolic profiles involved comparison of fasting lipid levels—total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglycerides (TG)—from preoperative to discharge time points; serum samples were analyzed using a Cobas c702 analyzer (Roche Diagnostics Ltd). Following standard protocols, including ≥8 h fasting, centrifugation at 3500 rpm for 5 min within 1 h of collection, and testing completed within 4 h of processing.

Postoperative recovery metrics included time to ambulation, defined as the first documented out-of-bed activity, and monitoring duration in the recovery unit, measured from the end of the procedure to the issuance of the transfer order to the general ward. Patient-reported outcomes were assessed using institutional satisfaction survey scores (range: 1–10) retrieved from quality management databases, covering intraoperative nursing support, postoperative pain management, environmental comfort, and overall service experience.

Statistical Analysis

Data analysis was conducted using SPSS statistical software (version 26.0, IBM Corp). Quantitative data were presented as means ± standard deviations, and differences between the two groups were analyzed using independent sample *t*-tests. Categorical data were analyzed using chi-square tests. The significance level for all statistical tests was set at 0.05, and $P<0.05$ was considered statistically significant. To mitigate selection bias while retaining all study participants, inverse probability of treatment weighting (IPTW) was performed using propensity scores. The propensity model included age, gender, SYNTAX score, and comorbidities. Balance was assessed via standardized mean differences (<0.1 indicated adequate balance). All outcome analyses incorporated stabilized weights.

Results

Propensity Score Matching Outcomes

To minimize potential confounding while retaining the full study cohort, propensity score–based inverse probability weighting was applied. The propensity score model included clinically relevant covariates: age, gender, BMI, baseline blood pressure, SYNTAX score, diabetes status, and smoking history. These variables were selected based on their known associations with cardiovascular outcomes. All subsequent analyses were conducted using these weighted estimates to ensure intergroup comparability. Standardized mean differences for all covariates were < 0.1, indicating adequate balance between groups. Table 1 presents the baseline characteristics of the matched cohort.

Primary Outcomes

Comparison of Postoperative Recovery and Hospitalization Time

Table 2 illustrates the comparison of postoperative recovery and hospitalization time. The data show that both the length of hospital stay and postoperative recovery time were significantly shorter in the observation group compared to the control group ($P<0.001$). Moreover, the patient satisfaction scores were significantly higher in the observation group compared to the control group ($P<0.001$).

Comparison of Postoperative Complications

Table 3 presents a comparative analysis of postoperative complications at 24 hours. The data show that the incidence rates of complications such as hematoma/bleeding, radial artery spasm/occlusion, arrhythmia, fever, and vagal reflex were lower in the observation group compared to the control group. Specifically, the differences in hematoma/bleeding, radial artery spasm/occlusion, arrhythmia, and fever were statistically significant ($P<0.05$).

Table 1 Baseline Characteristics with Propensity Score Adjustment

	Observation Group (n=83)	**Control Group (n=67)**	**Weighted SMD**	**P**
Age (years)	61.72 ± 9.18	62.14 ± 8.97	0.04	0.712
Gender (male) [n(%)]	53 (63.86%)	39 (58.21%)	0.06	0.857
SYNTAX score	22.12 ± 5.38	22.64 ± 5.17	0.07	0.654
Smoking history [n(%)]	34 (40.96%)	30 (44.78%)	0.05	0.873
Hypertension [n(%)]	57 (68.67%)	50 (74.63%)	0.08	0.837
Diabetes [n(%)]	29 (34.94%)	24 (35.82%)	0.02	0.861
Heart rate (times/min)	72.89 ± 8.11	73.52 ± 8.45	0.05	0.752
BMI (Kg/m^2)	27.42 ± 4.86	26.98 ± 4.59	0.03	0.812
Blood pressure (mmHg)	130.88 ± 10.29	132.14 ± 11.42	0.05	0.785

Table 2 Comparison of Postoperative Recovery and Hospitalization Time

	n	**Length of Hospital Stay (Days)**	**Postoperative Recovery Time (Days)**	**Patient Satisfaction Score**
Control group	67	8.43 ± 2.56	3.74 ± 1.18	7.85 ± 1.42
Observation group	83	6.39 ± 1.93	2.48 ± 1.01	9.28 ± 0.76
t		5.176	6.531	6.292
P		<0.001	<0.001	<0.001

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Table 3 Comparison of Postoperative Complications at 24 hours [n(%)]

	n	Hematoma/ Hemorrhage	Radial Artery Spasm/Occlusion	Arrhythmia	Fever	Vagal Reflex
Control group	67	11 (16.42%)	6 (8.96%)	8 (11.94%)	5 (7.46%)	3 (4.48%)
Observation group	83	2 (2.41%)	1 (1.20%)	3 (3.61%)	1 (1.20%)	1 (1.20%)
χ^2	–	8.672	5.731	5.089	4.121	2.984
P	–	0.003	0.017	0.024	0.042	0.084

Table 4 Comparison of Psychological Stress and Anxiety Levels

	n	State Anxiety Score		Trait Anxiety Score	
		Preoperative	24 hours Postoperative	Preoperative	24 hours Postoperative
Control group	67	43.28 ± 5.12	37.29 ± 5.42	44.55 ± 5.78	42.37 ± 5.98
Observation group	83	43.47 ± 5.33	30.18 ± 4.89	44.62 ± 5.67	35.88 ± 4.71
t	–	0.204	7.054	0.068	5.911
P	–	0.839	<0.001	0.946	<0.001

Table 5 Comparison of Lipid Levels

	n	Total Cholesterol (mmol/L)		LDL Cholesterol (mmol/L)		HDL Cholesterol (mmol/L)		Triglycerides (mmol/L)	
		Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
Control group	67	5.56 ± 0.98	5.46 ± 1.02	3.67 ± 1.09	3.62 ± 1.12	1.20 ± 0.35	1.21 ± 0.33	2.04 ± 0.88	2.01 ± 0.86
Observation group	83	5.43 ± 1.02	4.86 ± 0.95	3.54 ± 1.06	2.97 ± 0.99	1.22 ± 0.33	1.34 ± 0.31	2.07 ± 0.92	1.78 ± 0.79
t	–	0.683	3.142	0.641	3.257	0.312	2.195	0.183	1.973
P	–	0.496	0.002	0.523	0.001	0.756	0.030	0.856	0.051

Secondary Outcomes

Comparison of Psychological Stress and Anxiety Levels

Table 4 summarizes the comparison of psychological stress and anxiety levels. The results show that the state anxiety score and trait anxiety score of patients in the observation group were significantly lower than those in the control group at 24 hours postoperatively (P<0.001).

Comparison of Lipid Levels

Table 5 presents the comparison of lipid levels. The results indicate that after treatment, the levels of total cholesterol and LDL cholesterol in the observation group were significantly lower than those in the control group (P<0.01), while HDL cholesterol levels increased (P=0.030). Although there was a decreasing trend in triglycerides, it did not reach statistical significance (P>0.05).

Discussion

While coronary artery stenting is effective in treating coronary artery disease and significantly reduces patient mortality rates, limited access to health information and insufficient understanding of the procedure often lead to pre- and post-operative anxiety and depression, which can seriously hinder treatment outcomes.[11] Traditional nursing methods, although meeting basic surgical needs, have limited efficacy in reducing patient psychological stress. With the introduction and implementation of comprehensive nursing models, this approach greatly addresses the physiological and psychological needs of patients, helping them actively cope with the treatment process.[12]

For patients with coronary heart disease, undergoing coronary stent surgery is usually accompanied by significant psychological pressure. This pressure may lead to elevated plasma lipid levels, accelerate disease progression, and increase the risk of cardiovascular problems and other complications during surgery, all of which are key factors affecting surgical success and postoperative recovery.[13] Patients often feel anxious upon admission for various reasons, including uncertainty about disease symptoms, complex medical and nursing procedures, lack of information about disease diagnosis and severity, and uncertainty about disease progression and prognosis. On the day of surgery, patients' anxiety significantly increases mainly due to fear of surgery and deep concerns about potential surgical risks. Although patients' symptoms improve and their mood gradually improves after surgery, confusion and anxiety still exist during the later stages of recovery and rehabilitation after discharge.[14,15]

This study explored the impact of comprehensive perioperative nursing on patients with coronary artery disease undergoing coronary artery stenting. The results of this study demonstrate that the observation group receiving comprehensive nursing intervention showed significant advantages in several key indicators. Patients in the observation group exhibited lower scores of state anxiety and trait anxiety after surgery, indicating that psychological intervention measures significantly reduced postoperative anxiety and enhanced psychological adaptation. These findings are consistent with previous research not only in coronary artery bypass grafting (CABG) settings, but also in studies specifically targeting stent implantation. For example, Protogerou et al[15] reported that structured perioperative nursing interventions significantly reduced anxiety scores and improved postoperative quality of life in patients undergoing percutaneous coronary intervention (PCI). Similarly, another meta-analysis demonstrated that nurse-led comprehensive care models significantly improved adherence to lifestyle modifications and lowered the risk of adverse cardiovascular events in PCI patients.[16]

In terms of complications, the observation group exhibited a significantly lower incidence of postoperative complications such as hematoma, radial artery spasm, arrhythmia, and fever compared to the control group. This result supports the role of comprehensive nursing in reducing postoperative complications, enhancing patient safety, and improving clinical outcomes. This is consistent with the study by Zhou et al, who divided 62 post-coronary artery bypass grafting (CABG) patients into continuous care and routine care groups. The continuous care group showed lower anxiety and depression scores one year after surgery and significantly higher scores in five items related to angina compared to the routine care group. Additionally, the incidence of chest tightness or pain and restenosis of coronary arteries was significantly lower in the continuous care group, indicating that continuous care can effectively improve both the psychological and physiological recovery of patients.[17] Another study by Li et al demonstrated that the incidence of postoperative complications was significantly lower in the evidence-based nursing observation group compared to the control group, especially in terms of arrhythmia and respiratory infections, while nursing satisfaction was also significantly improved. This indicates that evidence-based nursing is effective in reducing complications and improving patient satisfaction, warranting its promotion in clinical nursing.[18]

Comparison of postoperative recovery and length of hospital stay results showed that patients in the observation group had shorter recovery times and shorter hospital stays, with significantly higher patient satisfaction. These data emphasize the importance of comprehensive nursing in accelerating patient recovery, reducing medical resource utilization, and enhancing patient satisfaction. Additionally, in terms of lipid control, the observation group showed significant reductions in total cholesterol and LDL cholesterol levels and increases in HDL cholesterol compared to the control group, possibly attributed to dietary and lifestyle management guidance included in comprehensive nursing. A study by Yan et al showed that community nursing intervention (CNI) significantly improved lipid levels in patients with coronary heart disease. Through analysis of 70 patients diagnosed with coronary heart disease by coronary angiography in a study in 2015, it was found that patients receiving community nursing intervention showed significant improvements in total cholesterol (TC), triglycerides (TG), and low-density lipoprotein cholesterol (LDL-C) levels after six months, while the control group without community nursing intervention showed no significant improvement, demonstrating the importance and effectiveness of community nursing intervention in clinical practice.[19] In another study by Allen et al, the effects of nurse-led case management versus routine treatment were compared in 228 patients with coronary heart disease through random grouping. The results showed that the proportion of patients in the nurse-led case management group who achieved the target low-density lipoprotein cholesterol (LDL-C) level within one year after discharge was significantly higher than that in the group receiving routine treatment alone.[20]

A key contribution of this study lies in its incorporation of dynamic health monitoring and behavioral interventions, including dietary advice, smoking cessation support, and physical activity promotion. These elements are central to sustained cardiovascular health but are often insufficiently addressed during routine perioperative care. By integrating these interventions into nursing workflows, this study aligns with recent frameworks emphasizing proactive health management and individualized risk reduction.

Compared with previous work,[21] our study strengthens the evidence base for implementing perioperative comprehensive care in PCI populations. While existing studies have shown similar benefits in CABG or chronic management contexts, few have applied this model to the acute perioperative phase in stent implantation. This work thus fills a practical gap and offers an adaptable framework that may inform clinical protocols and future policy-making.

In light of recent technological advancements, future studies may benefit from incorporating intelligent monitoring systems and data-driven nursing platforms to further enhance the precision and personalization of perioperative care. For instance, Wang et al[22] demonstrated that AI-assisted perioperative support tools can help reduce human error and improve clinical outcomes by enabling real-time decision support and patient monitoring. Additionally, dynamic clinical prediction models, as discussed in a study by Guo et al,[23] offer a framework for optimizing personalized nursing interventions by integrating real-time clinical data analytics into care protocols.

Although this study did not incorporate wearable devices or AI-based platforms, the promising results of comprehensive perioperative nursing intervention in our study suggest a valuable foundation upon which intelligent systems could be layered. Future research could explore the integration of smart wearable devices and machine learning-based decision support tools into the perioperative nursing workflow to further improve patient monitoring, risk assessment, and individualized care in PCI settings.

Limitations

Despite these encouraging findings, several limitations should be noted. First, the study was conducted in a single center with a relatively limited sample size, which may limit generalizability. Second, long-term outcomes such as rehospitalization rates, medication adherence, and quality of life beyond the early postoperative period were not assessed. Third, while propensity score weighting helped reduce bias, the observational design still carries inherent limitations compared to randomized controlled trials. Future multicenter RCTs with longer follow-up are warranted to validate and extend these findings.

Conclusion

This study demonstrates that comprehensive perioperative nursing care significantly improves postoperative outcomes for patients undergoing coronary stent implantation. Benefits include reduced complication rates, improved psychological resilience, better lipid control, shorter recovery times, and higher patient satisfaction. These findings highlight the importance of integrating structured nursing interventions, including dynamic health monitoring and behavioral modification strategies, into routine perioperative practice.

Disclosure

The authors report no conflicts of interest in this work.

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