International Journal of General Practice Nursing, 2025, Volume 3, Issue 1
https://ojs.bbwpublisher.com/index.php/IJGPN
ISSN Online: 2981-9423
ISSN Print: 2981-9415

Application Effect of Cardiac Rehabilitation Nursing in Patients with Myocardial Infarction after Interventional Surgery

Peng Sun†, Yuxin Tian†, Jingyi Wang*, Dan Liu*, Xuanze Han, Jia Feng, Hong Su, Yewei Wang, Fei Zhu, Zhuo Liu, Shuangning Ji

Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China
†These authors contributed equally to this work and shared the first authorship.

**Authors to whom correspondence should be addressed.*

Abstract: *Objective:* To explore the application effect of cardiac rehabilitation nursing in patients with myocardial infarction after interventional surgery. *Method:* 82 patients who underwent myocardial infarction intervention surgery in our hospital from June 2022 to June 2023 were randomly divided into an observation group and a control group, with 41 patients in each group. Among them, the control group received routine care, while the observation group received cardiac rehabilitation care on the basis of routine care. The cardiac function indicators and quality of life scores of the two groups of patients were compared. *Result:* The postoperative left ventricular ejection fraction (LVEF) and 6-minute walking distance of the observation group were higher than those of the control group, and the left ventricular end diastolic diameter (LVEDD) was smaller than that of the control group ($P<0.05$). The quality of life scores of the observation group were higher than those of the control group ($P<0.05$). *Conclusion:* Cardiac rehabilitation nursing can effectively improve cardiac function, enhance quality of life, and reduce the incidence of cardiovascular adverse events in patients with myocardial infarction after interventional surgery. It is worthy of clinical promotion and application.

Keywords: Cardiac rehabilitation nursing; Myocardial infarction; Interventional surgery; Application effect

Online publication: March 10, 2025

1. Introduction

Myocardial infarction, as a serious type of cardiovascular disease, poses a huge threat to the life and health of patients. Although percutaneous coronary intervention (PCI) can timely open up infarct related blood vessels, postoperative patients still face many rehabilitation challenges, such as slow recovery of heart function, decreased quality of life, and potential risks of cardiovascular adverse events. Cardiac rehabilitation nursing, as a comprehensive and systematic nursing intervention model, integrates various measures such as exercise rehabilitation, psychological support, health education, and lifestyle adjustment, aiming to comprehensively

promote the recovery of patients' cardiac function, improve their quality of life, and reduce the incidence of cardiovascular adverse events [1]. This study thoroughly investigates the application effect of cardiac rehabilitation nursing in patients with myocardial infarction after interventional surgery. The report is as follows.

2. Data and method

2.1. General data

82 patients who underwent myocardial infarction intervention surgery in our hospital from June 2022 to June 2023 were selected as the subjects of this study. Patients were randomly divided into an observation group and a control group, with 41 cases in each group. There were 20 male patients and 21 female patients in the observation group. The age ranged from 26 to 73 years old, with an average of (40.29 ± 2.01) years. There were 22 male patients and 19 female patients in the control group. The age ranged from 27 to 75 years old, with an average of (41.06 ± 1.02) years old; There was no statistically significant difference in general information between the two groups of patients ($P>0.05$), indicating comparability.

Inclusion criteria: (1) Meet the diagnostic criteria for myocardial infarction and successfully undergo PCI surgery; (2) Vital signs are stable, with no severe liver or kidney dysfunction; (3) Patients and their families provide informed consent and sign an informed consent form.

Exclusion criteria: (1) Patients with severe arrhythmia and uncontrolled heart failure; (2) Individuals with mental illness or cognitive impairment who are unable to cooperate; (3) Merge with other serious physical illnesses.

2.2. Method

The control group patients received routine postoperative care for myocardial infarction intervention, including continuous electrocardiogram monitoring and close monitoring of vital signs such as heart rate, blood pressure, and respiration. Carefully care for surgical wounds, ensure wound cleanliness and dryness, and prevent infection. Strictly follow the doctor's advice to guide patients in medication, and provide detailed information on the name, dosage, duration, and precautions of the medication. Provide dietary guidance, emphasizing the principles of low salt, low-fat, and low cholesterol diets, controlling calorie intake, and increasing dietary fiber intake [2].

The observation group implemented cardiac rehabilitation nursing on the basis of routine nursing, with the following specific contents. Firstly, evaluation and planning. After surgery, the cardiac rehabilitation team (including cardiologists, rehabilitation nurses, rehabilitation therapists, etc.) conducted a comprehensive evaluation of the patients, including cardiac function grading, exercise ability, psychological status, lifestyle, etc. Based on the evaluation results, a personalized cardiac rehabilitation nursing plan was developed. Secondly, early activity guidance. Within 2 days after surgery, the patients were guided to engage in limb activities in bed, such as clenching fists, bending and extending knee and ankle joints, every 4 hours for 2 minutes each time. Five days after surgery, with the assistance of a nurse, patients could sit up beside the bed, gradually transition to standing and walking beside the bed and gradually increase activity time and distance based on the patient's tolerance. Thirdly, sports rehabilitation training. According to the recovery of the patient's cardiac function, formal exercise rehabilitation training usually begins around one week after surgery. The exercise methods include aerobic exercise (such as walking, jogging, cycling, etc.) and resistance exercise (such as using dumbbells for simple strength training, etc.). The exercise intensity was calculated using the heart rate reserve method to determine the target heart rate, which is calculated as the target heart rate=(maximum heart rate - resting heart

rate) × exercise intensity + resting heart rate. The exercise intensity starts from low intensity (40%–50%) and gradually increases to moderate intensity (50%–70%). The exercise time starts from 15 minutes each time, 3 times a week, gradually increasing to 30 minutes each time, 7 times a week. During the exercise process, it was necessary to closely monitor changes in the patient's heart rate, blood pressure, electrocardiogram, etc. If there is any discomfort, stop exercising in a timely manner and handle it. Fourthly, psychological care. Patients with myocardial infarction often experience negative emotions such as anxiety and depression after surgery, which can affect the recovery process [3]. Nursing staff communicated and interacted with patients and their families to understand their psychological state and provide psychological support and counseling, explained the disease knowledge, treatment methods, and rehabilitation process of myocardial infarction to patients, so as to eliminate their fear psychology, and enhance their confidence in rehabilitation. If necessary, professional psychological intervention could provided from a psychologist. Fifthly, health education. Various forms of health education were adopted for patients, such as holding health lectures, distributing promotional brochures, watching videos, etc. The content includes the etiology, risk factors, drug treatment knowledge, diet and nutrition, lifestyle adjustments, etc. of myocardial infarction. Patients were guided to develop good eating habits, such as low salt, low-fat, low sugar diet, eating more vegetables, fruits, whole grains, etc, stopping smoking and restricting alcohol, maintaining a regular daily routine, avoiding overexertion and emotional excitement. Patients were guided to use medication correctly, knowing the effects, usage, dosage, and adverse reactions of the medication, and improving medication compliance. Sixthly, follow-up management. It was necessary to establish patient follow-up records and conduct follow-up visits to patients through phone, WeChat, outpatient follow-up, and other means after discharge. The follow-up content includes the patient's rehabilitation training, lifestyle changes, medication use, and whether there are any discomfort symptoms. Based on the follow-up results, the rehabilitation nursing plan was adjusted in a timely manner, and further guidance and suggestions were given to the patients.

2.3. Observation indicators

2.3.1. Cardiac function indicators

Echocardiography was used to measure the left ventricular ejection fraction (LVEF) and left ventricular end diastolic diameter (LVEDD) of two groups of patients before and 3 months after surgery, and the walking distance of the patients was recorded at 6 minutes after surgery. LVEF reflects the systolic function of the heart, and the higher its value, the better the systolic function of the heart. LVEDD can reflect the diastolic function of the ventricle and cardiac remodeling. The larger the value, the more pronounced the ventricular dilation and the more severe the cardiac dysfunction. The 6-minute walking distance is an important indicator for evaluating a patient's exercise endurance and cardiac function. The longer the distance, the better the patient's cardiac function and exercise ability.

2.3.2. Quality of life quality

Three months after surgery, the MOS Item Short From Health Survey (SF-36) was used to assess the patient's social, physiological, and psychological functions, with a total score of 100 points. The higher the score, the better the patient's quality of life.

2.4. Statistical methods

SPSS 24.0 statistical software was used for data analysis. Measurement data was expressed as mean ± standard

deviation (Mean ± SD), paired t-test was used for intra group comparison, and independent sample t-test was used for inter group comparison. The count data was expressed as a rate (%), and the comparison between groups was conducted using the $x2$ test. P<0.05 indicates a statistically significant difference.

3. Results

3.1. Comparison of cardiac function indicators

There was no statistically significant difference in LVEF, LVEDD, and 6-minute walking distance between the two groups of patients before surgery (P>0.05). Three months after surgery, the LVEF and 6-minute walking distance of the observation group were higher than those of the control group, while the LVEDD was lower than that of the control group (P<0.05) (Table 1).

Table 1. Comparison of cardiac function indexes between the two groups (Mean ± SD)

Group	Cases	LVEF（%）		LVEDD（mm）	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Observation group	41	36.76±8.79	45.02±9.31	60.11±10.03	52.02±8.14
Control group	41	37.02±8.67	38.24±6.29	59.94±11.01	58.05±10.11
t value	-	0.01	2.93	1.211	9.34
P value	-	>0.05	<0.05	>0.05	<0.05

3.2. Comparison of quality of life scores

After 3 months after surgery, the quality of life scores of both groups were improved, and the observation group was higher than that of the control group, and the difference was statistically significant (P<0.05) (Table 2).

Table 2. Comparison of quality of life scores between the two groups (Mean ± SD, points)

Group	Cases	Social functions	Mental functions	Physiology functions
Observation group	41	70.10±5.25	70.17±5.30	70.11±5.52
Control group	41	62.64±5.20	62.34±5.25	62.25±5.72
t value	-	6.321	4.436	6.365
P value	-	<0.001	<0.001	<0.001

4. Discussions

After myocardial infarction intervention, patients' cardiac function was impaired, and the recovery process was relatively long and complex, requiring comprehensive nursing interventions to promote their recovery. Cardiac rehabilitation nursing is a nursing model based on multidisciplinary collaboration, covering multiple aspects such as exercise rehabilitation, psychological care, health education, lifestyle guidance, etc. It is of great significance for improving patient prognosis.

The results of this study showed that the LVEF of the observation group patients was higher than that of the control group at 3 months after surgery, and the LVEDD was lower than that of the control group, and the 6-minute

walking distance was longer than that of the control group, indicating that cardiac rehabilitation nursing can effectively improve the cardiac function of patients with myocardial infarction after interventional surgery. Early activity and exercise rehabilitation training can promote the establishment of myocardial collateral circulation, enhance myocardial contractility, improve ventricular remodeling, and thus improve cardiac function. At the same time, exercise training can improve patients' exercise endurance and increase their 6-minute walking distance.

In terms of quality of life, the observation group patients were evaluated for their social, physiological, and psychological functions using the Brief Health Status Survey at 3 months after surgery, and their scores were higher than those of the control group. This is because cardiac rehabilitation nursing alleviates patients' negative emotions and improves their psychological comfort through psychological care. Through health education and lifestyle guidance, patients have developed good habits and improved their self-management abilities. Exercise rehabilitation training helps to restore patients' physical function, improve their daily living activities, and thus comprehensively enhance their quality of life [4–6].

The cardiac function of patients after myocardial infarction intervention is in a damaged state, and the rehabilitation process is a complex and lengthy system engineering that requires comprehensive and multi-level nursing interventions to promote the recovery of cardiac function and improve overall health status. Cardiac rehabilitation nursing, as an innovative nursing model based on multidisciplinary collaboration, integrates various key elements such as exercise rehabilitation, psychological nursing, health education, and lifestyle guidance, and plays an indispensable role in the rehabilitation process of patients after myocardial infarction intervention surgery. It should be noted that during the implementation of cardiac rehabilitation nursing, the cardiac rehabilitation team needs to possess professional knowledge and skills, while closely monitoring individual differences and changes in the patient's condition to ensure the safety and effectiveness of rehabilitation nursing.

In summary, the application effect of cardiac rehabilitation nursing in patients with myocardial infarction after interventional surgery is significant. It can improve patients' cardiac function, enhance their quality of life, reduce the occurrence of cardiovascular adverse events, and is of great significance in promoting patient recovery and improving prognosis. It should be widely applied and promoted in clinical practice.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Yao J, Song JB, Guo YF, et al., 2024, A Study on the Effects of Cardiac Rehabilitation Training on Cardiac Function and Prognosis in Patients with Acute Myocardial Infarction after Percutaneous Coronary Intervention in Cold Regions. Chinese Medicine, 19(11): 1620–1625.

[2] Liu M, 2024, Application Effect of Cardiac Rehabilitation Nursing in Patients after Myocardial Infarction Intervention. Frontiers in Medicine, 14(27): 104–106.

[3] Peng XM, 2024, The Impact of Cardiac Rehabilitation Nursing on Patients with Myocardial Infarction after Interventional Therapy. Chinese Medical Guidelines, 22(21): 22–25.

[4] Bian Y, Feng WW, Liu MF, 2024, The Impact of Early Cardiac Rehabilitation Nursing on Patients with Acute Myocardial Infarction after PCI. Qilu Nursing Journal, 30(14): 106–109.

[5] Hao CY, Liu XL, Yang L, et al., 2024, Study on the Intervention Effect of Early Cardiac Rehabilitation Nursing

Practice Plan on Emergency PCI Patients with Acute Myocardial Infarction. Journal of Modern Integrated Traditional Chinese and Western Medicine, 33(12): 1727–1731.

[6] Ding W, 2024, The Impact of Pathway Guided Cardiac Rehabilitation Nursing on Patients with Acute Myocardial Infarction after PCI. Knowledge of Cardiovascular Disease Prevention and Treatment, 14(9): 86–89 + 93.