Effect of forest model combined with evidence-based nursing on the rehabilitation quality of patients with myocardial infarction after PCI

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Abstract

Aim: To explore the effect of green model combined with evidence-based nursing on the rehabilitation quality of patients with myocardial infarction after PCI. Methods: From June 2018 to June 2019, 100 AMI patients who underwent PCI Treatment in our hospital were selected as the study subjects. According to the random number method, 100 patients were divided into study group and control group, 50 patients in each group. The control group was treated with evidence-based nursing; The research group adopted green model combined with evidence-based nursing. The scores of anxiety and depression (had), self-management behavior after intervention, cardiac function index at 30 days after operation, cardiac rehabilitation quality at 6 months after operation, incidence and satisfaction of adverse cardiovascular events (MACE) within 6 months after operation were compared between the two groups. Results: The had score of the study group was lower than that of the control group (P < 0.001); The incidence of MACE in the study group within 6 months was 6.00%, which was significantly lower than that in the control group (P<0.05); The satisfaction rate of patients in the study group was higher than that in the control group (P<0.05). Conclusion: Green model combined with evidence-based nursing improves the quality of rehabilitation of AMI patients after PCI

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Methods: From June 2018 to June 2019, 100 AMI patients who underwent PCI Treatment in our hospital were selected as the study subjects. According to the random number method, 100 patients were divided into study group and control group, 50 patients in each group. The control group was treated with evidence-based nursing; The research group adopted green model combined with evidence-based nursing. The scores of anxiety and depression (had), self-management behavior after intervention, cardiac function index at 30 days after operation, cardiac rehabilitation quality at 6 months after operation, incidence and satisfaction

of adverse cardiovascular events (MACE) within 6 months after operation were compared between the two groups.

Results: The had score of the study group was lower than that of the control group (P < 0.001); The incidence of MACE in the study group within 6 months was 6.00%, which was significantly lower than that in the control group (P<0.05); The satisfaction rate of patients in the study group was higher than that in the control group (P<0.05).

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Keywords: Green model; Evidence-based nursing; Acute myocardial infarction; Percutaneous coronary intervention

Introduction

Acute myocardial infarction (AMI) refers to the dramatic reduction or interruption of coronary blood supply due to various causes, and the death of myocardial cells due to prolonged myocardial ischemia and hypoxia [1]. Currently, percutaneous coronary intervention (PCI) is commonly used in clinical treatment, which can dilate coronary arteries and improve myocardial ischemia [2-4]. However, due to the rapid onset of AMI, PCI cannot eliminate the risk factors for cardiovascular events, thus affecting the quality of cardiac rehabilitation. In addition, the symptoms of the disease are accompanied by pain, fever and a sense of dying, and the patients are prone to fear, negativity and other adverse psychological conditions [5-6]. Therefore, the establishment of accurate and effective, scientific and efficient nursing measures is crucial to the quality of recovery of AMI patients after PCI treatment. Evidence-based nursing is a nursing model developed by scientific evidence, which has achieved certain results in all departments of the hospital. However, there are still deficiencies in the nursing care of AMI patients undergoing PCI, such as the lack of a framework model for diagnosis and evaluation of patients, which may easily lead to the omission of some factors. Green's model is a kind of model that makes use of the organizational framework of various behavior change theories to formulate behavior intervention strategies. However, there are few reports on its application in the nursing of AMI patients undergoing PCI. Therefore, the purpose of this study is to explore the effect of green model combined with evidence-based nursing on the postoperative rehabilitation quality of AMI patients after PCI, so as to provide references for future research.

Materials and Methods

2.1 general information

A total of 100 AMI patients receiving PCI in our hospital from June 2018 to June 2019 were selected as the study subjects. Inclusion criteria: (1) complete clinical data; Meet the diagnostic criteria of AMI [7]; (3) the first time, and the operation was successful; (4) the patient is conscious and has good communication skills;(5) patients are aware of the research content and sign the informed consent. Exclusion criteria: (1) recent infection or other major diseases of the operation; (2) combined with malignant or tumor, stroke; (3) merger of thinking disorders, mental illness. According to the random number method, 100 patients were divided into study group and control group, with 50 patients in each group, including 29 males and 21 females. The average age was 57.45±8.56 years. Cardiac function classification: I level 10 cases, II 17 cases, III 23 cases. The control group included 31 males and 19 females. The average age was 57.97+-8.65 years. Cardiac function classification: I level 9 cases, II 16 cases, 25 cases III level. There was no statistically significant difference in gender, age and cardiac function classification between the two groups (P > 0.05), as shown in table 1. This study has been approved by the ethics committee of our hospital.

[Insert Table 1]

2.2 methods

The control group was only given evidence-based nursing, specifically as follows: (1) by consulting relevant literature, obtain nursing evidence to summarize and conclude, determine the nursing program. (2) Health

education: health knowledge education was carried out, explain nursing contents, and distribute health manual for patients. (3) Psychological intervention: the onset of AMI and the development of the disease is rapid, accompanied by a sense of pain, dying, patients will be lack of confidence in the treatment, prone to fear, and negative psychological. Nursing staff should carry on its psychological counseling to enhance the patient's confidence, instruct the family to give it more care and promote the patient to actively cooperate with the treatment. (4) Symptom nursing: assess the patient's pain and fever; appropriate analgesic drug intervention used for patients with intolerable pain; appropriate physical cooling used for patients with persistent high temperature, At the same time, nursing staff explain the causes of pain and fever to the patients to eliminate their concerns, and closely observe the patient's condition, monitoring their blood pressure, heart rate, temperature. (5) Diet care: instruct patients to eat more vitamin rich, high calorie food, fast stimulating, greasy food, in order to maintain unobstructed stool. (6) Nursing of complications: after PCI, patients are prone to venous thrombosis, so need to rest in bed [8] and provide appropriate anticoagulant drug intervention, and guide family members to massage the patient's lower limb gastrocnemius muscle, soleus muscle, do passive movement of foot and ankle to reduce venous thrombosis. In addition, after PCI, the patient's micturition pattern changes and emotional tension, which is easy to cause urinary retention? Nursing staff guide the patient to conduct anal exercise, micturition interrupt training, through acupuncture, hot application of the lower abdomen, listening to the sound of running water, flushing perineum and other methods to promote the patient's micturition.

The study group added green model on the basis of the control group, namely green model combined with evidence-based nursing. Specifically, (1) predisposition factors: To understand patients' previous drug use and health status, to assess patients' perioperative health education needs, as well as postoperative cognitive needs, pain needs, psychological needs through interviews with patients and field investigations. On the basis of these predisposition factors and combining with evidence-based nursing, a more suitable nursing plan is developed. (2) Enabling factor: Many aspects such as the health education, nursing knowledge training, health behavior intervention and nursing intervention were implemented. For example, patients with obvious postoperative pain, according to the patients' self-management awareness and knowledge of related pain, to assess the postoperative pain of patients using cold compress method, music method, and self-suggestion method when necessary to give analgesic drug intervention to help patients relieve pain. (3) strengthening factors: for the patients who need to strengthen the postoperative self-training, to strengthen the patients' self-health assessment, or to promote the improvement of their knowledge and practice. The patient's family members are encouraged to supervise the patient's diet and exercise plan. At the same time, patients are also encouraged to pour out their inner anxiety and worry to their families. A group of patients was established in the research group, encourage patients to share their experience and skills, so that other patients can get as much social support as possible.

2.3 Observation indicators

(1) The hospital anxiety and depression scale (HAD) [8] was used to evaluate the negative emotions of the two groups of patients before and after intervention. D stood for depression and A stood for anxiety using the grade 5 scoring method (according to 4, 3, 2, 1, 0), 0~7 means there is no anxiety or depression, 8~10 means at the edge of anxiety or depression, and 11~20 means at the symptoms of anxiety or depression.(2) after the nursing intervention, Self-management behavior scale (CSMS) [9] was used to evaluate way of life and self-management behavior in both groups, the scale including 27 items namely, symptom management (4 items), emergency management (3 items), bad habits (4 items), emotion management (4 items), disease, knowledge management (5 items), life management (4 items), treatment compliance management (3 items). Level 5 scoring was used (4, 3, 2, 1, 0). The higher score means better self-management behavior. (3) Philips IE33 ultrasound was used to evaluate the cardiac function of the patients 30 days after the operation. Left ventricular end-diastolic volume (LVEDV), left ventricular end-systolic volume (LVESV) and left ventricular ejection fraction (LVEF) were recorded respectively. (4) In 6 months after the cardiovascular, patients life quality evaluation questionnaire (CQQC) [10] was used to assess the patient's quality of rehabilitation, the scale contains 24 items in six dimensions, including physical strength (2 items), illness (6 items), medical conditions (2 items), general life (5 items), social psychology (7 items), working conditions (2 items), total

score is 154 points. The higher score indicates that the better quality of rehabilitation.(5) The incidence of adverse cardiovascular events (MACE) was observed in the two groups within 6 months after surgery, MACE mainly included non-fatal recurrent AMI, cardiogenic shock, arrhythmia, heart failure, etc. On the day of the patient's discharge from the hospital, the self-made satisfaction questionnaire was used to evaluate the patient's satisfaction with the nursing work. The total score of the scale was 100 points, among which > 80 was satisfaction, 60 to 80 was general satisfaction and < 60 was dissatisfaction. Total satisfaction rate = (satisfaction + general satisfaction)/total number of cases x100%.

2.4 statistical analysis

Hosted file

`image1.wmf` available at https://authorea.com/users/727046/articles/709139-effect-of-forest-model-combined-with-evidence-based-nursing-on-the-rehabilitation-quality-of-patients-with-myocardial-infarction-after-pci

SPSS19.0 statistical software was used to process the data, in which the measurement data was expressed as mean standard deviation (+-s) and t test was used. The rate of enumeration data (%) was indicated by chi-square (χ^2) test. $P < 0.05$ means the difference is statistically significant.

Results

3.1 comparison of HAD score before and after intervention between the two groups

There was no significant difference in HAD score between the two groups before intervention ($P > 0.05$). After intervention, the HAD score of the study group was significantly lower than that of the control group, and the difference was statistically significant ($P < 0.001$, table 2).

[Insert Table 2]

3.2 comparison of self-management behavior after intervention between the two groups

Symptom management, first aid management, bad habits management, emotion management, disease knowledge management, life management, treatment compliance management and the total score of the self-management behavior after intervention in the study group were all higher than the control group, with statistically significant differences ($P < 0.05$), as shown in table 3.

[Insert Table 3]

3.3 comparison of cardiac function indexes between the two groups 30 days after surgery

The cardiac function index of the study group was significantly better than that of the control group 30 days after the operation, and the difference was statistically significant ($P < 0.05$), as shown in table 4.

[Insert Table 4]

3.4 comparison of cardiac rehabilitation quality scores between the two groups 6 months after surgery

Physical strength, illness, medical status, general life, social psychology, work status and total scores of CQQC in the study group 6 months after the operation were all higher than those in the control group, with statistically significant differences ($P < 0.001$), as shown in table 5.

[Insert Table 5]

3.5 Comparison of MACE incidence in the two groups within 6 months after surgery

The incidence of MACE in the study group within 6 months after the operation was 6.00%, which was significantly lower than that in the control group (20.00%). The difference was statistically significant ($P < 0.05$), as shown in table 6.

[Insert Table 6]

3.6 comparison of satisfaction between the two groups

The nursing satisfaction rate of patients in the study group was significantly higher than that in the control group, and the difference was statistically significant (P < 0.05), as shown in figure 1.

[Insert Figure1]

Discussion and Conclusion

With the improvement of people's living standard, the prevalence of AMI is on the rise, the age of the patients is getting younger and younger, and the complications are more frequent, which has become one of the major diseases threatening human health [11-12]. Therefore, it is very important to implement effective treatment and nursing. Green mode is developed in recent years a health education mode, is based on the multidisciplinary, comprehensive, systematic and effective means of health education, on the basis of the emphasis on the importance of knowledge at the same time, pay more attention to faith behavior change dynamically, thus to provide clinical health education, management, scientific research system, continuous and comprehensive guide.

Green's model firstly starts from the patient's propensity to fully understand the patient's previous bad behavior, previous drug use, health status, psychological status, etc., so as to assess the patient's perioperative health education needs, postoperative cognitive needs, pain needs, psychological needs and other nursing needs. On the basis of these predisposition factors, the nursing plan was developed in combination with previous evidence-based nursing problems and the health education, nursing knowledge training, health behavior intervention, nursing management intervention and many other aspects of nursing implementation. Studies have reported that most AMI patients have fear and tension, among which 94.0% have anxiety and 88.8% have depression [13]. Anxiety and depression stimulate the excitatory function of the sympathetic nerves, increase the heart rate and the oxygen consumption of the heart, and thus lead to cardiac dysfunction [14]. In this study, green model was applied to AMI patients treated with PCI, and the results showed that the anxiety and depression score of the study group was significantly lower than that of the control group, and the cardiac function index was better than that of the control group. Focusing on the early evaluation of patients, understanding of the patient's health status and needs, the implementation of related care, can more thoroughly relieve the negative emotions of patients and indirectly reduce the adverse emotions of sympathetic nerve stimulation. Studies have shown that patients' self-management level is positively correlated with their quality of life [15]. This study also found that the symptom management, first aid management, bad habits management, emotion management, disease knowledge management, disease knowledge management, life management, treatment compliance management and total score of the self-management behavior after intervention in the study group were all higher than the control group, and the recovery quality was higher than the control group. The core of health education is the change of patients' behavior [16-17]. The systematic self-management education of green mode can better and more accurately locate the promoting factors to improve patients' self-management behavior, so that patients can understand the errors in disease management, promote patients to actively participate in treatment, and correct the errors in self-management. Through health education, patients are provided with certain knowledge reserve, which is conducive to the transformation of patients' behaviors, and reduces the impact of diseases on patients' physiology, psychology and society, ultimately improve the quality of patients' generation [18-19]. The systematic strengthening factor of green's model is to enhance the postoperative self-training and self-health assessment of AMI patients and promote their knowledge, faith and behavior. It also encourages family members to supervise patients' diet and exercise plan, and encourages family members to participate in the communication with the cooperation with doctors. With the help of the network platform, the communication between doctors, patients and patients can be promoted [20], so that the fatigue of long-term disease management of patients can be released, which is conducive to the recovery of the disease. The results of this study found that the incidence of MACE after PCI in AMI patients with green's model was significantly lower than that in the control group, and their satisfaction was higher than that in the control group. It indicates that strengthening the level of postoperative self-management can reduce the incidence of MACE and provide patients with satisfaction.

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In summary, green model combined with evidence-based nursing has a greater impact on the postoperative rehabilitation quality of AMI patients after PCI, which can alleviate the negative psychology of patients, improve the level of self-management of patients, promote the quality of life of patients, reduce the incidence of MACE after surgery, and improve the satisfaction of patients. However, due to the limitations of the study conditions and time, the short-term effect of green mode system in self-management of AMI patients after PCI can only be confirmed, but its long-term impact has not been evaluated, which needs to be further confirmed by longer time observation and larger sample size.

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Acknowledgement

Conflicts of interest Statement: Not applicable

Ethics approval:

This study has been approved by the ethics committee of The Fourth Hospital of Hebei Medical University hospital.

Compliance with Ethical Standards

Conflict of interest

The authors declare that they have no conflict of interest.

Human and Animal Rights

This article does not contain any studies with human or animal subjects performed by any of the authors.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Consent to participate: Not applicable

Consent for publication: Not applicable

Availability of data and material:

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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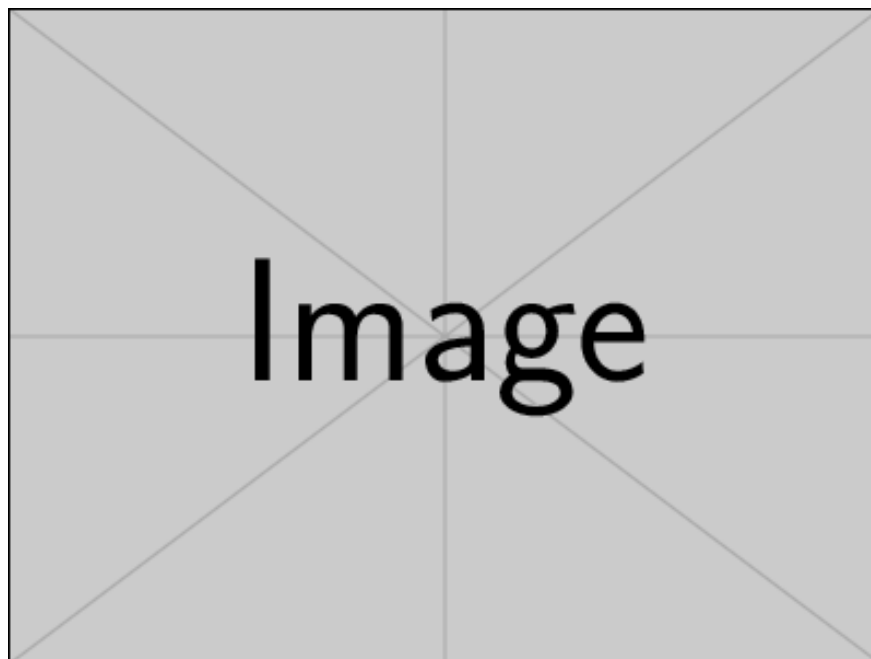
Table

Table 1 comparison of general information between the two groups [n(%),±s]

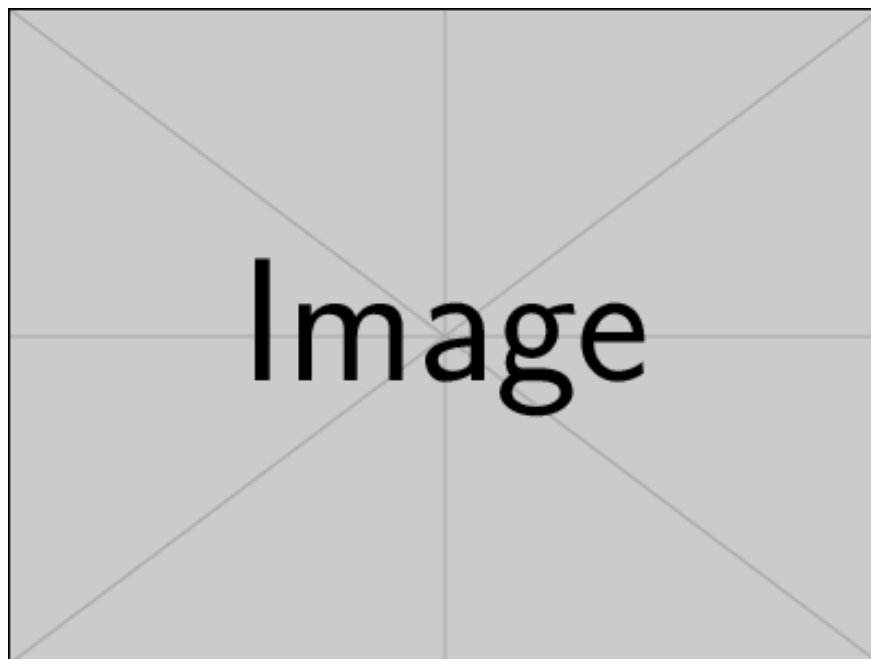| Group	Number	Gender	Gender	Age	Cardiac function classification	Cardiac function classifi...
		Male	Female		Level I	Level II
Observation	50	29(58.00)	21(42.00)	57.45±8.56	10(20.00)	17(34.00)
Control	50	31(62.00)	19(38.00)	57.97±8.65	9(18.00)	16(32.00)
statistical value		χ^2=0.167	χ^2=0.167	t=0.302	χ^2=0.166	χ^2=0.166
P - value		0.683	0.683	0.763	0.920	0.920

Table 2 comparison of HAD scores before and after intervention between the two groups ($\pm$s)

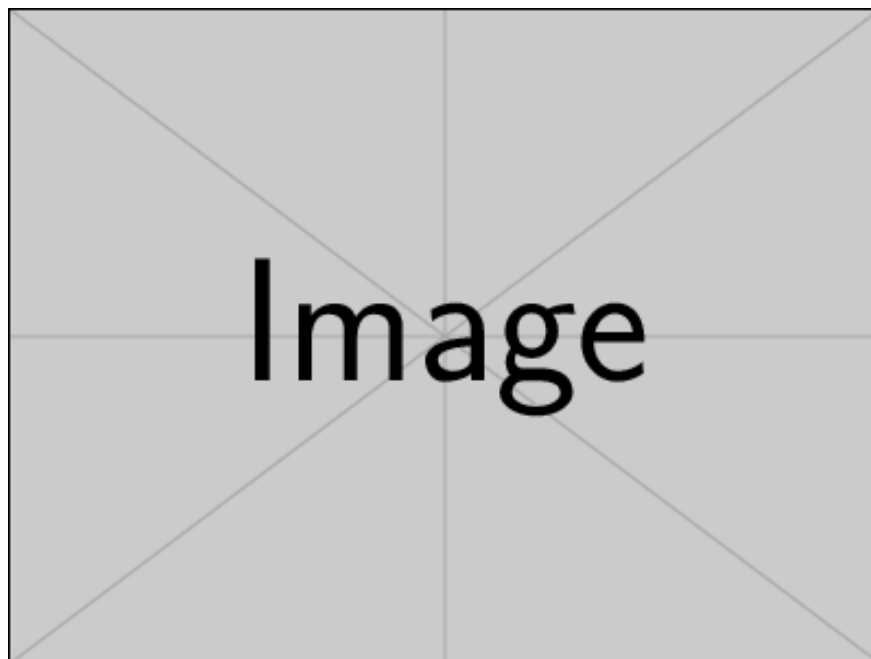| Group	Number	Before	After	t	P
Observation	50	16.74±3.75	10.76±2.24	9.680	¡0.001
Control	50	16.87±3.84	13.89±3.07	4.286	¡0.001
t		0.173	5.824		
P		0.864	¡0.001		

Table 3 comparison of self-management behaviors between the two groups after intervention($\pm$s)

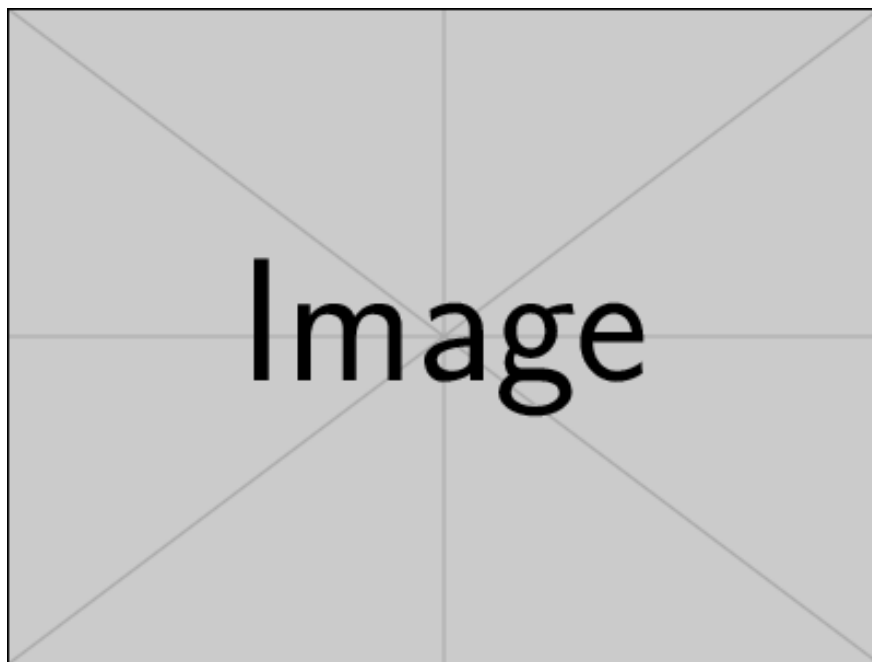| Management	Observation(n=50)	Control(n=50)	t	P
Symptom	15.34$\pm$2.68	13.16$\pm$2.45	4.245	¡0.001
first aid	11.27$\pm$2.05	10.15$\pm$1.72	2.960	0.004
bad habits	10.85$\pm$1.72	9.78$\pm$1.94	2.918	0.004
emotion	10.19$\pm$1.92	9.06$\pm$1.75	3.076	0.003
disease knowledge	14.08$\pm$2.46	12.16$\pm$2.59	3.801	¡0.001
life	13.12$\pm$2.33	11.28$\pm$2.18	4.078	¡0.001
treatment compliance	8.75$\pm$1.69	7.26$\pm$1.43	4.759	¡0.001
Total score	83.60$\pm$6.58	72.85$\pm$5.48	8.77	¡0.001

Table 4 comparison of cardiac function indexes between the two groups at 30d after surgery($\pm$s)

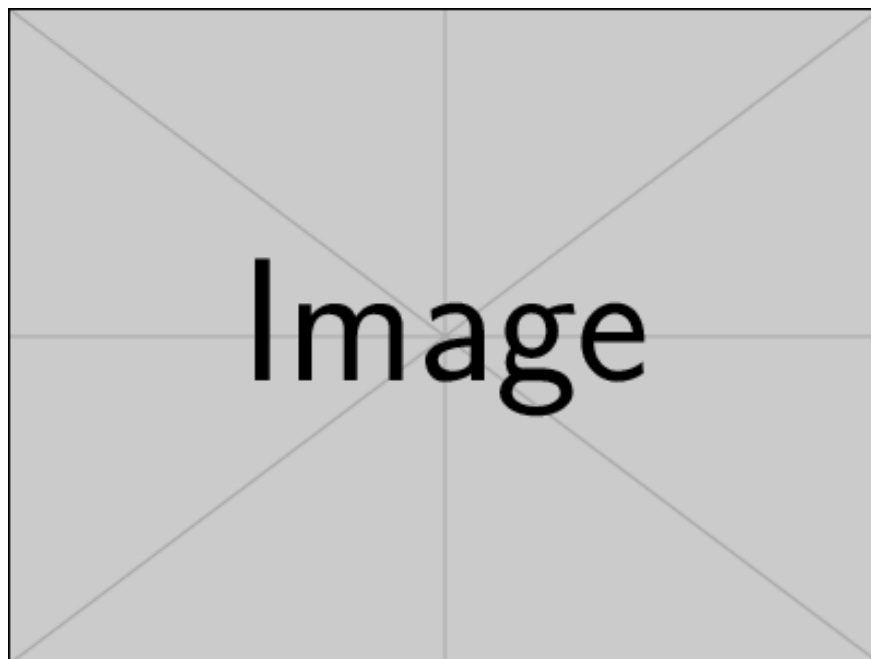| Group	Number	LVEDV(mL)	LVESV(mL)	LVEF(%)
Observation	50	93.72±9.85	50.75±7.34	57.85±6.84
Control	50	104.56±10.67	55.68±8.42	53.57±6.68
t		5.278	3.121	3.165
P		¡0.001	0.002	0.002

Table 5 comparison of cardiac rehabilitation quality scores between the two groups 6 months after surgery($\pm$s)

	Observation(n=50)	Control(n=50)	t	P
Physical strength	52.67±4.23	46.83±5.17	6.129	¡0.001
illness	18.58±1.84	13.74±1.69	13.701	¡0.001
medical status	4.86±0.33	3.28±0.57	16.960	¡0.001
general life	13.59±2.03	8.76±2.15	11.550	¡0.001
social psychology	18.74±2.45	13.23±2.27	11.670	¡0.001
work status	6.74±1.58	4.52±1.17	7.984	¡0.001
total scores	115.18±10.53	90.36±10.17	11.990	¡0.001

Table 6 comparison of MACE incidence in the two groups within 6 months after surgery

[n (%)]

Group	Number	recurrent AMI	cardiogenic shock	arrhythmia	heart failure	Total incidence
Observation	50	0(0.00)	0(0.00)	2(4.00)	1(2.00)	3(6.00)
Control	50	1(2.00)	1(2.00)	5(10.00)	3(6.00)	10(20.00)
χ^2						4.332
P						0.037

Figure 1. comparison of satisfaction rates between the two groups

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