Journal of Clinical and Nursing Research, 2024, Volume 8, Issue 2
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

Analysis of the Effect of Extended Rehabilitation Care at Home on the Psychological Condition and Adherence to Medical Compliance Behavior of Patients with Coronary Heart Disease Combined with Heart Failure

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Abstract: *Objective:* To analyze the effects of providing extended rehabilitation nursing services at home to patients with coronary heart disease (CHD) combined with heart failure (CHF) on psychological improvement and adherence to medical compliance behavior. *Methods:* 79 patients with CHD with CHF admitted to Sijia Town Central Health Hospital, Haimen District, Nantong City, Jiangsu Province, between June 2021 and June 2023 were selected and grouped according to the randomized numerical table method. The control group (39 cases) was provided with conventional nursing care and extended rehabilitation nursing care at home was provided to the observation group (40 cases). The psychological status, adherence to medical behaviors, cardiac function, and complications between both groups were compared. *Results:* The scores of anxieties and depression self-assessment scales (SAS, SDS) of patients in the observation group were lower than those of the control group ($t = 2.954, 3.212$; $P < 0.05$); the compliance of patients in the observation group was higher than that of the control group ($P < 0.05$). The levels of left ventricular ejection fraction, end-systolic and end-diastolic internal diameters (LVEF, LVESD, LVEDD) of patients in the observation group at 58.02 ± 5.34 %, 44.49 ± 5.16 mm, and 49.16 ± 5.76 mm respectively were better than those of the control group after nursing care ($t = 3.205, 3.288, 2.633$; $P < 0.05$); the complication rate of the observation group was lower than that of the control group ($P < 0.05$). *Conclusion:* Extended rehabilitation nursing at home exhibited a psychological regulation effect on CHD with CHF patients, improved their medical compliance, improved cardiac function, reduced the incidence of complications, and had significant application value.

Keywords: Home-based extended rehabilitation nursing; Coronary heart disease; Heart failure; Psychological condition; Compliance with medical behaviors

Online publication: February 26, 2024

1. Introduction

Coronary heart disease (CHD) with heart failure (CHF) can significantly damage the pumping function of the heart, leading to a decrease in cardiac excretion, which in turn affects the normal metabolism of the body. Common symptoms include dyspnea along with the projection of exertional and nocturnal paroxysmal characteristics, which greatly jeopardizes the patient's life and safety [1]. The risk of cardiogenic shock, sudden death, and other adverse events is high, thus increasing economic pressure on the family and aggravating social burdens. Routine nursing care lacks systematic efficiency, does not implement standardized care of patients after discharge, and has a general intervention effect [2]. Patients with CHD with CHF require long-term preventive treatment; therefore, it is necessary to implement extended rehabilitation care after discharge to promote the patient's recovery. Home care is an extension of nursing services from in-hospital to out-of-hospital settings, and the implementation of extended rehabilitation care can accelerate and promote the process of home rehabilitation after hospital discharge [3]. In this study, 79 patients with CHD with CHF admitted to our hospital from June 2021 to June 2023 were selected, and the effects of extended rehabilitation nursing services at home on the patient's psychological status and adherence to medical behaviors were analyzed. The details are as follows.

2. Information and methods

2.1. General information

79 patients with CHD with CHF admitted to Sijia Town Central Health Hospital, Haimen District, Nantong City, Jiangsu Province, during the period from June 2021 to June 2023, were selected for this study and grouped according to the method of randomized numerical table. The observation group consisted of 22 males and 18 females aged 48–90 years old, with an average of 76.89 ± 12.27 years; the duration of the disease ranged from 2–12 years, with an average of 5.77 ± 1.32 years. The control group consisted of 20 males and 19 females aged 50–92 years old, with an average age of 76.93 ± 12.32 years; the duration of the disease ranged from 2–11 years, with an average of 5.76 ± 1.34 years. The baseline information of the two groups of patients was balanced, were comparable, and there were no statistical differences ($P > 0.05$).

2.2. Inclusion and exclusion criteria

Inclusion criteria: (1) Meet the Stable Coronary Heart Disease Primary Diagnosis and Treatment Guidelines (2020) [4] and the 2021 European Society of Cardiology (ESC) Guidelines Interpretation for Acute and Chronic Heart Failure [5]; (2) stable condition and can communicate normally; (3) consented. Exclusion criteria: (1) Presence of severe organ lesions or infectious diseases; (2) tumor patients; (3) presence of hematological diseases.

2.3. Methods

2.3.1. Control group

The control group underwent routine nursing: real-time monitoring of patient blood pressure, heart rate, and other indicators. This was conducive to the timely discovery of anomalies to undertake corresponding interventions. Before the patients were discharged from the hospital, specific methods and precautions in the out-of-hospital rehabilitation treatment were explained to them, and they were instructed to review these rules regularly.

2.3.2. Observation group

The observation group received extended rehabilitation care at home, which covered several aspects: (1) An extended care group was established to strengthen the professional knowledge training of group members (physicians, head nurses, nurses), including the knowledge of CHD with CHF disease, nursing skills, etc. An assessment system was implemented to ensure all personnel were qualified to carry out this program. (2) Pre-discharge rehabilitation education was provided with the help of health manuals, lectures, case studies, and simulation exercises to increase the nurses' knowledge of discharge rehabilitation and improve their relevant skills. (3) The knowledge of CHD with CHF disease and its treatment methods were conveyed to patients and their families with the help of WeChat for joint learning. Communication with family members was strengthened to increase their trust regarding the treatment. The patient's medical compliance was promoted by emphasizing the importance of optimism in accelerating the recovery of the disease, and successful cases of recovery were also shared with the patients. This increases their faith in recovery and helps maintain an ideal psychological and mental condition during home rehabilitation. Patients and their families were also informed to use WeChat for any queries.

2.4. Observation indicators

2.4.1. Psychological status

The anxiety and depression degree before and after 3 months of nursing care of the two groups of patients were assessed by the Self-Assessment Scale for Anxiety (SAS) and the Self-Depression Scale for Depression (SDS). Anxiety assessment criteria: SAS score >50 = "mild," 50–69 = "moderate," ≥ 70 = "severe"; depression assessment criteria: SDS score >53 = "mild," 53–72 = "moderate," ≥ 73 = "severe."

2.4.2. Adherence to medical behavior

The hospital's questionnaire was used to assess the adherence of patients in the two groups in terms of compliance with medication, diet, exercise, self-measurement of blood pressure, and regular review.

2.4.3. Cardiac function

The cardiac color ultrasound was used to determine the changes in the left ventricular ejection fraction, systolic, and end-diastolic internal diameters (LVEF, LVESD, LVEDD) of the two groups of patients before and after 3 months of care.

2.4.4. Complications

The incidence of respiratory infection, pulmonary embolism, and cardiogenic cirrhosis in the two groups was recorded.

2.5. Statistical analysis

Data analysis was carried out using SPSS 27.0 and measurement data were expressed as mean ± standard deviation. Count data was expressed as (n [%]) and compared using the t-test and chi-square (χ^2) test. Results were considered statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of the psychological status of the two groups

As shown in **Table 1**, the comparison of the SAS and SDS scores of the two groups of patients before nursing

showed no statistical significance ($P > 0.05$); after nursing care, the SAS and SDS scores of the patients in the observation group were lower than those of the control group ($P < 0.05$).

Table 1. Comparison of psychological conditions between the two groups (mean ± standard deviation, points)

Group	Case, *n*	SAS score		SDS score	
		Before care	Aftercare	Before care	Aftercare
Observation	40	55.27 ± 5.21	42.18 ± 4.15	61.17 ± 5.95	45.18 ± 4.42
Control	39	55.03 ± 5.28	45.08 ± 4.57	63.02 ± 5.98	48.65 ± 5.16
t	-	0.203	2.954	1.378	3.212
P	-	0.839	0.004	0.172	0.001

3.2. Comparison of adherence to medical compliance behavior between the two groups

As shown in **Table 2**, the adherence to medical compliance behavior of patients in the observation group was higher than that of the control group ($P < 0.05$).

Table 2. Comparison of adherence to medical compliance behavior between the two groups [*n* (%)]

Group	Case, *n*	Medication	Diet	Sport	Blood pressure measurement	Regular review
Observation	40	40 (100.00)	37 (92.50)	36 (90.00)	38 (95.00)	35 (87.50)
Control	39	32 (82.05)	29 (74.35)	28 (71.79)	30 (76.92)	27 (69.23)
χ^2	-	7.877	4.727	4.254	5.383	3.902
P	-	0.005	0.029	0.039	0.020	0.048

3.3. Comparison of cardiac function indexes between the two groups

As shown in **Table 3**, the comparison between the cardiac function of the two groups of patients before nursing showed no statistical significance ($P > 0.05$); after nursing, the cardiac function of the patients in the observation group was better than that of the control group ($P < 0.05$).

Table 3. Comparison of cardiac function indexes between the two groups (mean ± standard deviation)

Group	Cases, *n*	LVEF (%)		LVESD (mm)		LVEDD (mm)	
		Before care	Aftercare	Before care	Aftercare	Before care	Aftercare
Observation	40	44.76 ± 4.75	58.02 ± 5.34	57.03 ± 6.17	44.49 ± 5.16	63.28 ± 6.27	49.16 ± 5.76
Control	39	44.79 ± 4.76	54.27 ± 5.05	57.11 ± 6.22	48.12 ± 4.63	63.19 ± 6.34	52.65 ± 6.02
t	-	0.028	3.205	0.057	3.288	0.063	2.633
P	-	0.977	0.002	0.954	0.001	0.949	0.010

3.4. Comparison of complication rates between the two groups

As shown in **Table 4**, the complication rate of the observation group after nursing was lower than that of the control group ($P < 0.05$).

Table 4. Comparison of complication rates between the two groups [*n* (%)]

Group	Case, *n*	Respiratory tract infections	Pulmonary embolism	Cardiogenic cirrhosis	Total incidence
Observation	40	2 (5.00)	1 (2.50)	0 (0.00)	3 (7.50)
Control	39	5 (12.82)	3 (7.69)	2 (5.13)	10 (25.64)
χ^2	-	-	-	-	4.727
P	-	-	-	-	0.029

4. Discussion

CHF is a clinical syndrome in which CHD and other heart diseases develop during the end stage and is closely related to coronary atherosclerosis and vascular stenosis, as well as high blood viscosity. This disease negatively affects the safety and health of patients, as well as their psychological conditions and treatment outcomes. Recently, the incidence of CHD with CHF has become more common among the younger generation, posing a serious threat to society [6]. Due to the long treatment and rehabilitation time, patients are often burdened by feelings of anxiety and depression, which likely affects the patient's compliance and prognosis during the rehabilitation. Therefore, it is necessary to explore effective nursing measures for the rehabilitation of CHD with CHF patients. Conventional nursing focuses more on the care of patients during hospitalization, but not on post-discharge care, which leads to easy recurrence of the disease and poor prognosis. Extended rehabilitation care at home focuses more on the well-being of the patient after discharge, with family care as the core. Extended rehabilitation care provides home rehabilitation guidance by emphasizing the importance of the patient's and their family's compliance. The concept of humanization is fully embodied in extended care, providing patients with health education and guidance through door-to-door, telephone, micro-letter, and other follow-up methods. This improves the patient's cognitive level, regulates their psychological state, and promotes their early recovery [7,8].

This study suggests that extended rehabilitation care at home has a positive regulating effect on the psychological state of patients. This is because extended rehabilitation nursing establishes a good nurse-patient relationship, giving continuity and nursing service after the patients are discharged from the hospital. By channeling the patient's adverse emotions through health education and psychological interventions, and guiding the family to provide relevant support for home rehabilitation, the patient's confidence in rehabilitation and recovery can be increased [9]. This study showed that the medication compliance of patients in the observation group was 100.00%, dietary compliance of 92.50%, exercise compliance of 90.00%, blood pressure measurement compliance of 95.00%, and regular review compliance of 87.50%. The levels of LVEF, LVESD, and LVEDD after extended rehabilitation care in the observation group were better than those of the control group ($P < 0.05$). It is suggested that extended rehabilitation care at home significantly improves patient compliance with medical behaviors, which is beneficial in improving their cardiac function. This is because nursing staff can instruct the family members on how to effectively use their strengths, increase the knowledge and skills of the family members, and provide patients with correct health guidance to improve the patient's adherence to given medical advice. This study suggests that extended rehabilitation care at home can effectively avoid high-risk factors that induce complications in patients and ensure patient safety. Extended rehabilitation care also pays more attention to the appearance of symptoms before the occurrence of complications, allowing for timely interventions. This is conducive to the subsequent development and implementation of corresponding solutions, which have a significant effect on the prevention of complications [10].

5. Conclusion

The implementation of extended rehabilitation care at home in the treatment of CHD with CHF patients yielded significant results, which achieved the purpose of benign psychological regulation and improved patient adherence to medical behaviors, thus restoring their cardiac function and reducing the incidence of complications.

Disclosure statement

The author declares no conflict of interest.

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