ISSN 2616-5791 Vol. 7, Issue 2: 8-12, DOI: 10.25236/AJMHS.2026.070202

Research on the Application of Transitional Care in Cardiac Rehabilitation of Elderly Patients with Chronic Heart Failure

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Abstract: *To explore the clinical effect of transitional care on cardiac rehabilitation in elderly patients with chronic heart failure (CHF), 102 elderly CHF patients admitted to our hospital from January to December 2025 were randomly divided into an observation group and a control group, with 51 cases in each group. The control group received routine discharge guidance and regular follow-up nursing, while the observation group was given a standardized 3-month transitional care intervention. Cardiac function indicators, self-management ability, and quality of life were compared between the two groups before and after the intervention. After intervention, the observation group showed significantly higher left ventricular ejection fraction (LVEF) and 6-minute walking distance (6MWD), as well as lower levels of N-terminal pro-B-type natriuretic peptide (NT-proBNP) (P<0.05). Meanwhile, the self-management ability score was significantly higher and the Minnesota Living with Heart Failure Questionnaire (MLHFQ) score was significantly lower in the observation group (P<0.05). Transitional care can effectively improve cardiac function, enhance self-management ability, and promote quality of life in elderly patients with CHF, and is worthy of clinical application in cardiac rehabilitation.*

Keywords: *Transitional care; Chronic heart failure; Cardiac rehabilitation; Self-management; Quality of life*

1. Introduction

Chronic heart failure (CHF), the end-stage manifestation of various cardiovascular diseases, is characterized by impaired cardiac pump function and inadequate tissue perfusion[1], and is associated with high prevalence, frequent hospital readmissions, and high mortality[2].In China, the prevalence of CHF among individuals aged ≥65 years ranges from 4.5% to 6.0% and rises with increasing age[3]. Although pharmacological and device-based therapies have improved short-term outcomes[4], many patients achieve suboptimal recovery due to limited access to continuous, structured post-discharge rehabilitation, which leads to poor self-management, discontinued rehabilitation regimens, and subsequent cardiac deterioration or rehospitalization[5]. Cardiac rehabilitation, which comprises exercise training, patient education, psychological support, and behavioral interventions[6], plays a pivotal role in promoting long-term functional recovery. However, its full benefits are often not realized because traditional outpatient follow-up is frequently limited by time, geographical factors, and resource availability, making it less effective for elderly patients, particularly those with mobility impairments or multiple comorbidities[7]. These patients may also face additional challenges such as cognitive decline, social isolation, and insufficient caregiver support, which further reduce treatment adherence. Transitional care, a multidisciplinary approach designed to ensure seamless continuity between hospital and home or community settings, has been shown to enhance outcomes in various chronic disease populations by integrating nursing, medicine, rehabilitation, and social work to address both clinical and psychosocial needs during care transitions[8].Yet, its specific effectiveness in supporting cardiac rehabilitation for older adults with CHF remains under investigated, especially in the context of China's aging population and unique healthcare delivery system. To address this gap, the present study evaluates the application and impact of transitional care in the cardiac rehabilitation of elderly CHF patients, aiming to provide evidence for developing more integrated, patient-centered models of care.

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1.1 General information

A total of 102 elderly CHF patients admitted to our hospital from January 2025 to December 2025 were selected. The inclusion criteria were as follows: meeting the diagnostic criteria specified in the Chinese Guidelines for the Diagnosis and Treatment of Heart Failure (2024)[9]; aged ≥60 years; New York Heart Association (NYHA) cardiac function grade II-III; discharged in a stable condition after treatment; patients and their family members were fully informed and provided written informed consent. The exclusion criteria were as follows: complicated with severe hepatic and renal insufficiency, malignant tumors, cognitive dysfunction, or mental disorders; complicated with acute cardiovascular events such as severe arrhythmia and acute myocardial infarction; unable to cooperate with follow-up and intervention. The patients were divided into an observation group and a control group with 51 cases in each group by the random number table method. In the observation group, there were 30 males and 21 females, aged 60-82 years with an average age of (68.54±6.32) years, the course of disease was 2-10 years with an average of (5.67±2.13) years, and 28 cases were NYHA grade II and 23 cases were grade III. In the control group, there were 28 males and 23 females, aged 61-83 years with an average age of (69.12±6.57) years, the course of disease was 2-11 years with an average of (5.89±2.31) years, and 26 cases were NYHA grade II and 25 cases were grade III. There was no statistically significant difference in general information such as gender, age, disease duration, and NYHA cardiac function grade between the two groups (P>0.05).

1.2 Nursing methods

The control group received routine discharge education and conventional follow-up care. Before discharge, the primary nurse provided routine health education on rational medication use, dietary advice, and precautions for daily activities and rest. In addition, structured telephone follow-up was conducted at 1 and 3 months after discharge. During these calls, the nurse assessed the patients' general condition, addressed any questions or concerns they might have had, and reminded them of scheduled outpatient follow-up appointments, thereby maintaining basic continuity of care.

The observation group received a 3-month transitional care intervention, with the specific measures as follows: (1) Establishment of a specialized nursing team: The team consisted of 2 cardiologists, 3 specialist nurses, 1 rehabilitation therapist and 1 dietitian, all with more than 5 years of relevant clinical experience, who jointly developed and implemented individualized nursing plans for each patient. (2) Formulation of individualized nursing plan: Before discharge, the team evaluated the patient's condition, living habits, psychological state and family support, and formulated an individualized transitional care plan together with the patient and their family members. (3) Implementation of multi-dimensional intervention: Medication management: Knowledge on medication was regularly delivered via WeChat, video calls, and other digital platforms; medication reminders were set, and medication adherence was assessed and intervened on a monthly basis. Symptom monitoring and management: Patients and their family members were guided to monitor body weight, blood pressure, heart rate and symptoms such as edema and shortness of breath, and a 24-hour consultation hotline was established to deal with abnormalities in a timely manner. Rehabilitation training guidance: The rehabilitation therapist formulated individualized exercise prescriptions such as slow walking and Baduanjin, and provided remote guidance and adjustment through video. Diet and lifestyle guidance: The dietitian formulated a low-salt and low-fat diet plan and guided a healthy lifestyle. Psychological and social support: The psychological state of patients was evaluated regularly, emotional counseling was provided, family members were encouraged to participate, and a social support system was constructed. (4) Follow-up schedule: Follow-up was conducted once weekly in the first month after discharge and once every two weeks in the 2nd and 3rd months via telephone, WeChat video calls, or home visits.

1.3 Observation indicators

1.3.1 Cardiac function indices

Left ventricular ejection fraction (LVEF) was measured via color Doppler echocardiography before and after the intervention; 6-minute walking distance (6MWD) was measured by 6-minute walking test; peripheral venous blood was collected to detect the level of N-terminal pro-B-type natriuretic peptide (NT-proBNP) by enzyme-linked immunosorbent assay.

1.3.2 Self-management ability

The self-management ability scale for heart failure patients developed by Shi Xiaoqing et al[10] was

ISSN 2616-5791 Vol. 7, Issue 2: 8-12, DOI: 10.25236/AJMHS.2026.070202

used to assess self-management ability before and after the intervention. The scale included four dimensions: medication management (5 items), symptom management (7 items), diet management (3 items) and psychological and social adaptation management (5 items), with a total of 20 items. Each item was scored from 0 to 4 points, with a total score of 80 points. The higher the score, the stronger the self-management ability.

1.3.3 Quality of life

The Minnesota Living with Heart Failure Questionnaire (MLHFQ) [11] was used to assess quality of life before and after the intervention. This questionnaire consists of 21 items, each scored on a 1–5 Likert scale, with a total possible score of 105; higher scores indicate a poorer quality of life.

1.4 Statistical analysis

SPSS 26.0 statistical software was used for data sorting and analysis. Continuous data with a normal distribution were expressed as mean ± standard deviation ($\bar{x} \pm s$).A paired t-test was used for intragroup comparisons before and after the intervention, and an independent samples t-test was used for intergroup comparisons. $P<0.05$ was considered statistically significant.

2. Results

2.1 Comparison of cardiac function indexes between the two groups before and after intervention

Before intervention, there was no statistically significant difference in LVEF, 6MWD and NT-proBNP levels between the two groups ($P>0.05$). After 3 months of intervention, LVEF and 6MWD of the two groups were significantly higher than those before intervention, and NT-proBNP level was significantly lower than that before intervention, and the improvement of the above indexes in the observation group was better than that in the control group, with statistically significant differences ($P<0.05$), as shown in Table 1.

Table 1: Comparison of cardiac function indexes between the two groups of patients.

group	Example	LVEF (%)		6MWD(m)		NT-proBNP(pg/ml)	
		Before intervention	After the intervention	Before intervention	After the intervention	Before intervention	After the intervention
observation group	51	35.26±4.15	42.89±4.52*	286.35±35.62	352.68±40.15*	1856.32±215.68	985.26±156.35*
control group	51	34.98±4.08	38.15±4.21*	265.89±34.97	301.52±38.64*	1849.65±220.31	1356.89±189.52*
	t	0.342	6.725	0.328	7.892	0.145	19.632
	p	0.733	<0.001	0.743	<0.001	0.885	<0.001

Note: Compared with before intervention, $P<0.05$

2.2 Comparison of self-management ability between the two groups before and after intervention

Before intervention, there was no statistically significant difference in the total score of self-management between the two groups ($P>0.05$). After 3 months of intervention, the total scores of both groups were significantly higher than those before intervention, and the score of the observation group was higher than that of the control group, with a statistically significant difference ($P<0.05$), as shown in Table 2.

Table 2. Comparison of self-management ability scores between the two groups of patients

group	Example	Before intervention	After the intervention	t	p
observation group	51	42.35±5.12	68.79±6.25*	23.581	<0.001
control group	51	41.89±4.98	55.63±5.87*	14.257	<0.001
t		0.372	10.692		
p		0.711	<0.001		

Note: Compared with before intervention, $P<0.05$

ISSN 2616-5791 Vol. 7, Issue 2: 8-12, DOI: 10.25236/AJMHS.2026.070202

2.3 Comparison of quality of life between the two groups before and after intervention

Before intervention, there was no statistically significant difference in MLHFQ score between the two groups (P>0.05). After 3 months of intervention, the MLHFQ scores of both groups were significantly lower than those before intervention, and the improvement of the observation group was better than that of the control group, with a statistically significant difference (P<0.05), as shown in Table 3.

Table 3. Comparison of MLHFQ scores between the two groups of patients

group	Example	Before intervention	After the intervention	t	p
observation group	51	65.24±7.36	32.57±5.89*	28.645	<0.001
control group	51	64.89±7.12	48.36±6.25*	15.782	<0.001
t		0.238	13.596		
p		0.812	<0.001		

Note: Compared with before intervention, P<0.05

3. Discussion

CHF is a common chronic progressive disease in the elderly, and its long-term management relies on patients' disease cognition, adherence to self-management behaviors, and continuous access to medical resources[12]. The conventional discharge nursing model often lacks systematicness and continuity, making it difficult to meet the post-discharge health needs of patients and leading to poor medication adherence, non-standard rehabilitation training, and difficulty in correcting unhealthy living habits, which in turn causes disease recurrence[13]. As a patient-centered nursing model, transitional care emphasizes the seamless nursing connection from hospital to family, and effectively solves the shortcomings of the traditional nursing model by establishing a professional nursing team to provide personalized and all-round continuous nursing services for patients[14].

The results of this study showed that after intervention, the LVEF and 6MWD of the observation group were significantly higher than those of the control group, and the NT-proBNP level was significantly lower than that of the control group, indicating that transitional care can effectively improve the cardiac function of elderly CHF patients. This result is closely related to the systematic intervention of transitional care: standardized medication guidance can significantly improve patients' medication compliance and ensure the therapeutic effect; individualized rehabilitation training plan can effectively improve patients' cardiopulmonary function and exercise tolerance on the premise of safety; continuous symptom monitoring enables early identification and intervention of disease changes, avoiding acute exacerbation, which jointly promote the recovery of cardiac function.

Self-management ability is the core link of CHF rehabilitation. The scores of the observation group in medication management, symptom monitoring, exercise and diet control were all higher than those of the control group, suggesting that transitional care empowers patients in an all-round way through continuous health education, skill training such as symptom identification and weight monitoring, regular follow-up supervision and feedback, and mobilization of family support network. This not only enhances patients' cognition of the disease, but also strengthens their behavioral execution in medication management, diet control, regular exercise and emotional regulation, making them transform from passive treatment recipients to core participants in health management. Studies have shown that daily recording of body weight changes can reduce the risk of readmission in CHF patients[15]. It indicates that transitional care can effectively improve the self-care ability of elderly CHF patients. Through various ways such as health knowledge education, self-care skill training and psychological support, transitional care helps patients and their family members fully understand the relevant knowledge of the disease, master the methods and skills of self-care, enhance the sense of responsibility and confidence of patients in self-care[16], enable patients to actively participate in disease management and form good self-care behaviors.

Quality of life is an important index to evaluate the rehabilitation effect of patients with chronic diseases. The results of this study showed that the MLHFQ score of the observation group was significantly lower than that of the control group after intervention, indicating that transitional care can significantly improve the quality of life of elderly CHF patients and reduce the risk of disease recurrence

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and readmission. Through diet and lifestyle intervention, transitional care helps patients develop healthy living habits and reduce the risk factors inducing disease exacerbation[17]; psychological support measures effectively alleviate patients' negative emotions and improve their psychological state; at the same time, timely disease monitoring and intervention avoid acute exacerbation of the disease and reduce the impact of readmission treatment on patients' quality of life[18].

In summary, transitional care effectively improves cardiac function, self-management, and quality of life in elderly CHF patients through a multidisciplinary team and personalized, continuous support.Thus, transitional care is a valuable clinical intervention strategy for promoting cardiac rehabilitation and improving long-term prognosis in this population, and it warrants wider clinical application.

Acknowledgements

This study was supported by Shaanxi Provincial Science and Technology Program Project (No.2024SF-YBXM-399).

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