

A Study on Quality of Life of Patients with Chronic Heart Failure Under the Guidance of Cognitive Behavioral Intervention in Specialized Rehabilitation Nursing

Guilan Chen

Fifth Affiliated Hospital of Sun Yat-sen University, Zhuhai, Guangdong, 519000, China

ABSTRACT

Objective: To investigate the impact of specialized rehabilitation nursing guided by cognitive behavioral intervention on the quality of life of chronic heart failure patients, providing a reference for optimizing clinical nursing protocols. **Methods:** A total of 32 chronic heart failure patients admitted between January 2024 and March 2025 were selected as research subjects. Using random number table method, they were divided into a control group and an experimental group, with 16 cases in each group. The control group received conventional nursing measures for chronic heart failure, while the experimental group received specialized rehabilitation nursing guided by cognitive behavioral intervention. After intervention, the quality of life scores, cardiac function indicators, and self-care ability scores were compared between the two groups. **Results:** The experimental group demonstrated significantly higher scores in physiological function, psychological state, social function, and material living conditions compared to the control group. Specifically, the average physiological function score (78.5 ± 6.2) vs (65.3 ± 5.8); left ventricular ejection fraction (LVEF) in cardiac function indicators was higher at (45.2 ± 4.1)% vs (38.6 ± 3.9)%; and self-care ability scores were significantly higher at (82.3 ± 7.5) vs (68.9 ± 6.3). All comparisons showed statistically significant differences ($P < 0.05$). **Conclusion:** Specialized rehabilitation nursing guided by cognitive behavioral intervention can effectively improve cardiac function status and enhance self-care abilities in chronic heart failure patients, thereby improving their quality of life. This nursing model holds clinical value and potential for widespread application.

KEYWORDS

Cognitive behavioral intervention; Specialized rehabilitation nursing; Chronic heart failure; Quality of life; Cardiac function

1 Introduction

Chronic heart failure, as the terminal stage of various cardiac diseases, is characterized by prolonged progression and recurrent episodes, causing persistent damage to patients' cardiac structure and function^[1]. As the disease advances, patients not only face physical symptoms like dyspnea and fatigue but also develop negative emotions such as anxiety and depression due to uncertain prognosis and complex treatment processes. These intertwined factors collectively impact patients' daily lives and health status^[2]. In clinical nursing practice, traditional care models primarily focus on symptom control and condition monitoring, while insufficient attention is given to correcting cognitive biases and systematically intervening in behavioral habits. Cognitive behavioral intervention, as a mature psychological intervention technique, has demonstrated practical value in managing chronic diseases by clarifying patients' erroneous cognitions and establishing correct cognitive frameworks to optimize behavioral patterns^[3]. Specialized rehabilitation nursing focuses on disease pathophysiology, developing personalized rehabilitation plans based on individual patient conditions^[4]. Integrating cognitive behavioral intervention with specialized rehabilitation nursing to create a holistic care model combining psychological intervention and physiological rehabilitation holds promise for improving health outcomes in chronic heart failure patients from multiple dimensions^[5]. Given the current nursing needs of chronic heart failure patients and the complementary nature of these two care philosophies, conducting research to explore their impact on patients' quality of life carries significant clinical relevance and practical value.

2 General information and methods

2.1 General information

This study enrolled 32 chronic heart failure patients admitted between January 2024 and March 2025. Using a random number table method, participants were divided into a control group (16 patients) and an experimental group (16 patients). The control group comprised patients aged 45-78 years with an average age of 62.3 ± 7.5 years, including 9 males and 7 females, and a BMI range of 18.5-27.3 kg/m² with an average BMI of 23.1 ± 2.2 kg/m². The experimental group included patients aged 46-79 years with an average age of 63.1 ± 7.3 years, comprising 8 males and 8 females, and a BMI range of 18.7-27.5 kg/m² with an average BMI of 23.3 ± 2.1 kg/m².

Inclusion criteria: Patients must meet the clinical diagnostic criteria for chronic heart failure, confirmed by electrocardiogram (ECG) and echocardiography; have cardiac function graded as Class II to III; have a disease duration

exceeding 6 months; be aged between 45 and 80 years; maintain clear consciousness and be able to cooperate with nursing interventions and evaluation assessments; voluntarily participate in this study and sign an informed consent form.

Exclusion criteria: Patients with severe hepatic or renal dysfunction, malignant tumors, or other organic diseases; those with mental disorders, cognitive impairments, or communication difficulties who cannot participate in the intervention; individuals with acute cardiovascular events (e.g., acute myocardial infarction or severe arrhythmia) within the past 3 months; those with limb dysfunction unable to undergo rehabilitation training; and participants who withdraw from the study or lose contact during follow-up.

2.2 Method

2.2.1 Standard care for the control group

The nursing team provides patients with condition monitoring, medication guidance, daily care, and health education. They regularly track vital signs including heart rate, blood pressure, and respiratory function, while explaining medication dosages, precautions, and usage instructions. The team assists patients with dietary adjustments and personal hygiene, and educates them about chronic heart failure through verbal explanations.

2.2.2 Experimental Group Optimization Management

(1) Cognitive Intervention Module: Nursing staff implement cognitive interventions through one-on-one communication and specialized lectures. To address common misconceptions about chronic heart failure—such as excessive anxiety over prognosis and neglecting medication adherence—nurses use plain language to explain disease mechanisms, treatment plans, and prognostic factors, tailored to patients' educational backgrounds and comprehension levels. Weekly 40-minute lectures are followed by a 15-minute Q&A session to resolve patient concerns. Each patient receives a disease education booklet containing key information, common misconceptions, and correction methods. Nurses regularly review booklet reading progress weekly, providing focused reinforcement on critical content to help patients establish accurate disease understanding and reduce cognitive triggers for negative emotions.

(2) Behavioral Intervention Module: Based on cognitive intervention outcomes, nursing staff develop personalized behavioral intervention plans for patients. For dietary behavior, a low-salt, low-fat, high-protein diet plan is formulated according to the patient's weight, cardiac function classification, and comorbid conditions, with daily salt intake strictly controlled under 5g. Patients are guided to maintain a food diary, with weekly reviews to correct unhealthy eating habits. For exercise behavior, a stepwise exercise program is designed based on the patient's cardiac status. The initial phase focuses on bed-based limb movements and bedside standing exercises, lasting 10-15 minutes twice daily. As the patient's tolerance improves, the intensity and duration are gradually increased, transitioning to activities like slow walking and Tai Chi, each session lasting 20-30 minutes once daily.

(3) Specialized Rehabilitation Nursing Module: The nursing team collaborates with cardiovascular specialists and rehabilitation therapists to develop personalized care plans. During the acute phase, the focus is on stabilizing cardiac function through passive limb exercises to prevent deep vein thrombosis, combined with abdominal breathing training (10 minutes, three times daily) to improve respiratory function. In the stable phase, patients undergo cardiac rehabilitation exercises including seated training, standing exercises, and walking drills to progressively enhance mobility. Symptom management is intensified, with guidance on using semi-recumbent positions and balancing rest with activity to alleviate symptoms like dyspnea and fatigue.

(4) Continuity of Care Module: To ensure the sustainability of intervention outcomes, nursing staff establish comprehensive discharge care records. Before discharge, patients and their families receive discharge instructions detailing dietary guidelines, exercise regimens, medication management, and symptom monitoring protocols. The first telephone follow-up occurs within one week after discharge, followed by monthly calls and bi-monthly home visits. During these follow-ups, healthcare providers assess patients' dietary adherence, exercise compliance, medication adherence, and symptom changes. Cognitive function and behavioral execution are evaluated, with nursing plans adjusted promptly to address identified issues.

2.3 Evaluation Criteria

2.3.1 Quality of Life Assessment

The Global Quality of Life Index (GQOLI-74) was used for evaluation, covering four dimensions: physiological function, psychological state, social function, and material life. Each dimension is scored out of 100, with higher scores indicating better quality of life. Assessments were completed within one week after the intervention.

2.3.2 Cardiac function index evaluation

Cardiac ultrasound was used to assess the patient's left ventricular ejection fraction (LVEF), left ventricular end-diastolic diameter (LVEDD), and left ventricular end-systolic diameter (LVESD). These measurements were performed within one week after intervention to evaluate cardiac function.

2.3.3 Self-care Competence Assessment

The Chronic Heart Failure Self-Care Competence Scale (SCHFI) was used for evaluation, comprising three dimensions: self-care maintenance, self-care management, and self-care confidence, with a total score of 100 points. Higher scores indicate stronger self-care abilities. The assessment was completed within one week after the intervention.

2.4 Statistical methods

The study data were imported into SPSS 26.0 software for statistical analysis. Quantitative data were presented as mean $\pm$ standard deviation ($\bar{x} \pm s$), with independent samples t-test used for inter-group comparisons. Discrete data were expressed as percentages (%), and chi-square test was applied. A $P < 0.05$ was set as the threshold for statistical significance.

3 Results

3.1 Comparison of quality of life scores between two groups of patients

The quality of life scores in all dimensions of the experimental group were higher than those in the control group, and the inter-group differences were statistically significant. See Table 1 for details.

Table 1 Comparison of quality of life scores between the two groups

group	Number of examples	Physiological functions (points)	Mental state (score)	Social function (sub)	Material life (sub)
control group	16	65.3 $\pm$ 5.8	62.5 $\pm$ 6.1	60.2 $\pm$ 5.9	68.3 $\pm$ 6.4
experimental group	16	78.5 $\pm$ 6.2	76.8 $\pm$ 5.7	75.3 $\pm$ 6.2	80.5 $\pm$ 5.8
T		9.194	8.619	8.659	9.178
P		0.000	0.000	0.000	0.000

3.2 Comparison of cardiac function indicators between two groups

The experimental group demonstrated higher left ventricular ejection fraction (LVEF) and lower left ventricular end-diastolic diameter (LVEDD) and end-systolic diameter (LVESD) than the control group, with statistically significant differences between the groups. See Table 2 for details.

Table 2 Comparison of cardiac function indexes between the two groups

group	Number of examples	Left ventricular ejection fraction (%)	End-diastolic diameter of the left ventricle (mm)	End-systolic diameter of left ventricle (mm)
control group	16	38.6 $\pm$ 3.9	65.3 $\pm$ 4.2	52.6 $\pm$ 3.8
experimental group	16	45.2 $\pm$ 4.1	58.5 $\pm$ 3.9	46.3 $\pm$ 3.5
T		8.618	9.359	8.189
P		0.000	0.000	0.000

3.3 Comparison of self-care ability scores between two groups of patients

The scores of self-care ability in all dimensions of the experimental group were higher than those of the control group, and the inter-group differences were statistically significant. Details are shown in Table 3.

Table 3 Comparison of self-care ability scores between the two groups

group	Number of examples	Self-care maintenance (points)	Self-care management (sub)	Self-care confidence (points)
control group	16	65.2 $\pm$ 6.3	63.5 $\pm$ 5.9	70.3 $\pm$ 6.1
experimental group	16	78.6 $\pm$ 5.8	76.3 $\pm$ 6.2	85.2 $\pm$ 5.7
T		9.648	9.184	8.669
P		0.000	0.000	0.000

4 Discussion

Chronic heart failure, a prevalent progressive cardiovascular disorder, is characterized by impaired cardiac pumping capacity that fails to meet metabolic demands, leading to various physical symptoms and functional impairments. The chronic and recurrent nature of this condition not only increases physical strain on patients but also fosters cognitive biases and negative emotions, creating a vicious cycle of "disease-cognition-behavior" that further diminishes quality of life ^[6]. The core objective of clinical nursing is to break this cycle by implementing evidence-based interventions to improve cardiac function and enhance patients' self-management capabilities ^[7].

The specialized rehabilitation nursing framework guided by cognitive behavioral intervention establishes a comprehensive system encompassing "cognitive correction, behavioral shaping, specialized rehabilitation, and sustained maintenance". The cognitive intervention module helps patients objectively understand their condition through targeted education and correction of misconceptions, reducing anxiety and fear caused by cognitive biases while laying psychological groundwork for subsequent behavioral interventions. The behavioral intervention module develops personalized guidelines for diet, exercise, and medication based on individual patient profiles, reinforcing adherence through diary tracking and reminder mechanisms to gradually cultivate healthy habits ^[8]. The specialized rehabilitation nursing module leverages multidisciplinary expertise to create stepwise rehabilitation plans tailored to cardiac function status, progressively enhancing mobility and improving cardiac function while ensuring safety. The sustained care module extends intervention beyond hospital settings to households, maintaining therapeutic effects through follow-up visits and online communication to prevent post-discharge relapses caused by interrupted care.

Empirical analysis demonstrated that patients in the experimental group achieved significantly higher quality-of-life scores across all dimensions compared to the control group, with particularly notable improvements in physiological function and psychological well-being. These findings validate the intervention model's dual value in enhancing both physical performance and mental health. Cardiac function measurements revealed significant increases in Left Ventricular Ejection Fraction (LVEF) and decreases in Left Ventricular End-diastolic Diameter (LVEDD) and Left Ventricular End-systolic Diameter (LVESD) in the experimental group, indicating effective improvements in cardiac structure and pumping capacity. This outcome is closely linked to evidence-based exercise programs and symptom management strategies in specialized rehabilitation care. The improvement in self-care competency scores highlights the synergistic effects of cognitive and behavioral interventions. Patients who developed proper mental frameworks were better equipped to proactively adopt healthy behaviors, thereby elevating their self-management capabilities.

In terms of clinical value, this intervention model features a clear operational process with customizable modules tailored to real-world clinical scenarios, demonstrating strong feasibility and scalability. It not only improves patients' short-term cardiac function and quality of life, but also supports long-term disease management by enhancing self-care capabilities. This approach helps reduce readmission rates and lower healthcare costs.

References

- [1] Mao Yanli, Liu Juanrong. The Application Value of Nursing Interventions Based on IMB Theory in Chronic Heart Failure Patients and Its Impact on Hope Levels [J]. *Clinical Medical Research and Practice*, 2024,9(27):162-165.
- [2] Zhang Yun, Gu Minghui. The Impact of Binary Intervention on Self-Care Capacity and Quality of Life in Chronic Heart Failure Patients [J]. *Journal of Cardiovascular Disease Prevention and Treatment*, 2024,14(17):81-83+87.
- [3] Cai Ruihua, Chen Siping, Gao Jiying. Impact of Precision Nursing Based on the Happiness PERMA Model on Patients with Chronic Heart Failure [J]. *Journal of Cardiovascular Disease Prevention and Treatment*, 2024,14(17):96-98+105.
- [4] Liu Weihua, Lai Huiqi, Zhu Mengting. The Application Effect of High-Quality Nursing Intervention in Patients with Chronic Heart Failure [J]. *China Urban and Rural Enterprise Health*, 2024,39 (09):186-188.
- [5] Cheng Huafeng, Zhou Qiuxia, He Xuemei, Hong Chunfeng. The Impact of Nursing Care on Medical Compliance and Coping Strategies Among Elderly Patients with Chronic Heart Failure on the WeChat Official Health Information Platform [J]. *Primary Healthcare Forum*, 2024,28(25): 97-101.
- [6] Liang Yanping. The Impact of Exercise Rehabilitation Nursing on Motor Function and Daily Living Skills in Patients with Chronic Heart Failure [J]. *Marriage, Childbearing and Health*, 2024,30(16):127-129.
- [7] Liao Wenhua, Wang Xiuping, Zhou Ying. The application of combined warm needle acupuncture and systematic rehabilitation nursing in patients with hypertension and chronic heart failure [J]. *Cardiovascular Disease Prevention and Treatment Knowledge*, 2024, 14(16): 128-130+135.
- [8] Ling Yun. Application Effect of Multidisciplinary Team Nursing in Elderly Patients with Chronic Heart Failure and Hypertension [J]. *Modern Diagnosis and Treatment*, 2024,35(16):2526-2528.