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## Retrospective Study

**Effects of health concept model-based detailed behavioral care on mood and quality of life in elderly patients with chronic heart failure**

Ai-Di Zheng, Li-Li Cai, Jing Xu

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**Abstract****BACKGROUND**

With the intensification of social aging, the susceptibility of the elderly population to diseases has attracted increasing attention, especially chronic heart failure (CHF) that accounts for a large proportion of the elderly.

**AIM**

To evaluate the application value of health concept model-based detailed behavioral care in elderly patients with CHF.

**METHODS**

This study recruited 116 elderly CHF patients admitted from October 2018 to October 2020 and grouped them according to the nursing care that they received. The elderly patients who underwent health concept model-based detailed behavioral care were included in a study group (SG;  $n = 62$ ), and those who underwent routine detailed behavioral nursing intervention were included as a control group (CG;  $n = 54$ ). Patients' negative emotions (NEs), quality of life (QoL), and nutritional status were assessed using the self-rating anxiety/depression scale (SAS/SDS), the Minnesota Living with Heart Failure Questionnaire (MLHFQ), and the Modified Quantitative Subjective Global Assessment (MQSGA) of nutrition, respectively. Differences in rehabilitation efficiency, NEs, cardiac function (CF) indexes, nutritional status, QoL, and nursing satisfaction were comparatively analyzed.

**RESULTS**

A higher response rate was recorded in the SG vs the CG after intervention ( $P < 0.05$ ). After care, the left ventricular ejection fraction was higher while the left ventricular end-diastolic dimension and left ventricular end systolic diameter were lower in the SG compared with the CG ( $P < 0.05$ ). The post-intervention SAS

and SDS scores, as well as MQSGA and MLHFQ scores, were also lower in the SG ( $P < 0.05$ ). The SG was also superior to the CG in the overall nursing satisfaction rate ( $P < 0.05$ ).

## CONCLUSION

Health concept model-based detailed behavioral care has high application value in the nursing care of elderly CHF patients, and it can not only effectively enhance rehabilitation efficiency, but also mitigate patients' NEs and improve their CF and QoL.

**Key Words:** Chronic heart failure; Elderly patients; Health concept model; Detailed behavioral care; Patient mood; Quality of life; Nursing effect

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**Core Tip:** Elderly patients with chronic heart failure (CHF) are prone to negative emotions (NEs) such as depression and anxiety during treatment. Although some drugs can alleviate NEs, they are not conducive to the cardiac function of patients. Therefore, effective means should be explored clinically to improve the mood and quality of life of elderly patients with CHF.

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## INTRODUCTION

Chronic heart failure (CHF) is a clinically common cardiovascular disorder that may cause various complications[1,2]. The disease is difficult to treat with a high death rate, re-hospitalization rate, and bleak prognosis, resulting in great clinical attention to its treatment and nursing care[3]. In the current aging society, CHF patients account for a large proportion of the elderly population[4]. CHF in the elderly is characterized by a long course, multiple underlying comorbidities, and declined self-care ability, bringing huge economic burden to patients' families and society[5]. Elderly CHF patients are also predisposed to negative emotions (NEs) due to their age and unpredictable conditions[6]. Although drugs such as duloxetine can be used to relieve depression and other NEs, they may be disadvantageous to patients' cardiac function (CF)[7,8]. Effective nursing intervention is therefore extremely necessary, which is the key to improving patients' quality of life (QoL) and disease prognosis[9].

Conventional nursing intervention, being single and inflexible, cannot meet the actual needs of elderly CHF patients [10]. Health concept model-based detailed behavioral care, on the other hand, formulates nursing intervention programs through behavioral and social psychology, which encourages patients to take the initiative to adopt healthy behaviors, thus improving the treatment effect[11]. In addition, there is a positive correlation between health beliefs and healthy behaviors. Establishing correct health beliefs allows people to accept persuasion, change unhealthy behaviors, and actively adopt healthy behaviors[12]. At present, the health belief model has been widely used in the health education of various diseases with good effects achieved[13]. Besides, chronic and unremitting symptoms and long treatment process significantly reduces the QoL of CHF patients while causing NEs such as anxiety and depression[14]. Health education can mitigate the NEs of elderly CHF patients and enhance their disease awareness to mitigate their fear of the disease due to insufficient awareness[15].

Based on the above, this study explored the application value of health concept model-based detailed behavioral care in the care of elderly CHF patients.

## MATERIALS AND METHODS

### Patient information

The clinical data of 116 elderly patients with CHF admitted to the Affiliated Hangzhou First People's Hospital Zhejiang University School of Medicine from October 2018 to October 2020 were analyzed retrospectively. Patients who underwent health concept model-based detailed behavioral care were included in a study group (SG;  $n = 62$ , male-female ratio 40:22) and those who underwent routine detailed behavioral nursing intervention were included in a control group (CG;  $n = 54$ , male-female ratio 29:25).

**Eligibility criteria**

The enrolled patients all were aged  $\geq 60$  years, with a confirmed diagnosis of CHF[16], complete clinical data, and active cooperation with treatment. Patients and their families were informed and consented to participate in the study.

Patients with chronic obstructive pulmonary disease, cerebral toxicosis, hyperthyroidism, inability to eat normally, cognitive and consciousness disorders, serious infections, malignant diseases, and limited mobility or those who were otherwise unable to complete all care measures were excluded from the study.

**Nursing methods**

Patients in the CG were intervened by routine detailed behavioral nursing. Following the doctor's advice, patients were instructed to stay in bed or carry out appropriate activities. Besides, their body temperature and pulse were monitored on time until discharge, and their conditions were closely observed.

Patients in the SG received health concept model-based detailed behavioral care. Before carrying out the nursing work, the nursing staff introduced the disease to the elderly patients in detail, and guided them to relax and cooperate with the care. In addition, each patient's condition and physical function were assessed in a timely manner by means of echocardiography and 24-h continuous ECG monitoring, and the corresponding nursing plan was formulated based on the evaluation results. Furthermore, medication management was strengthened. The patient's indicators (*e.g.*, blood pressure and blood lipid) were strictly monitored and controlled within the reference range as far as possible to prevent complications. The emotional status of patients was always concerned during daily care. When they were found to develop NEs, the causes of unhealthy psychological states were analyzed in time, based on which targeted psychological nursing intervention was developed and implemented. During the nursing intervention, patients' bad daily behavioral habits were corrected, and they were guided to keep good hours to reduce the burden on their hearts. In addition, a certain amount of exercise was also ensured, which was realized by developing an appropriate exercise program for each patient to help improve his/her physical fitness and blood circulation. Moreover, a reasonable diet plan was formulated based on the patient's nutritional status and physical function. In the daily diet, patients were advised to take easy-to-digest, crude fiber, and light foods, and avoid oily and high-fat foods.

**Outcome measures**

The rehabilitation of the two groups of patients after nursing was compared. It was considered markedly effective if the patient had CF improvement  $\geq$  grade II, with obviously improved condition. Effective referred to CF improvement  $>$  grade I and alleviation of clinical symptoms. Ineffective corresponded to CF improvement  $<$  grade I, non-improvement, or disease worsening[17]. Overall response rate was calculated as (markedly effective cases + effective cases)/total cases  $\times$  100%.

Alterations in CF indexes [left ventricular ejection fraction (LVEF), left ventricular end-diastolic dimension (LVEDD), and left ventricular end systolic diameter (LVESD)] were compared before and after care.

Assessment of patients' anxiety and depression was performed 7 d after nursing using the self-rating anxiety/depression scale (SAS/SDS)[18]. Both scales have a total score of 100, with the scores in direct proportion to anxious and depressive symptoms.

The Minnesota Living with Heart Failure Questionnaire (MLHFQ)[19], which comprises 3 dimensions and 21 items (8, 5, and 8 items in physical field, emotional field, and other fields, respectively), was used for QoL assessment of elderly CHF patients. The total score is 105 points, and the score is inversely proportional to the patient's QoL. Patients' overall nutritional status was evaluated by the Modified Quantitative Subjective Global Assessment (MQSGA) of nutrition[20], with a total score of 35 points, and the score is inversely proportional to the nutritional status.

Nursing satisfaction was investigated using the self-made nursing satisfaction questionnaire (total score: 100) from the aspects of comfort, health knowledge, working ability, service attitude, and comprehensive level. Patients or their families filled it out according to the actual situation. A score of  $> 90$ , 70-90, and  $< 70$  points was considered as very satisfied, satisfied, and dissatisfied, respectively, and the total satisfaction = very satisfied + satisfied. The overall nursing satisfaction was compared.

**Statistical analysis**

In this study, SPSS 19.0 medical statistical analysis software was used to statistically analyze the collected data, with  $P < 0.05$  regarded as the significance level for all analyses. The chi-square test ( $\chi^2$ ) was performed for counting data expressed as percentages (%). The mean  $\pm$  SD was used to denote quantitative data, which all followed a normal distribution and were analyzed between groups by the independent sample *t* test and between different time points by the paired *t* test.

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**RESULTS**

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**Patients' baseline data**

Comparing patients' baseline data, it was found that the two patient cohorts were comparable in age, sex, course of disease, body mass index, systolic blood pressure, complications (hypertension, diabetes, coronary heart disease, and atrial fibrillation), CF grade[17], and heart rate ( $P > 0.05$ ), as shown in Table 1.

**Comparison of rehabilitation efficacy**

Comparing the rehabilitation effects after intervention, it was found that the total rehabilitation effective rate in the SG

**Table 1 Baseline data**

	Study group (n = 62)	Control group (n = 54)	$\chi^2/t$	P value
Age (years old)	78.16 ± 6.58	77.19 ± 6.94	0.772	0.442
Sex			1.400	0.237
	Male	29 (53.70)		
	Female	25 (46.30)		
Course of disease (years)	5.55 ± 1.34	5.43 ± 1.56	0.446	0.657
BMI (kg/m <sup>2</sup> )	23.71 ± 3.27	23.93 ± 3.11	0.370	0.712
Systolic pressure (mmHg)	147.97 ± 12.45	149.94 ± 14.28	0.794	0.429
Complications				
	Hypertension	14 (25.93)	0.717	0.397
	Diabetes mellitus	10 (18.52)	0.694	0.404
	Coronary heart disease	23 (42.59)	0.204	0.652
	Atrial fibrillation	7 (12.96)	1.296	0.255
Cardiac function grade			2.772	0.250
	II	21 (38.89)		
	III	25 (46.30)		
	IV	8 (14.81)		
Heart rate (beats/min)	80.11 ± 5.24	80.98 ± 5.7	0.856	0.394

BMI: Body mass index.

**Table 2 Rehabilitation efficacy**

	Study group (n = 62)	Control group (n = 54)	$\chi^2$	P value
Markedly effective	38 (61.29)	25 (46.30)		
Effective	21 (33.87)	20 (37.03)		
Ineffective	3 (4.84)	9 (16.67)		
Overall response	59 (95.16)	45 (83.33)	4.354	0.037

was 95.16%, significantly higher than that of the CG (83.33%;  $P < 0.05$ ), as shown in [Table 2](#).

### CF improvement

The observation of patients' CF revealed no evident difference in LVEF, LVEDD, and LVESD between the two groups prior to nursing intervention ( $P > 0.05$ ), while elevated LVEF and decreased LVEDD and LVESD were found in both cohorts post intervention ( $P < 0.05$ ). And in comparison with the CG, LVEF was higher while LVEDD and LVESD were lower in the SG ( $P < 0.05$ ; [Figure 1](#)).

### Relief of patients' NEs

We comparatively analyzed the relief of patients' NEs and found significantly reduced SAS and SDS scores in both cohorts after intervention ( $P < 0.05$ ), with more significant reductions in the SG compared with the CG ( $P < 0.05$ ; [Figure 2](#)).

### Improvement of nutritional status and QoL of patients after nursing

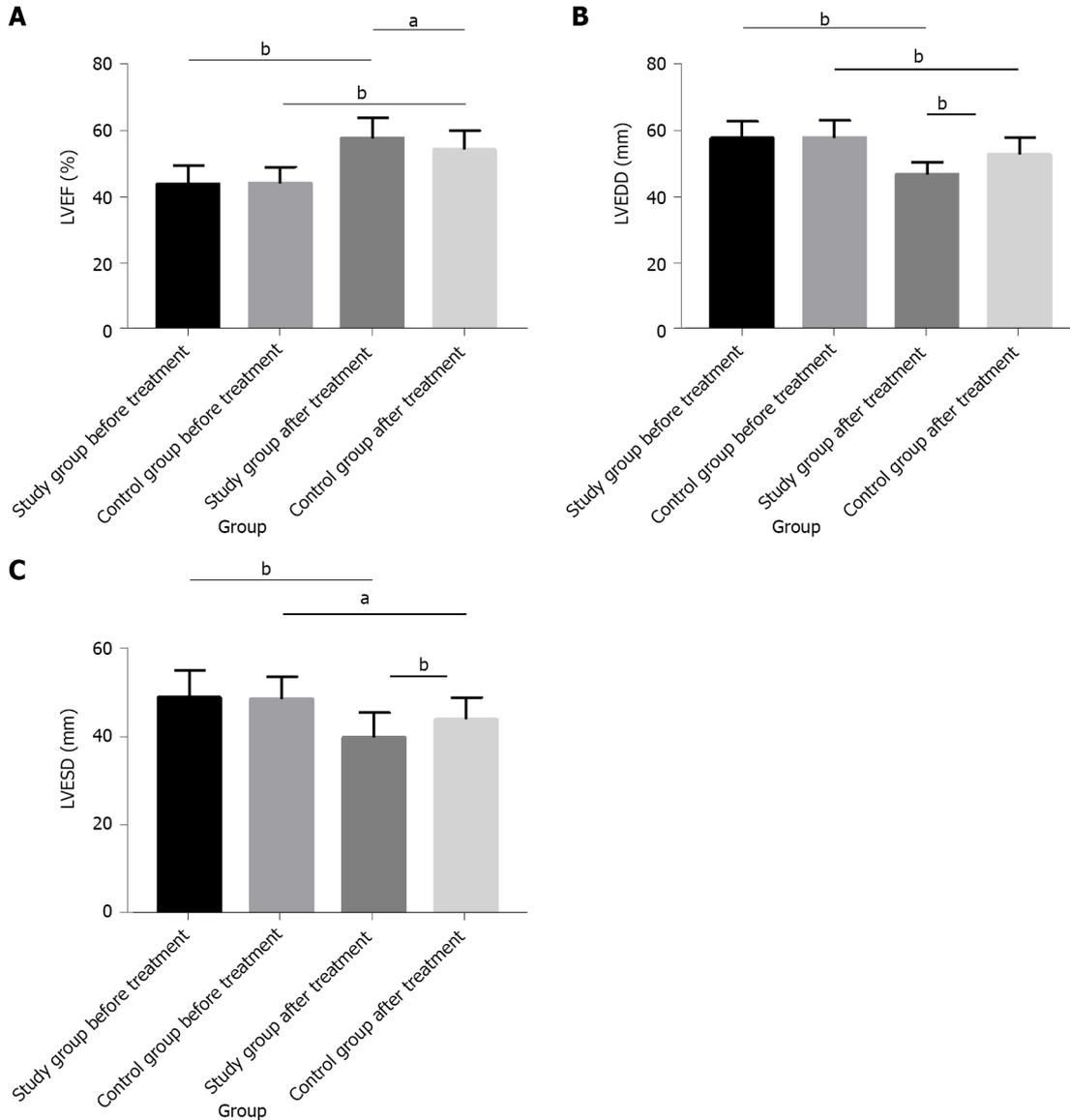
Comparing the MQSGA and MLHFQ scores before and after patient care, it was found that both scores decreased after nursing ( $P < 0.05$ ), with more significant reductions in the SG as compared to the CG ( $P < 0.05$ ; [Figure 3](#)).

### Comparison of patients' nursing satisfaction

Statistics on patient satisfaction revealed a nursing satisfaction of 93.55% in the SG, statistically higher than that of the CG (81.48%;  $P < 0.05$ ; [Table 3](#)).

**Table 3** Nursing satisfaction

	Study group (n = 62)	Control group (n = 54)	$\chi^2$	P value
Very satisfied	35 (56.45)	27 (50.00)		
Satisfied	23 (37.10)	17 (31.48)		
Dissatisfied	4 (6.45)	10 (18.52)		
Total satisfaction	58 (93.55)	44 (81.48)	3.960	0.047

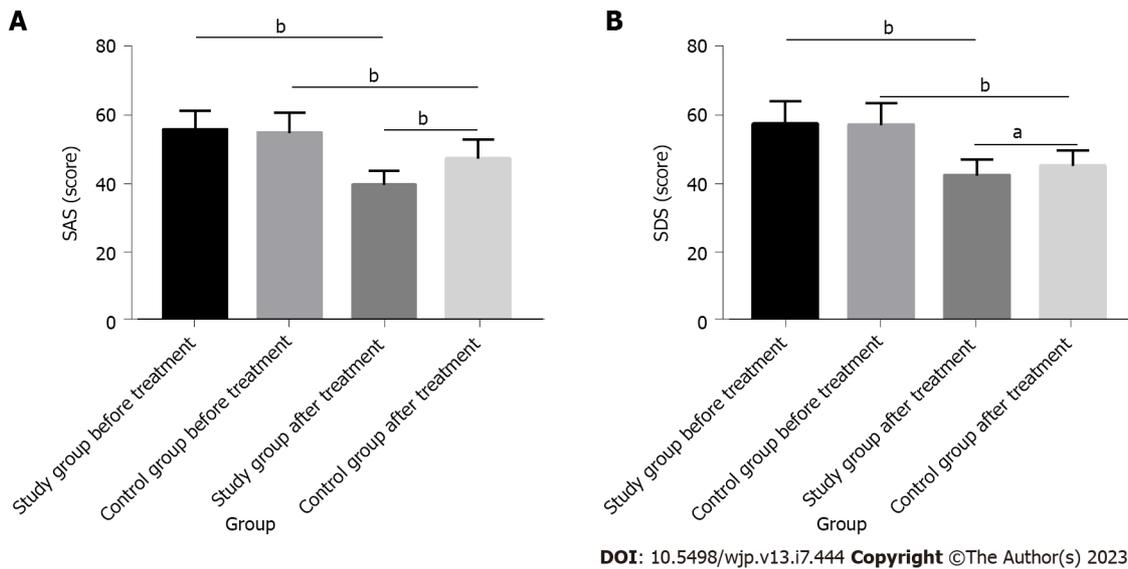


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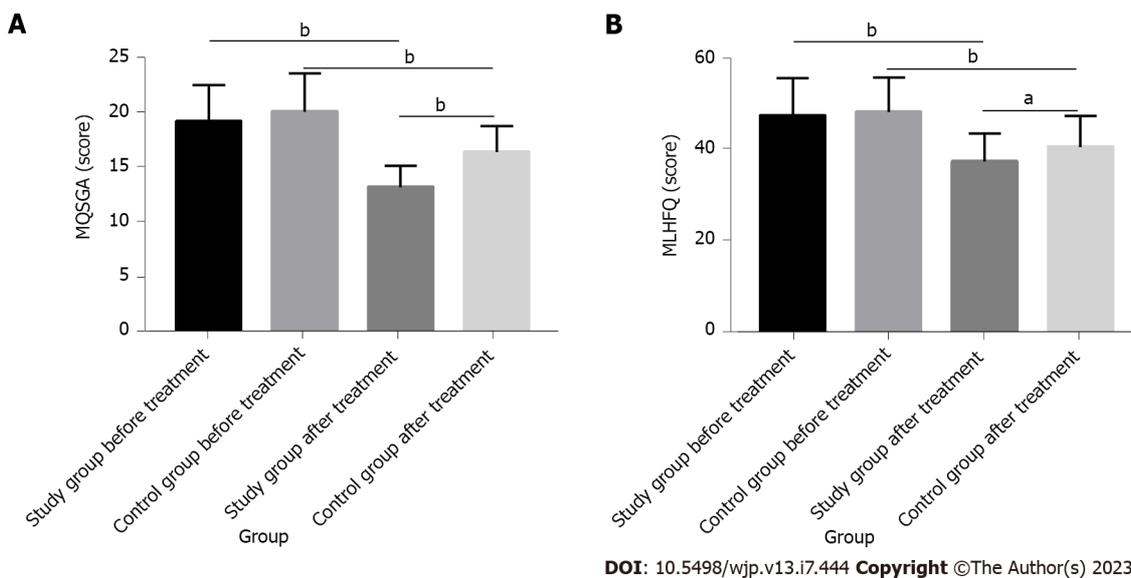
**Figure 1** Comparison of patients' cardiac function. A: After nursing, the left ventricular ejection fraction of patients in both groups were significantly improved, with a higher level in the study group as compared to the control group; B: Left ventricular end diastolic diameter was significantly reduced in both groups after nursing, and was statistically lower in the study group compared with the control group; C: After nursing, left ventricular end systolic diameter in the two groups dropped obviously and was lower in the study group compared with the control group. <sup>a</sup>*P* < 0.01; <sup>b</sup>*P* < 0.001. LVEF: Left ventricular ejection fraction; LVEDD: Left ventricular end diastolic diameter; LVESD: Left ventricular end systolic diameter.

## DISCUSSION

Due to CF abnormalities, CHF patients experience many physiological and psychological problems such as restricted daily activities, disordered sleep patterns, and depression, resulting in the need of care from family members in daily life [21]. However, there may be unsatisfactory nursing effects due to inadequate nursing training of family caregivers, and improper care may adversely impact patients both physically and psychologically. Educational interventions can



**Figure 2 Comparison of patients' negative emotions.** A: After nursing, the self-rating anxiety scale score of both groups of patients dropped markedly and was lower in the study group compared with the control group; B: The self-rating depression scale score decreased statistically in both groups after nursing and was lower in the study group compared with the control group. <sup>a</sup>P < 0.01; <sup>b</sup>P < 0.001. SAS: Self-rating anxiety scale; SDS: Self-rating depression scale.



**Figure 3 Improvement of nutritional status and quality of life of patients.** A: The modified quantitative subjective global assessment score of the two groups dropped statistically after nursing, and was lower in the study group compared with the control group; B: After nursing, the Minnesota living with heart failure questionnaire score of the two groups dropped statistically and was lower in the study group compared with the control group. <sup>a</sup>P < 0.01; <sup>b</sup>P < 0.001. MQSGA: Modified quantitative subjective global assessment; MLHFQ: Minnesota living with heart failure questionnaire.

effectively improve people's awareness of various health issues, thus affecting patients' detailed behaviors. In recent years, an increasing number of researchers have devoted themselves to exploring a better nursing intervention model for CHF. For example, Taniguchi *et al*[22] adopted a self-monitoring outpatient care model for CHF patients, and Jin *et al*[23] suggested cluster care in their study[22,23].

This study put forward the view that health concept model-based detailed behavioral care can better promote the rehabilitation of elderly CHF patients and improve their CF than the routine one. Previous studies have also shown that interventions based on the health concept model can accelerate recovery from chronic diseases[24]. In addition, under the health concept model-based detailed behavioral care, appropriate exercise programs will be developed for patients, with the exercise intensity gradually increased according to the patient's tolerance, thus facilitating patient recovery. It has been shown that CF recovery in heart failure patients is accelerated with increasing intensity of exercise training. However, too much exercise in a short period of time will lead to poor exercise experience, reduced comfort, and increased NEs, which cannot motivate patients' treatment and compliance[25,26]. Therefore, we increased the amount of exercise step by step to play a better role in rehabilitation.

Middle-aged and aged people are more susceptible to coronary heart disease as their physical fitness will be partially degraded with age, which will affect their physical resistance and psychological status, reducing their QoL[27]. The detailed behavior nursing based on the health concept model can mitigate patients' NEs while enhancing their nutritional status and QoL. The introduction of a more nutritious diet into daily life, coupled with effective rehabilitation, resulted in significant improvements in the patient's nutritional status, QoL, and NEs. Li *et al*[28] mentioned in their study that intervention based on the health concept model can effectively improve the self-management ability of patients and enhance their professional knowledge during the intervention process, contributing to enhanced confidence in treatment and better QoL, which is similar to our research. In addition, detailed nursing can reflect the quality of care services. Nursing disputes arising from nursing defects, errors, and accidents should be effectively avoided during clinical treatment and nursing care. Meanwhile, ward inspections should be strengthened during treatment, so as to ensure nursing safety, enhance nursing service quality, and improve patient satisfaction[29,30]. In our research, health concept model-based detailed behavioral care also significantly outperformed conventional detailed behavioral nursing in terms of patient satisfaction, consistent with the satisfaction results of Smeulders *et al*[31] on patients with heart failure.

The novelty of this study lies in the comparative analysis of the clinical differences in the rehabilitation effect, CF, SAS, SDS, nutritional status, QoL, and nursing satisfaction between health concept model-based detailed behavioral care and routine detailed behavioral nursing in elderly CHF patients. However, this study also has some limitations. CHF is a long-term condition, but patient outcomes have not been explored in this study, resulting in little understanding of the impact of this care model on patient prognosis. Second, we only included patients aged over 60 years, since the elderly were the main patient group of CHF. However, it is still unclear whether our intervention methods are also applicable to those younger than 60 years, which needs to be explored by re-incorporating samples in subsequent studies.

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## CONCLUSION

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In conclusion, health concept model-based detailed behavioral care has high application value in elderly CHF patients, which can improve patients' rehabilitation efficiency, significantly mitigate NEs, and enhance their CF and QoL.

## ARTICLE HIGHLIGHTS

### **Research background**

Chronic heart failure (CHF), a clinical condition that affects a large proportion of the elderly population, is characterized by a long course of disease, many complications, and decreased self-care ability, often bringing a huge economic burden to the families of patients and society.

### **Research motivation**

To help people understand CHF in the elderly and provide reference for the clinical optimization of this disease.

### **Research objectives**

To evaluate the application value of health concept model-based detailed behavioral care in elderly patients with CHF.

### **Research methods**

Sixty-two cases of CHF who underwent health concept model-based detailed behavioral care were included in a study group, and patients' rehabilitation efficiency, negative emotions (NEs), cardiac function (CF) parameters, nutritional status, quality of life (QoL), and nursing satisfaction were recorded. In addition, 54 cases who underwent routine detailed behavioral care were included in a control group (CG) for analysis.

### **Research results**

The rehabilitation efficiency and CF parameters of the study group were significantly improved after intervention. In addition, more significant alleviation in NEs and improvement in QoL were recorded in the study group as compared to the CG. A higher degree of overall nursing satisfaction was also noted in the research group.

### **Research conclusions**

Health concept model-based detailed behavioral care has high application value in elderly patients with CHF, which can improve patients' rehabilitation efficiency, significantly relieve NEs, and enhance their CF and QoL.

### **Research perspectives**

This study discusses the application value of health concept model-based detailed behavioral care in the nursing of elderly CHF patients, and focuses on patients' NEs and QoL, hoping to provide some references for improving the clinical care of such patients.

## FOOTNOTES

**Author contributions:** Zheng AD and Xu J carried out the studies, and conceived and designed the study; Zheng AD and Cai LL performed the analyses and collected the data; Zheng AD drafted the manuscript; all authors approved the final manuscript submitted.

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