

Original Article

Influence of targeted motivational interviewing on self-care level and prognosis during nursing care of chronic heart failure

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Abstract: Objective: To analyze the effects of targeted motivational interviewing (TMI) during the nursing care for chronic heart failure (CHF). Methods: A total of 93 patients with CHF admitted to our hospital were selected as study subjects, and were divided into Group A (n=47) and Group B (n=46) in accordance with a randomized double-blind method. Group A was treated with TMI, while Group B was treated with the conventional nursing care for heart failure (HF). The self-care levels (self-care of heart failure index), medication compliance (Morisky's medication compliance scale), quality of life (Minnesota Living with Heart Failure Questionnaire), and prognosis (the readmission and mortality rates) were compared between the 2 groups. Results: After nursing care, patients in Group A were higher than those in Group B in their scores of self-care maintenance, management and confidence, medication frequency, time, dose, and type as instructed by the physician, and drug withdrawal or discontinuation of drugs, and forgetting medication, and body, emotion, and other fields ($P < 0.05$). Group A was superior to Group B in the rates of medication compliance and medication non-compliance (61.70% and 6.38% vs. 41.30% and 23.91%, $P < 0.05$); rate of hospital readmission (6.38% vs. 23.91%, $P < 0.05$), and mortality rate (0% vs. 6.52%, $P > 0.05$). Conclusion: TMI is conducive to improving the self-care level, medication compliance, quality of life, and prognosis in patients with CHF.

Keywords: Targeted motivational interviewing, chronic heart failure, nursing, self-care level, prognosis, influence

Introduction

Chronic heart failure (CHF) is a serious public health concern worldwide. Globally, 1%-2% of patients suffer from CHF. CHF can lead to a significant decrease in quality of life and even a severe reduction or complete loss of labor ability. In addition, CHF, a chronic disease consumes many medical resources and puts a heavy burden on the lives of the patients' families and society [1].

Regarding the treatment of CHF, it is necessary to monitor the condition, provide necessary guidance on diet and exercise, and conduct behavior management and emotional intervention. An investigation shows that CHF is very common in middle-aged and elderly people, especially in the elderly. A low educational level, a large proportion of rural population, and

low awareness of disease, lead to a low self-care level [2]. An investigation into self-care ability of patients with CHF reveals that a low self-care ability is characterized by low medication compliance, poor recognition ability of improvement of conditions, inability to insist on water deprivation, and inability to insist on measuring body mass [3]. A comparative study shows that active self-care intervention can significantly elevate the self-care level of patients with CHF [4]. A study suggests that self-care ability is closely related to patients' symptoms and quality of life, and a high self-care ability can help improve the symptoms and quality of life of patients with CHF [5]. Motivational interviewing (MI) is a novel patient-oriented nursing intervention that aims to enhance the motivation to change the internal behaviors of patients by identifying and elimi-

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nating their contradictory psychologies [6]. MI exhibits satisfactory effects on chronic pain, diabetes, coronary heart disease, and chronic obstructive pulmonary disease (COPD) [7, 8].

However, MI has been introduced late in China, and has not been extensively implemented. Therefore, the effective implementation of MI is suitable for elderly patients and patients with low recognition ability and poor understanding. Based on the concept and conventional content of MI and the actual conditions and previous nursing care of patients with CHF admitted to our hospital, this study proposes targeted motivational interviewing (TMI), aiming to explore the implementation value of TMI during nursing care of CHF by selecting 93 patients with CHF as the study subjects.

Materials and methods

Clinical data

A total of 93 patients with CHF admitted to our hospital from January 2018 to December 2019 were selected as study subjects, and were divided into Group A (n=47) and Group B (n=46) in accordance with a randomized double-blind method. Group A was treated with TMI, while Group B was treated with the conventional nursing care for heart failure (HF).

Inclusion criteria: patients in line with the diagnostic criteria for CHF in the diagnosis and treatment guidelines [9]; aged > 18 years; the course of disease was over 3 months; with New York Heart Association (NYHA) class II-III cardiac function [10] prior to participating in the study; normal communication and a clear understanding ability. All patients signed an informed consent form. The study has been reviewed and approved by the Hospital Ethics Committee.

Exclusion criteria: patients who also had other serious physical diseases; patients with history of cardiac transplantation; patients with acute heart failure; patients with mental illness; patients with cognitive dysfunction; patients loss of self-care ability; patients who had malignant tumor.

Methods

Group B was treated with the conventional nursing care for heart failure. During the hospi-

tal stay, the primary nurse distributed medication instruction manuals and health knowledge manuals to patients. During the out-of-hospital period, they kept in touch with patients by WeChat 1-2 time (s) each month, and patients were instructed to maintain a correct lifestyle and follow the correct medication instructions.

Group A was treated with TMI combined with conventional nursing.

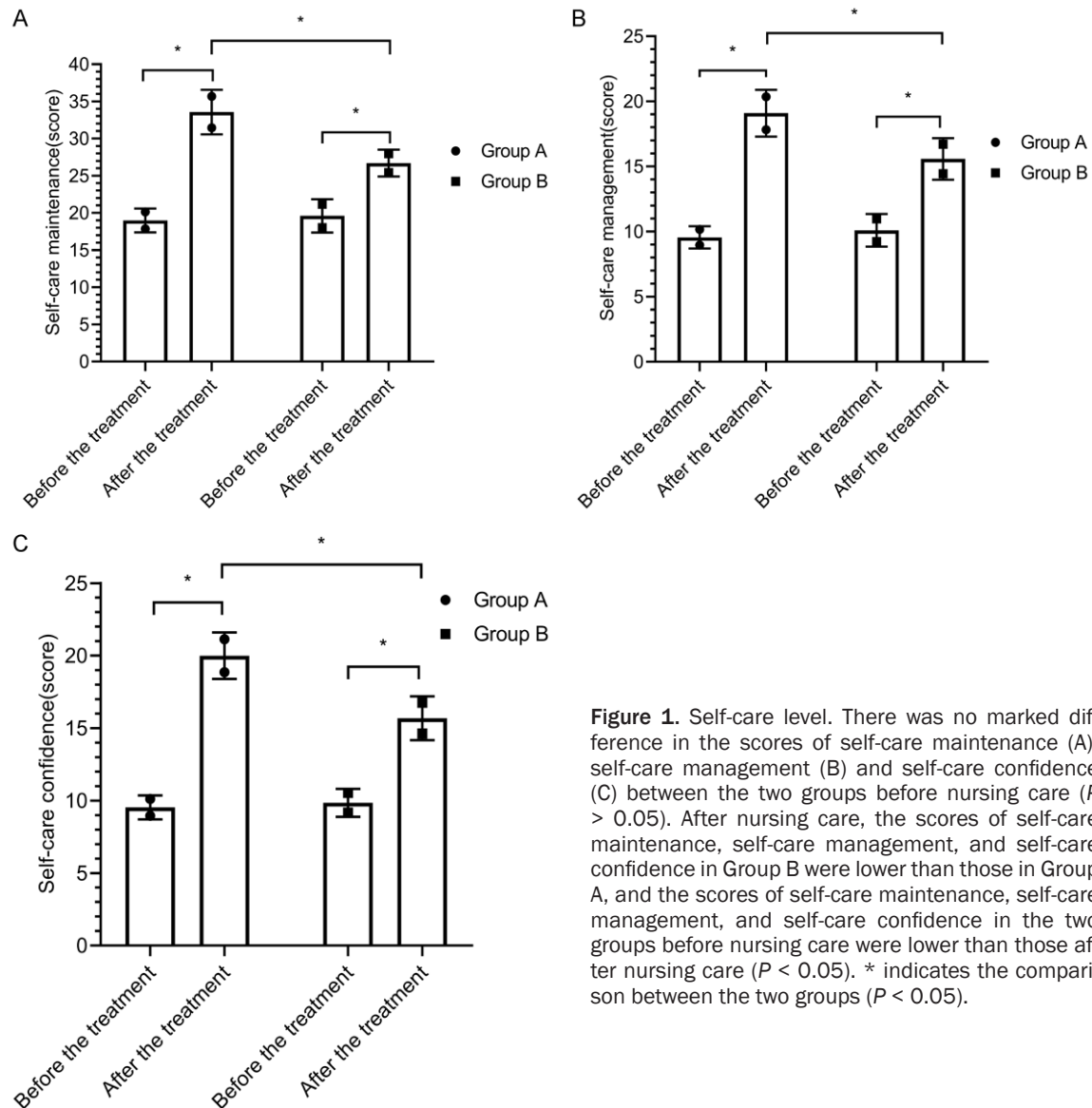
The first MI: It was performed on day 2 after hospital admission of patients to build a nurse-patient relationship of mutual trust and help understand the challenges faced by patients in the treatment of the diseases. During the conversation, the questions raised by the nurse included: What was the initial onset time? What were the symptoms and manifestations? What treatment did you receive at that time? Were there any challenges during treatment and during the rehabilitation process? Can you specify the challenges? Have you implemented any actions to tackle the challenges you raised previously? Have the actions you implemented actually handled the challenges facing you? Are the actions still being implemented? Can you describe your daily life and lifestyle? We can dig deep into these issues together. During the communication, the patients were guided to make an exposition without a subjective assessment. According to the explanations of the patients, their psychologic state and self-care behaviors were evaluated, and the patients were informed of the evaluation results, and a time for the next interview was agreed.

The second MI: This was performed on day 7 after hospital admission of patients. In this interview, the nurse encouraged the patients to raise the issues identified during the treatment and the challenges encountered during the improvement of bad behaviors, and guided the patients to seek solutions. Possible questions: What is your view on the evaluation results obtained in the last interview? Do you think the assessed issues are the issues that you are facing and awaiting to be tackled? What adverse behaviors do you think may affect your conditions? If you are ready to change these adverse behaviors, what are your preparations and concerns? What efforts are you going to make to change these adverse behaviors? What is your ideal state after

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Table 1. Comparison of general data between the two groups ($\bar{x} \pm s$)/[n (%)]

General data		Group A (n=47)	Group B (n=46)	t/ χ^2	P
Gender	Male	27 (57.45)	25 (54.35)	0.091	0.763
	Female	20 (42.55)	21 (45.65)		
Age (years)		56.86 \pm 13.18	58.94 \pm 15.21	0.705	0.483
BMI (kg/m ²)		22.13 \pm 2.19	23.04 \pm 2.32	1.946	0.055
Course of disease (years)		3.61 \pm 1.86	3.71 \pm 1.69	0.271	0.797
NYHA classification	Class II	23 (48.94)	26 (56.52)	0.537	0.464
	Class III	24 (51.06)	20 (43.48)		
Underlying etiology	Coronary heart disease	21 (44.68)	20 (43.48)	0.629	0.372
	Valvular heart disease	18 (38.30)	16 (34.78)		
	Respiratory failure	7 (14.89)	8 (17.39)		
	Others	1 (2.13)	2 (4.35)		



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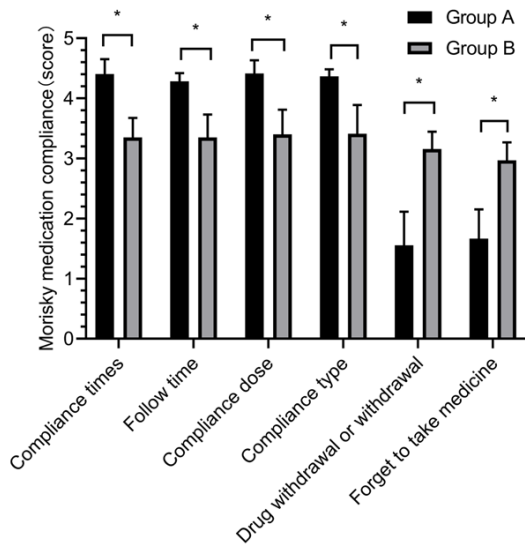


Figure 2. Medication compliance. At 1 month after discharge, the scores of medication frequency, time, dose, and type as instructed by the physician, and drug withdrawal or discontinuation of drugs, and forgetting medication in Group A were higher than those in Group B ($P < 0.05$). The scores of drug withdrawal or discontinuation of drugs, and forgetting medication in Group A were lower than those in Group B ($P < 0.05$). * indicates a comparison between the two groups ($P < 0.05$).

improvement of your behaviors? The questions and guided thinking made the patients have an understanding of the outcomes for adverse behaviors and improvement of such adverse behaviors. The nurse made no judgment on the patients' explanations, maintained an objective attitude, and showed understanding and respect, so as to ensure that the patients were willing to share their thoughts.

The third MI: This was performed on day 15 after hospital admission of patients. Based on the first two MIs, this interview was conducted so that the nurse could guide the patients and formulate a plan for improvement of adverse behaviors together with the patients, and inform the patients of the specific implementation methods and precautions in the plan. The specific follow-up plans were formulated after discharge, and the patients were informed of all plans in advance so that they had a psychologic preparation. After formulation of the plan, the nurse told the patients to set an achievable goal rather than a goal that the nurse thought patients should achieve. Upon the determination of the plan and goal, they

were written on paper for patients' reference at home.

Observational indices

General data: gender, age, body mass index (BMI), course of disease, cardiac function, and educational level were statistically compared between the two groups.

Self-care level: changes in self-care level in the two groups were evaluated using self-care of heart failure index (SCHFI) [11] before and after nursing care. SCHFI comprises 3 subscales and 22 items, including self-care maintenance (10 items scored by 1-4 points), self-care management (6 items scored by 0-4 points), and self-care confidence (6 items scored by 1-4 points). The sum of the score of each item is the total score of the subscale. A higher score indicated a higher self-care level.

Medication compliance: the medication compliance of patients in the past 1 month was evaluated using Morisky's medication compliance scale [12], including: medication frequency, time, dose, and type as instructed by the physician, and drug withdrawal or discontinuation of drugs, and forgetting medication. A scoring system of 1-5 points was adopted. The first four items were scored positively, while the latter two items were scored reversely. The total score was 6-30 points, with 30 points indicating complete compliance with medication, 25-29 points indicating basic compliance with medication, and < 25 points indicating non-compliance. The patients were evaluated at 1 month after discharge.

Quality of life: the changes of quality of life were evaluated using Minnesota Living with Heart Failure Questionnaire (MLHFQ) [13] before and after nursing care. The scale consists of 21 items, including 8 items for body, 5 items for emotion, and 8 items for other fields. Each item was scored by 1-5 point (s). A higher score indicates a higher quality.

Prognosis: the two groups were followed up for 1 year after the first discharge, and the readmission and mortality rates were compared between the two groups within 1 year after discharge. Re-admission criteria: the readmission was required as a result of the recurrence of heart failure after the discharge criteria were met.

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Table 2. Comparison of degrees of medication compliance between the 2 groups [n (%)]

Group	Complete compliance	Basic compliance	Non-compliance
Group A (n=47)	29 (61.70)	15 (31.91)	3 (6.38)
Group B (n=46)	19 (41.30)	16 (34.78)	11 (23.91)
χ^2	3.873	0.086	4.300
<i>P</i>	0.049	0.769	0.038

Statistical methods

SPSS23.0 was used for statistical analysis. The enumerated data were expressed as [n (%)], and detected using a χ^2 test. The measured data were expressed as ($\bar{x} \pm s$), and detected using t test. The multi-point comparison was performed using analysis of variance (ANVOA), and detected using *F* test. The graphs were plotted using Graphpad Prism 8. *P* < 0.05 indicated significance.

Results

General data

There was no statistically significant difference in gender, average age, BMI, ratio of cardiac function Class II to Class III, and underlying etiology between the two groups (*P* > 0.05) (**Table 1**).

TMI improved self-care level

There was no significant difference in scores of self-care maintenance, management, and confidence between the two groups before nursing care (*P* > 0.05). After nursing care, the scores of self-care maintenance, management, and confidence in the two groups were higher than those before nursing care (*P* < 0.05), and the scores in Group A were higher than those in Group B after nursing care (*P* < 0.05) (**Figure 1**).

TMI improved medication compliance

At 1 month after the first discharge, Group A had higher scores of medication frequency, time, dose, and type as instructed by their physician, and drug withdrawal or discontinuation of drugs, and forgetting medication than Group B (*P* < 0.05) (**Figure 2**). Compared with Group B, Group A had a higher complete compliance rate (61.70% vs. 41.30%) and a lower non-compliance rate (6.38% vs. 23.91%, *P* <

0.05). There was no significant difference in the basic compliance rate (31.91% vs. 34.78%) between Groups A and B (*P* > 0.05) (**Table 2**).

TMI improved quality of life

There was no difference in scores of body, emotions, and other fields between Groups A and B (*P* > 0.05). After nursing care, the scores of body, emotions, and other fields in the two groups were higher than those before nursing care, and the scores in Group A were higher than those in Group B (*P* < 0.05) (**Figure 3**).

TMI improved prognosis

In Group A, 3 patients were readmitted within 1 year after the first discharge and no death was found, while in Group B, 11 patients were readmitted within 1 year after the first discharge, and there were 3 deaths. The readmission rate in Group A was lower than that in Group B, showing a significant difference (*P* < 0.05), while the mortality rate in Group A was slightly lower than that in Group B, showing an insignificant difference (*P* > 0.05) (**Table 3** and **Figure 4**).

Discussion

As a way of communication, Motivational interviewing (MI) focuses on providing guidance for patients and digging deep into the relevance of the causes of adverse behaviors and the presence of adverse behaviors rather than making subjective judgments, aiming at helping patients correct their values, to encourage them to express their expectations for their diseases, and guide them to make efforts to achieve their expectations [14]. A study demonstrated that MI can improve self-care ability and quality of life of patients with CHF [15]. Another study shows that MI can alleviate symptoms related to heart failure [16]. In this study, since the patients with CHF were elderly patients, the nursing plan for TMI was formulated based on the concept of MI, the targeted nursing care was provided, and different interview contents were offered according to different conditions and understanding of patients, thus ensuring the extensive scope of application of the nursing plan.

The evaluation of self-care level after nursing care showed that self-care maintenance, man-

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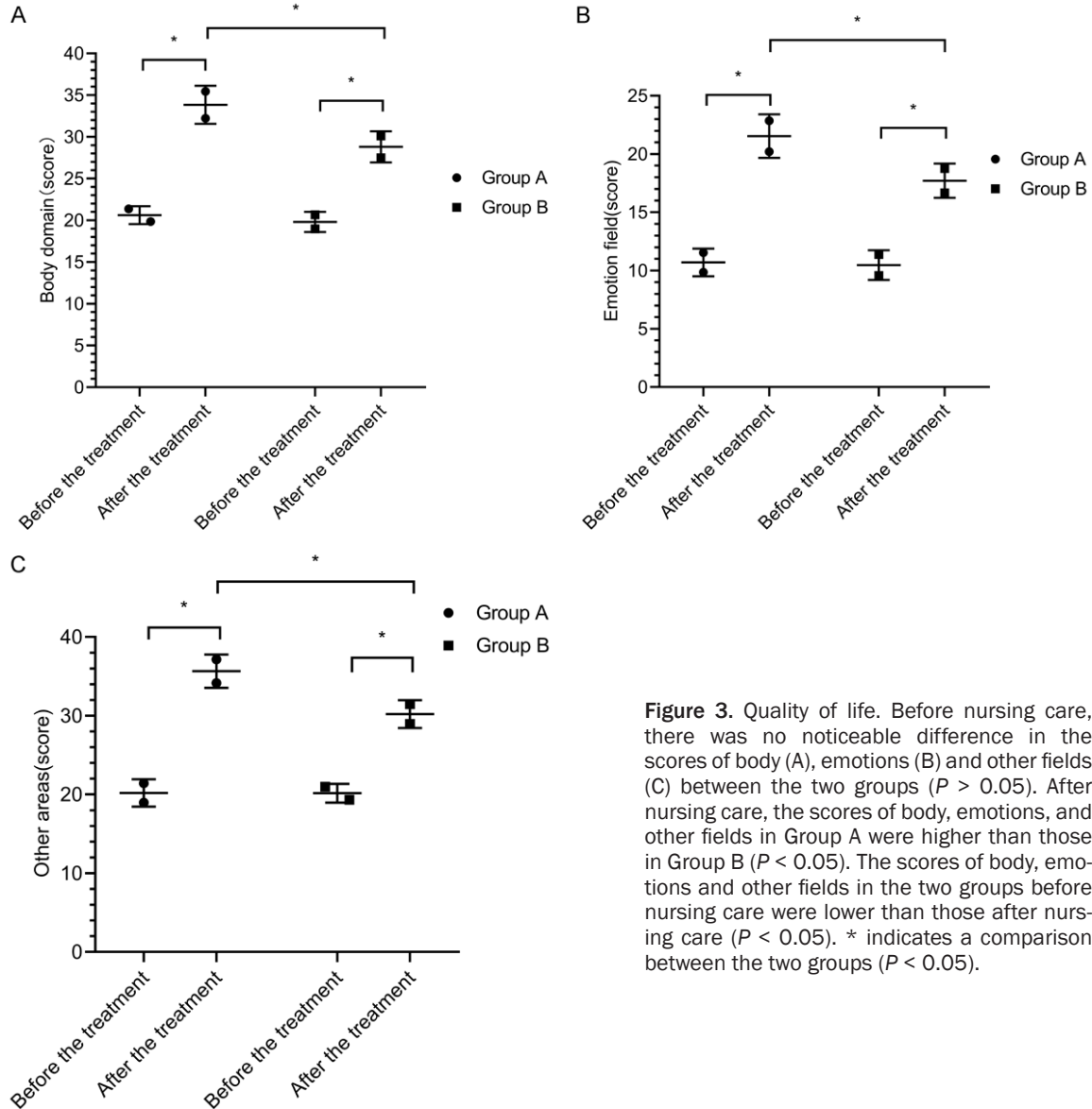


Figure 3. Quality of life. Before nursing care, there was no noticeable difference in the scores of body (A), emotions (B) and other fields (C) between the two groups ($P > 0.05$). After nursing care, the scores of body, emotions, and other fields in Group A were higher than those in Group B ($P < 0.05$). The scores of body, emotions and other fields in the two groups before nursing care were lower than those after nursing care ($P < 0.05$). * indicates a comparison between the two groups ($P < 0.05$).

Table 3. Comparison of readmission rates and mortality rates between the 2 groups within 1 year after the first discharge [n (%)]

Group	Number of cases	Readmission	Death
Group A	47	3 (6.38)	0 (0.00)
Group B	46	11 (23.91)	3 (6.52)
χ^2		4.300	1.423
P		0.038	0.233

agement and confidence, and medication frequency, time, dose, and type as instructed by the physician, and drug withdrawal or discontinuation of drugs, and forgetting medication were better in Group A than Group B ($P <$

0.05). This signals that TMI can improve self-care level and medication compliance of patients during nursing care for CHF. This is probably because TMI mobilizes the enthusiasm of patients, focuses on guidance rather than knowledge instillation throughout the intervention process, helps patients have a deeper understanding of educational contents and realize the importance of medication according to doctor's advice and their roles during the treatment of their diseases, and encourages patients to participate in self-care activities and actively learn nursing knowledge, especially self-monitoring and nursing methods after discharge. As a result, the me-

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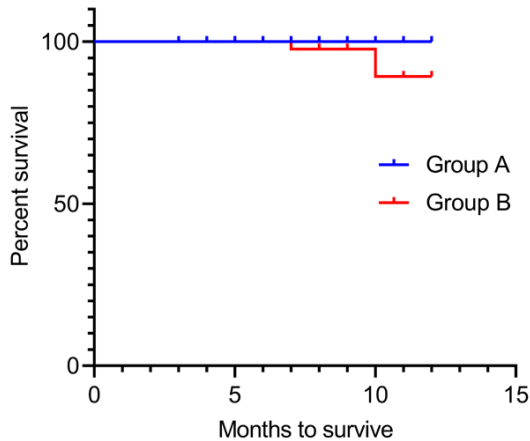


Figure 4. Survival curve diagram. Hazard Ratio (Mantel-Haenszel) Ratio (and its reciprocal) A/B was 0.1522, 95% CI of ratio was 0.01543-1.502, and B/A was 6.569 and 0.6660-64.81, respectively ($P=0.1271 > 0.05$).

dication compliance of patients can be maintained at a high level, and their self-care abilities can be significantly enhanced.

Regarding the treatment for CHF, it remains crucial to improve the quality of life of patients [17]. The clinical findings show that there is an inverse correlation between the emotional states of patients and their quality of life, and a poorer emotional state indicates a worse quality of life [18]. In this study, the scores of body, emotions, and other fields in Group A were higher than those in Group B ($P < 0.05$), suggesting that TMI could effectively improve the quality of life of patients. This was confirmed by the study results. A study revealed that MI combined with nursing intervention can remarkably improve the quality of life of patients with CHF, and the score of the 36-Item Short Form Survey (SF-36) were elevated from (46.82 ± 10.13) points before nursing care to (76.35 ± 12.37) points [19], which is consistent with the results of this study. Although different scales for evaluation of quality of life were adopted in these two studies, they confirmed the role of MI in improving the quality of life. In this study, the readmission rate in Group A was lower than that of Group B (6.38% vs. 23.91%). No deaths were found in Group A, and the mortality rate in Group B was 6.52% during the 1-year follow up period. This suggests that TMI can help patients with CHF improve their prognosis, and can effectively reduce the readmission rate after discharge,

thus alleviating the medical burden and family pressure on patients. The mortality rate in Group A was lower than that of Group B. In fact, the mortality rate in Group A was at a relatively low level. Since the subjects were with NYHA class II-III cardiac functions, the risk of death was low, and the sample size was very small, so there was no statistically significant difference in the mortality rate between the two groups. A study suggested that active nursing intervention can improve the readmission rate and prognosis of patients with chronic diseases [17]. This was because when TMI is implemented, nurses should guide patients to formulate a plan for improvement of adverse behaviors, work out detailed rules that can facilitate the implementation of the plan, and periodically perform the observations by video chat to provide necessary guidance during patients' stay at home. Under the guidance and supervision of nurses, patients can adhere to medication according to the doctor's advice, stick to healthy living habits, maintain a scientific diet, and improve the previous adverse behavioral habits and living habits, so as to receive a long-term effective treatment after discharge, thus reducing the readmission rate [20].

In summary, TMI is conducive to improving the self-care level, adverse emotions, medication compliance, quality of life, and prognosis of patients with CHF, demonstrating an excellent application value. However, there are some shortcomings in this study, including the small sample size, the failure to analyze the differences in effects of TMI in patients with different cognitions, to analyze the factors affecting the intervention effects, and to explore the influences of the difference in times of interviews on the nursing effects, and the conduction of only three interviews. This should be further analyzed in the next step.

Disclosure of conflict of interest

None.

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