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Original Article

The influence of self-perceived burden, fatigue and negative emotions on the coronary atherosclerotic cardiopathy patients under the personalized health management

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Abstract: To explore the influence of self-perceived burden, fatigue and negative emotions on the coronary atherosclerotic cardiopathy patients by the individualized health management. 98 cases with coronary atherosclerotic cardiopathy were enrolled. 49 cases were classified into the routine management group (accepting the routine guidance) (group A). 49 cases were classified into the personalized health management group (accepting the nursing intervention under the guidance of individualized health management) (group B). The self-perceived burden, fatigue and negative emotions of patients were compared between two groups. Before intervention, there was no statistically significant difference between the two groups in the economic burden, emotions, body burden, fatigue rating scores of each factor, anxiety self-assessment scores, depression self-rating scores ($P>0.05$). The economic burden, emotional burden, physical burden, fatigue rating scores, anxiety self-rating scores, depression self-rating scores of the two groups were decreased compared to those before the intervention, and the decrease was more significant in group B ($P<0.05$). Individualized health management can significantly reduce the burden of patients with coronary atherosclerotic cardiopathy, which can effectively control blood pressure of coronary atherosclerotic cardiopathy patients. Patients' sodium/water balance also increases than before, and patients' satisfaction to the nurse service is high. Individualized health management can significantly reduce self-perceived burden of coronary atherosclerotic cardiopathy patients, the patients' level of fatigue and improve patients' negative moods, suggesting that it is worthy clinical application and promotion.

Keywords: Coronary atherosclerotic cardiopathy, individualized health management, self-perceived burden, negative emotions, quality of care

Introduction

The prevalence of coronary atherosclerotic cardiopathy has been on the rise [1, 2]. In the United States and many other developed countries, this disease is ranked as the first cause of death [3, 4]. At present, due to the limited medical resources, most of the patients with coronary atherosclerotic cardiopathy receive the out-patient guidance and treatment in cardiovascular department [5, 6]. Patients with coronary atherosclerotic cardiopathy and caregivers often lack relevant professional knowledge, given the prevalent absence of medical background [7, 8]. Therefore, professionals in the cardiovascular department are very important for patients with coronary atherosclerotic cardiopathy. In view of this, scholars and nurses have been exploring approaches to optimize the management of coronary atherosclerotic cardiopathy. In recent years, the personalized health management model has been widely used in the treatment of various chronic diseases, such as rectal cancer and diabetes, with satisfactory results [9, 10]. This study aimed at proposing a personalized health management model for patients with coronary atherosclerotic cardiopathy. The maintenance hemodialysis patients were enrolled to investigate the effects of the personalized health management on the self-perceived burden, fatigue and negative emotions of patients with coronary atherosclerotic cardiopathy.

Table 1. Comparison of the basic information between the routine managemen t group and the personalized health management group ($\bar{x} \pm s$)

Group	Cases	Male/ female	Average age (years)	Average disease duration (months)	Education levels (primary school or below/junior high school/senior high school or technical secondary school/junior college or above)
Routine management group	49	27/22	52.65 ± 9.84	2.75 ± 0.95	2/11/16/20
Personalized health management group	49	29/20	53.47 ± 9.36	2.93 ± 0.87	4/11/16/18
t/x^2		0.167	0.415	0.869	0.772
P		0.683	0.585	0.131	0.856

Materials and methods

Subjects

Ninety-eight cases of coronary atherosclerotic cardiopathy patients treated in the hemodialysis division of our hospital from January 2016 to August 2016 were selected as the subjects. The inclusion criteria were as follows: 1) Patients who met the diagnostic criteria of coronary atherosclerotic cardiopathy in ICD-10; 2) Patients who visited our hospital initially; 3) Patients with clear consciousness and capable of effective communication with investigators; 4) Patients who can understand the purpose of this study and the contents of the intervention; 5) Patients who voluntarily participated in the study and signed the informed consent. The exclusion criteria: 1) Patients with congenital heart disease, rheumatic heart disease and other heart diseases; 2) Patients with mental disorders, such as schizophrenia, phobia, etc.; 3) Patients who were taking antidepressants, anxiolytic drugs and other drugs that affected moods. 49 cases were classified into the routine management group (accepting the routine guidance) (group A). 49 cases were classified into the personalized health management group (accepting the nursing intervention under the guidance of individualized health management) (group B). The basic information of the two groups were comparable ($P>0.05$), as shown in **Table 1**.

Survey methods

The questionnaire survey was conducted using the following scales by the trained investigators before intervention and 3 months after intervention. During the investigation, the subjects completed the questionnaires under the unified instruction of these investigators.

Survey tools

The survey tools were as follows. 1) Basic information: gender, age, dialysis time, blood pressure, etc.; 2) Self-perceived burden scale (3 dimensions): economic burden, emotional burden and body burden, where "never, occasionally, sometimes, often, always" corresponded to "1, 2, 3, 4, 5 points", respectively, with 20 points as a demarcation line for patients with or without self-perceived burden. The higher the score of the self-perceived burden scale, the higher the self-perceived burden of patients with coronary atherosclerotic cardiopathy [11]. 3) Fatigue assessment scale (four subscales): the global fatigue severity (subscale 1), situation-specific fatigue (subscale 2), fatigue consequence (subscale 3), and responsiveness to rest/sleep (subscale 4), which respectively reflected the fatigue degree, the susceptibility of fatigue to specific situations (such as cold, heat, mental stress, etc.), the consequences of fatigue, and the effects of fatigue on rest and sleep of the coronary atherosclerotic cardiopathy patients in the past two weeks. The points of items in each subscale were simply added and averaged [12]. 4 Depression was assessed using the self-rating depression scale. Higher standard scores of the self-rating depression scale suggested more severe depression [13]. 5 Anxiety was evaluated by the sSelf-rating anxiety scale. Higher standard scores of the self-rating anxiety scale suggested more severe anxiety [13].

Nursing methods

The routine management, including diet and exercise therapy, instructions on medication usage and precautions, etc., was given to the routine management group. The personalized health management was offered to the personalized health management group, with con-

Table 2. Comparison of the self-perceived burden between the routine management group and the personalized health management group ($\bar{x} \pm s$, points)

Groups	Cases	Economic burden		Emotional burden		Body burden	
		Before intervention	3 months after intervention	Before intervention	3 months after intervention	Before intervention	3 months after intervention
Personalized health management group	49	3.72±0.34	2.01±0.31★	15.61±0.67	5.18±0.55★	17.11±0.44	8.01±0.36★
Routine management group	49	3.75±0.36	2.89±0.27★	15.58±0.62	6.96±0.54★	17.18±0.46	8.99±0.44★
t		0.424	14.984	0.230	16.165	0.770	12.067
P		0.576	0.000	0.770	0.000	0.230	0.000

Note: ★ indicates significant difference compared with that of before intervention ($P<0.05$).

crete steps described as follows. 1) A personalized health management team consisting of a group leader (associate consultant nurse), deputy leader (head nurse), and group members (other nurses and two physicians in the cardiovascular department, one associate consultant responsible for the disease diagnosis and treatment, one attending physician responsible for patients' diet, exercise, etc.) was set up. According to the personal expertise, 5 positions were set up: position 1 (investigating the self-perceived burden of patients), position 2 (investigating the fatigue degree of patients), position 3 (investigating the negative emotions of patients), position 4 (training the nurses of the educational contents), position 5 (responsible for making and recording of microvideo contents), and position 6 (responsible for WeChat communication). 2 Training for the group members. The group leader trained the members of the personalized health management team via WeChat group, lectures in department, etc. (training time, 18 hours). Meanwhile, the team leader conducted one-to-one instructions for the members of the personalized health management group on the weak links in the formulation of the theoretical knowledge of coronary atherosclerotic cardiopathy, the personalized health management method, the knowledge of controlling sodium and water intake, and the dietetic monitoring logs, so as to ensure that the members of the personalized health management group were familiar with the educational contents of the coronary atherosclerotic cardiopathy related knowledge, personalized health management, emotional management, and exercise training. The members of the personalized health management group could communicate through the WeChat group to discuss the difficulties in the extended care process of patients with coronary atherosclerotic cardiopathy, and worked together to optimize the extended care work of patients with coronary atherosclerotic cardiopathy. 3 Implementation steps. The personalized health management plans were formulated under the participation of patients and their family members, and the targeted nursing interventions were given respectively. The means of intervention were as follows: (1) Establishing WeChat exclusive groups for patients with coronary atherosclerotic cardiopathy. The patients and family members joined the Wechat group, received the irregularly scheduled health education, and learned the specific educational contents of the coronary atherosclerotic cardiopathy related knowledge, personalized health management, emotional management, and exercise training. The last 20 minutes of WeChat education were left to solve the difficult problems. (2) Setting up the WeChat public account, and publishing the specific contents of emotional management and exercise training for patients with coronary atherosclerotic cardiopathy, who could also interact with the professionals in the message board as well. (3) Recording the microvideos for irregularly scheduled playing and explaining. (4) One-to-one WeChat consultation. In the process of personalized health management, any question can be communicated with nurses one to one.

Outcome measures

The self-perceived burden, fatigue and negative emotions of the routine management group and the personalized health management group were observed and recorded.

Statistical analysis

Based on the SPSS20.0 statistical package, the collected data were analyzed by student *t* test, Wilcoxon rank sum test, x^2 or Fisher's exact test. P<0.05 indicated statistically significant difference.

Results

Improved self-perceived burden in the personalized health management group

Before intervention, there was no significant difference in the economic burden, emotional burden and body burden between the two groups (*P*>0.05) (**Table 2**). After intervention, the economic burden, emotional burden and body burden of the two groups were both better than those before intervention, and the score decrease of group B was more obvious (*P*<0.05).

Decreased scores in the fatigue assessment instrument in personalized health management group

Before intervention, there was no significant difference in the scores of the subscales in the fatigue assessment instrument between the

Table 3. Comparison of the scores in the Fatigue Assessment Instrument between the routine management group and the personalized health management group ($\bar{x} \pm s$, points)

Groups	Cases	Subscale 1		Subscale 2		Subscale 3		Subscale 4	
		Before intervention	3 months after intervention	Before intervention	3 months after intervention	Before intervention	3 months after intervention		
Personalized health management group	49	4.77±0.34	2.01±0.33★	5.62±0.72	2.16±0.67★	4.11±0.44	2.01±0.36★	4.08±0.37	2.02±0.34★
Routine management group	49	4.78±0.37	3.39±0.30★	5.61±0.84	2.95±0.62★	4.18±0.46	2.98±0.44★	4.03±0.35	2.69±0.32★
t		0.139	21.660	0.063	6.058	0.770	11.944	0.687	10.045
P		0.861	0.000	0.937	0.000	0.230	0.000	0.313	0.000

Indications: ★P<0.05, compared to that before intervention.

Table 4. Comparison of the scores in the Self-Rating Anxiety Scale between the routine management group and the personalized health management group ($\bar{x} \pm s$, points)

Groups	Cases	Before intervention	3 months after intervention	*t*	*P*
Routine management group	49	58.45±2.66	41.13±1.76	38.471	0.000
Personalized health management group	49	58.11±2.43	38.24±1.55	48.721	0.000
t		0.704	8.734		
P		0.296	0.000		

Table 5. Comparison of the scores in the Self-Rating Depression Scale between the routine management group and the personalized health management group ($\bar{x} \pm s$, points)

Groups	Cases	Before intervention	3 months after intervention	*t*	*P*
Routine management group	49	56.38±2.47	43.15±1.96	29.563	0.000
Personalized health management group	49	57.43±2.11	39.44±1.87	45.055	0.000
t		2.237	9.638		
P		0.084	0.000		

two groups ($P>0.05$) (**Table 3**). After intervention, the scores of the subscales in the fatigue assessment instrument between the two groups were both better than those before intervention, and the score decrease of group B was more obvious ($P<0.05$).

Decrease of the scores in the self-rating anxiety scale in personalized health management group

Before intervention, there was no significant difference in the scores of the self-rating anxiety scale between the two groups ($P>0.05$) (**Table 4**). 3 months after intervention, the scores of the self-rating anxiety scale between the two groups were both significantly decreased than those before intervention, and the score decrease of group B was more obvious ($P<0.05$).

Decrease of the scores in the self-rating depression scale in personalized health management group

Before intervention, there was no significant difference in the scores of the self-rating depression scale between the two groups ($P>0.05$) (**Table 5**). 3 months after intervention, the scores of the self-rating depression scale between the two groups were both significantly decreased than those before intervention, and the score decrease of group B was more obvious ($P<0.05$).

Discussion

In recent years, the medical and health field has been profoundly affected by the rapid development of information technology. Until now, WeChat has become the main force leading the "new generation" of new media, due to its timeliness, convenience, diversification and higher security; the WeChat based health education model has been widely used in the extended care of several diseases, considering its characteristics of simple operation, quick reply, low cost, and no spatial restrictions [14, 15]. Based on literatures, WeChat has been used as a medium for the health education and health examination related extended service to young patients with acute myocardial infarction, and satisfactory results were reported [16, 17]. It can be seen that the application of WeChat in the intervention of various chronic diseases is feasible and effective. However, each disease has its own specificity, which determines the diversified usage patterns of WeChat. Therefore, how to use the medium of WeChat, which can meet the requirements of patients for medical care services, has also become the focus of scholars and nurses.

In this study, the WeChat platform was used to conduct the personalized health management for patients with coronary atherosclerotic cardiopathy. The results showed that there was no significant difference in the scores of the eco-

nomic burden, emotional burden and body burden, the subscales of fatigue assessment instrument, the self-rating anxiety scale, and the self-rating depression scale before the intervention ($P>0.05$) compared with routine management. After the intervention, the scores of the economic burden, emotional burden and body burden, the subscales of fatigue assessment instrument, the self-rating anxiety scale, and the self-rating depression scale for both the personalized health management group and the routine management group were all better than those before intervention, and the score decrease of the personalized health management group was more obvious ($P<0.05$). This may be explained by the following reasons. In view of the lack of professional knowledge and guidance in the nursing process of the patients with coronary atherosclerotic cardiopathy under the guidance of the personalized health management model, the author set up a personalized health management team through the communication medium of WeChat, so as to strengthen the team members' nursing theories and nursing technologies. The WeChat based education model has been increasingly accepted by patients, due to the widespread of WeChat. The emotional management and exercise training related WeChat videos were also released in this study. Besides, the implementation of various nursing measures was supervised and managed at a specific time, and one-to-one guidance via WeChat was conducted to ensure that all the medical intervention measures were carried out. Meanwhile, patients with coronary atherosclerotic cardiopathy could receive free consultation services in the WeChat group, where the difficult problems in nursing process and other related knowledge under the guidance of personalized health management model could also be discussed. This greatly reduced the patient's self-perceived burden. In addition, the application of emotional management methods, such as the progressive muscle relaxation training, also improved the negative emotions of patients and relieved the degree of their fatigue to a certain extent as well.

To sum up, the personalized health management can significantly reduce the self-perceived burden of patients with coronary atherosclerotic cardiopathy. It could also obviously decrease the degree of fatigue and improve the negative emotions of patients. Therefore, the personalized health management model is worthy clinical application and promotion.

Disclosure of conflict of interest

None.

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