Original Article
Effects of hospital care on the loss degree of healthy functions in patients with coronary heart disease

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Abstract: Objective: To explore the influence of hospital care on the loss degree of healthy functions in patients with coronary heart disease. Methods: One hundred patients with coronary heart disease admitted to our hospital from December 2015 to December 2016 were selected as the subject. They were randomly divided into intervention group and control group, 50 cases for each group. The two groups received routine nursing throughout the hospital stays; besides, based on routine nursing, intervention group received hospital care, including more humanized environment, specialized health guidance, more targeted disease nursing, diet nursing enhancement, sleep promotion, psychological guidance, helping gain family support, and encouraging patients to participate in recreational activities properly. The Sickness Impact Profile was used to assess the loss degree of healthy functions before admission and 14 days after admission. And the differences between the two groups were compared. Results: Fourteen days after admission, the loss degree of general health, physical function, social psychology, sleep and rest activity, household management, leisure pastimes and recreation, diet and other healthy function indicators in intervention group were significantly lower than those in control group (all P<0.05). Conclusion: Nursing care can reduce the loss degree of healthy functions in patients with coronary heart disease. It is worthy of clinical application.

Keywords: Coronary heart disease, nursing, healthy functions, loss

Introduction

In recent years, the incidence and mortality rates of coronary heart disease have risen rapidly, which seriously affects the healthy functions and quality of patients' lives [1-4]. It has brought great pain and serious financial burden to the patients, the family and the society [5-7]. It was found that the healthy functions of patients with coronary heart disease were influenced by various factors, and their demands for nursing were high [5]. How to maintain the psychosomatic healthy functions, reduce the loss of healthy functions and improve the life quality of patients with coronary heart disease are the focuses of current nursing work. Jiang used nursing intervention for coronary heart disease patients, relieving their anxiety [2]. Systematic review showed that positive psychological construct was beneficial to the health of patients with coronary heart disease [4]. Yang also applied nursing intervention to coronary heart disease patients, improving their healthy functions [8]. However, these care measures

focused on improving some healthy function of patients with coronary heart disease rather than the whole. In this study, on the one hand, hospital care for patients with coronary heart disease was carried out based on the methods of previous studies; on the other hand, humanized environment, specialized health guidance, more targeted disease nursing, diet nursing enhancement, sleep promotion, psychological guidance, helping to gain family support, and encouraging patients to participate in recreational activities properly were provided for patients to comprehensively improve their healthy functions. At the same time, the Sickness Impact Profile (SIP) was used to assess the loss degree of healthy functions, and positive outcomes of hospital care were as follows.

Materials and methods

Clinical data

One hundred patients with coronary heart disease admitted to our hospital from December

Table 1. Comparison of basic data between the two groups (for example, $\bar{x} \pm sd$)

	Intervention group	Control group	T or χ^2 value	P value
Gender			1.961	0.161
Male	28	21		
Female	22	29		
Age (years old)	60.5±11.1	61.0±10.7	0.248	0.804
Cardiac function (level)			2.746	0.432
I	19	15		
II	15	23		
III	13	10		
IV	3	2		
Therapeutic method			3.509	0.061
Medicine	34	42		
Operation	16	8		
Degree of Education			3.326	0.068
High school and below	33	41		
College degree and above	17	9		
Economic income (RMB)			1.268	0.260
≤2000	11	16		
>2000	39	34		

2015 to December 2016 were selected as the subject. This study was approved by Ethics Committee and gained permission.

Inclusion criteria: Patients were firstly diagnosed with coronary heart disease according to the diagnostic criteria of coronary artery disease; who were with primary and above educational level; who had normal thoughts and good communication skills; who voluntarily participated in this research and signed informed consent [9]. Exclusion criteria: Patients had a history of mental illness, disorder of consciousness and cognitive impairment; who had other serious organ diseases.

There were 49 males and 51 females, aged 40 to 82 years old, with an average of 60.8±10.6 years old. They were numbered according to the order of admission and randomly divided into intervention group and control group (50 cases for each group) by random number table.

Methods

Two groups received routine nursing throughout the hospital stays. Entrance education and health education were provided and good hospital environment was created. Patients should take proper dose of medicines on schedule and ensure enough rest. Based on routine nursing, intervention group received hospital care, including more humanized environment to ensure patients' rest, more targeted disease nursing, such as timely pain assessment and relief; medical treatment prescribed by a doctor and pain education were carried out when angina pectoris attacked [2, 10]. Arrhythmia, ST segment change, were monitored by continuous electrocardiogram; when patients got worse, timely treatment would be offered [11]. Patients in intervention group also controlled and reduced weight, developed good living habits, effectively controlled blood pressure, blood lipid and blood glucose levels, received rehabilitation training, etc. [2]; besides, they were strengthened diet nursing [12, 13], promoted sleep [10, 14], gave specialized health and psychological guidance [2, 13], helped to gain family support and encouraged to participate in recreational activities properly [8, 10, 13].

Evaluation criteria

The loss degree of patient's healthy functions was assessed on admission and the fourteenth day in hospital. SIP compiled by University of Washington was used, including 12 categories and 136 items [15-20]. The members in research group explained to patients in clear detail how to fill out the scale. The calculation formula of the patients' healthy function scores of each indicator: the healthy function scores = the sum of the function losses of each item in the indicator/the maximum possible function losses of the indicator*100. The total scores, physical function, social psychology, and other twelve function scores in the whole scale were all scored from 0 to 100 points. The higher the scores were, the worse the healthy functions were [5, 21-23].

Statistical method

SPSS19.0 software was applied to analyze the relevant data. The measurement data was ex-

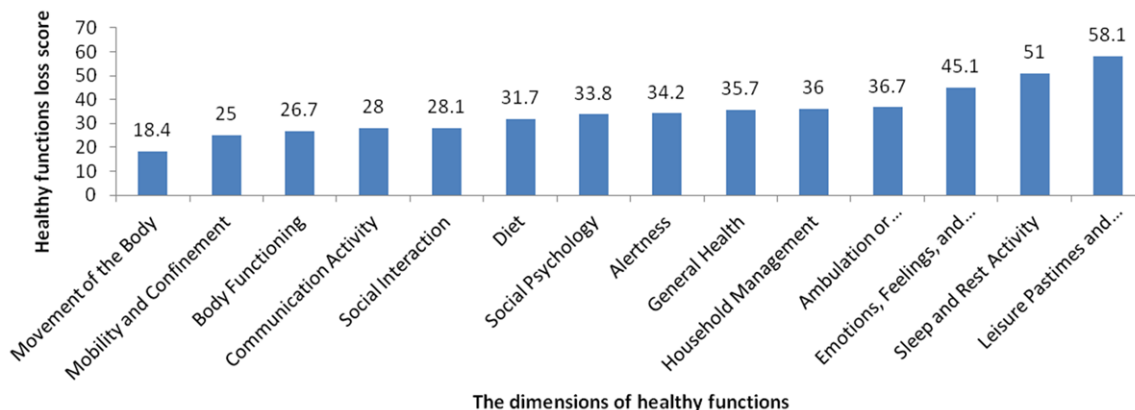# Effects of hospital care on the loss degree of healthy functions in patients

Figure 1. The loss degree of healthy functions in patients with coronary heart disease.

Table 2. Comparison of loss degree of healthy functions between the two groups on admission (score, $\overline{x} \pm sd$)

Health function	Intervention group	Control group	t value	P value
General health	35.7±13.0	35.6±12.3	0.007	0.994
Movement of the body	26.6±12.8	26.7±12.4	0.058	0.954
Ambulation	36.7±24.5	36.6±23.9	0.008	0.993
Mobility	24.9±10.2	25.1±9.7	0.141	0.888
Movement of the body	18.3±7.2	18.5±6.8	0.143	0.887
Social psychology	33.9±11.8	33.8±11.0	0.065	0.948
Social interaction	28.1±4.6	28.0±4.2	0.180	0.857
Communication activity	28.0±18.4	28.1±17.8	0.011	0.991
Emotions, feelings and sensations	45.3±9.5	44.8±8.4	0.291	0.772
Alertness	34.1±21.8	34.2±19.7	0.010	0.992
Sleep and rest activity	50.5±21.8	51.5±20.0	0.239	0.812
Household management	36.0±17.6	36.0±16.6	0.001	0.999
Leisure pastimes and recreation	58.5±6.4	57.8±6.5	0.648	0.518
Diet	31.8±19.4	31.6±18.3	0.053	0.958

between the two groups, all P>0.05. The differences were comparable (**Table 1**).

Dimensional comparison of the loss degree of healthy functions in patients with coronary heart disease on admission

On admission, patients' general health, physical function, social psychology, sleep and rest activity, household management, leisure pastimes and recreation, diet and other functions all got varying degrees of loss. According to the loss degree from light to heavy in order, they were movement of the body, mobility, physical function, communication activity, social interaction, diet, social psychology, alertness, general health, household management, ambulation, emotions, feelings and sensations, sleep and rest activity, leisure pastimes and recreation. See **Figure 1**.

Comparison of the loss degree of healthy functions between the two groups

On admission, patients' general health, physical function, social psychology, sleep and rest activity, household management, leisure pastimes and recreation, diet and other functions all got varying degrees of loss. There was no statistical difference in the loss degree of

pressed as mean ± standard deviation ($\overline{x} \pm sd$). The paired t-test was used for intra-group comparison; the independent sample t-test was used to compare difference between groups; the chi square test was adopted to test the enumeration data, and was presented by rate (%). P<0.05 was considered as statistically significant.

Results

Comparison of basic data between the two groups

There were no significant differences in the gender, age, cardiac function, treatment methods, degree of education and economic income

Table 3. Comparison of the loss degree of healthy functions in intervention group before and after the nursing (score, $\bar{x}$±sd)

Health function	Before nursing	After nursing	The difference	t value	P value
General health	35.7±13.0	27.7±10.9	8.0±2.6	21.826	0.000
Movement of the body	26.6±12.8	18.9±11.2	7.7±2.1	26.505	0.000
Ambulation	36.7±24.5	24.3±20.0	12.4±6.0	14.519	0.000
Mobility	24.9±10.2	19.4±10.1	5.5±0.6	62.920	0.000
Movement of the body	18.3±7.2	13.0±7.3	5.3±1.0	36.961	0.000
Social psychology	33.9±11.8	26.2±9.9	7.7±2.4	22.403	0.000
Social interaction	28.1±4.6	22.0±4.8	6.1±0.9	49.613	0.000
Communication activity	28.0±18.4	19.0±13.6	9.0±7.1	9.032	0.000
Emotions, feelings and sensations	45.3±9.5	38.8±9.4	6.6±6.4	92.508	0.000
Alertness	34.1±21.8	25.1±18.8	9.1±3.0	21.483	0.000
Sleep and rest activity	50.5±21.8	40.2±20.9	10.3±2.8	26.068	0.000
Household management	36.0±17.6	27.9±15.4	8.1±4.0	14.153	0.000
Leisure pastimes and recreation	58.5±6.5	50.6±6.4	8.0±0.3	161.933	0.000
Diet	31.8±19.4	23.2±13.3	8.5±0.3	6.560	0.000

Table 4. Comparison of the loss degree of healthy functions in control group before and after the nursing (score, $\bar{x}$±sd)

Health functions	Before nursing	After nursing	The difference	t value	P value
General health	35.6±12.3	34.6±12.0	1.0±0.1	104.241	0.000
Movement of the body	26.7±12.4	25.8±12.3	1.0±0.1	60.645	0.000
Ambulation	36.6±23.9	35.7±23.9	0.9±0.2	49.000	0.000
Mobility	25.1±9.7	24.1±9.8	1.0±0.4	16.344	0.000
Movement of the body	18.5±6.8	17.4±6.7	1.0±0.2	34.293	0.000
Social psychology	33.8±11.0	32.7±11.1	1.0±0.2	32.060	0.000
Social interaction	28.0±4.2	26.9±4.3	1.0±0.2	37.151	0.000
Communication activity	28.1±17.8	27.0±17.7	1.0±0.3	27.707	0.000
Emotions, feelings and sensations	44.8±8.4	43.8±8.3	1.0±0.2	29.247	0.000
Alertness	34.2±19.7	33.1±19.8	1.0±0.1	51.001	0.000
Sleep and rest activity	51.5±20.0	50.4±19.9	1.0±0.2	35.000	0.000
Household management	36.0±16.6	34.9±16.8	1.1±0.5	17.182	0.000
Leisure pastimes and recreation	57.8±6.5	56.6±6.6	1.1±0.3	23.898	0.000
Diet	31.6±18.3	30.5±18.4	1.1±0.2	21.789	0.000

healthy functions between the two groups, all P>0.05. See **Table 2**.

Comparison of the loss degree of healthy functions between the two groups before and after the nursing

After the nursing, the loss degree of general health, physical function, social psychology, sleep and rest activity, household management, leisure pastimes and recreation, diet and other functions of patients in intervention group significantly reduced, all P<0.05, as shown in **Table 3**. After the nursing, the loss

degree of the mentioned indicators of patients in control group also significantly reduced, all P<0.05. See **Table 4**.

Comparison of the loss degree of healthy functions between the two groups after the nursing

After the nursing, the loss degree of general health, physical function, social psychology, sleep and rest activity, household management, leisure pastimes and recreation, diet and other functions of patients in intervention group reduced. The reduce degree of each indictor mentioned above was better than that in

Table 5. Comparison of improvement degree of healthy functions loss between two groups after the nursing (score, $\bar{x} \pm sd$)

Health functions	Intervention group	Control group	t value	P value
General health	8.0±2.6	1.0±0.1	19.040	0.000
Movement of the body	7.7±2.1	1.0±0.1	22.991	0.000
Ambulation	12.4±6.0	0.9±0.2	13.364	0.000
Mobility	5.5±0.6	1.0±0.4	41.097	0.000
Movement of the body	5.3±1.0	1.0±0.2	29.647	0.000
Social psychology	7.7±2.4	1.0±0.2	19.319	0.000
Social interaction	6.1±0.9	1.0±0.2	40.161	0.000
Communication activity	9.0±7.1	1.0±0.3	8.087	0.000
Emotions, feelings and sensations	6.6±6.4	1.0±0.2	72.725	0.000
Alertness	9.1±3.0	1.0±0.1	19.048	0.000
Sleep and rest activity	10.3±2.8	1.0±0.2	23.476	0.000
Household management	8.1±4.0	1.1±0.5	12.193	0.000
Leisure pastimes and recreation	8.0±0.3	1.1±0.3	10.4215	0.000
Diet	8.5±0.3	1.1±0.2	5.742	0.000

control group, all P<0.05. And the difference was statistically significant. See **Table 5**.

Discussion

This study showed that the healthy functions in different dimensions of patients with coronary heart disease had varying degrees of loss, the biggest loss degrees belong to leisure pastimes and recreation as well as sleep and rest activity; what's more, the loss degree of psychosocial functions was greater than that of physical functions, which was similar to Zhang's opinion [5]. A survey of health-related life quality of patients with coronary artery disease demonstrated that because of complications and some negative emotions, like anxiety, depression, etc., they were poor in healthy functions and quality of life. Positive minds were conducive to patients' health. Medical staff should intervene actively, strengthen the psychological nursing and sequentially improve the prognosis of the patients [3, 24, 25]. Therefore, a series of hospital care interventions for patients with coronary heart disease achieved positive outcomes in this study.

This study also proved that the two groups both had different loss degree of healthy functions on admission, but there was no statistically significant difference. Compared with control group, the loss degree of general health, physical function, social psychology, sleep and rest activity, household management, leisure pas-

times and recreation, diet and other functions of patients in intervention group significantly reduced after the nursing; besides, the mentioned indicators of patients in intervention group were significantly lower than those before the nursing, which suggested hospital care could reduce the health loss degrees in patients with coronary artery disease. In addition, it was also found the implementation of nursing intervention for patients with coronary heart disease could improve their sleep quality [10, 13, 26]. Shen performed an intervention in pain care for coronary heart disease patients, which effectively alleviated the pain, as well as improved their prognosis and quality of life [27]. Compared with previous studies, this study provided more scientific and effective hospital care for patients with coronary heart disease, and used SIP to assess patients' healthy functions accurately, providing a scientific basis for intervention of coronary heart disease.

All-around hospital care for coronary heart disease patients was offered, and created good hospital environment in this study [8]. Patients quickly adapted to the hospital environment. Nurses provided targeted disease care for patients, relieved their pain and promoted the rehabilitation of the disease. With the help of nurses, patients had a reasonable diet, gradually developing a healthy lifestyle, actively participated in recreational activities, maintained good attitudes, gradually formed good sleep habits, improved sleep quality, and were helped to get the support from family [4, 10, 11, 13]. As a result, patients' healthy functions improved significantly.

A reasonable diet could not only prevent diseases but also provide reasonable nutrition support for patients. This study offered individual nutritional support program for patients and improved their healthy functions [13]. Due to their own disease factors and changes in the hospital environment, the sleep quality, rest,

physical health and mental health of coronary heart disease patients were seriously affected [10, 14]. In this study, medical staff created good sleep environment for the patients, strengthened the propaganda of sleep hygiene knowledge, and guided patients to develop good sleep habits; besides, they also provided acupoint massage to promote the sleep of patients and reduce the loss degree of health functions [10]. Establishing a good lifestyle was really essential for the rehabilitation of patients with coronary artery disease [28]. In this study, patients were urged to develop good lifestyles and promote their healthy functions through health guidance. It was found that the level of family care could reduce the healthy functions loss of patients with coronary heart disease [5]. Therefore, in this study, the subjective initiative of family members was mobilized in hospital care to improve their familial caring degrees and reduce their loss degree of healthy functions [5, 8]. Luo et al. found that targeted health education for patients with coronary heart disease could help them to establish healthy behaviors [29]. Thereby, health education was applied to promote patients' healthy functions in this study. The social psychological health of the hospitalized patients with coronary heart disease was poor, so they were in different levels of anxiety, fear, tension and other negative emotions [5]. Therefore, targeted psychological guidance for them was carried out. And when necessary, psychological counseling was provided, so as to improve the social and psychological functions of the patients [5, 13].

All in all, the reduction of health functions degree and improvement of their health level can be achieved by implementing hospital care for patients with coronary heart disease, setting more humanized environment, specialized health guidance, more targeted disease nursing, strengthening diet nursing, pmoting sleep and psychological guidance, gaining family and social support, and encouraging them to participate in recreational activities properly. However, the sample size in this study is small, so it is necessary to carry out a large-sample, multicenter, prospective, randomized, and controlled clinical trial to verify the intervention effects of hospital care on coronary heart disease.

Disclosure of conflict of interest

None.

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