

Original Article

Effects of an empowerment education model combined with nutritional care on patients with ascites caused by hepatitis B-related cirrhosis

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Abstract: Objective: This study aimed to explore the effects of an empowerment education model and nutritional care on the self-management, psychological and nutritional status in patients with ascites caused by hepatitis B-related cirrhosis. Methods: A total of 104 patients with ascites caused by hepatitis B-related cirrhosis were randomly divided into a control group (n=52, routine nursing) and study group (n=52, empowerment education model + nutritional care). The self-management behaviors, self-rating anxiety scale (SAS), self-rating depression scale (SDS) scores, and nutritional indices [upper arm circumference (AC), upper arm muscle circumference (AMC), triceps skin fold thickness (TSF), body mass index (BMI), albumin (ALB), prealbumin (PA), and hemoglobin (Hb)] were compared between the two groups. Results: (1) There was no significant difference in the total scores of dietary management, daily life management, medication management, disease monitoring management, and self-management behavior between the two groups before intervention ($P>0.05$); after intervention, these scores were all increased ($P<0.05$), and scores of the study group were significantly higher than those of the control group ($P<0.05$). (2) There was no significant difference in SAS and SDS scores between the two groups before intervention ($P>0.05$); the SAS and SDS scores of both groups decreased after intervention ($P<0.05$), and the scores of the study group were significantly lower than those of the control group ($P<0.05$). (3) There was no significant difference in AC, AMC, TSF, BMI, ALB, PA, and Hb levels before intervention ($P>0.05$); AC, AMC, TSF, BMI, ALB, PA, Hb were increased in the two groups after intervention ($P<0.05$), and the indices of the study group were significantly higher than those of the control group ($P<0.05$). Conclusion: An empowerment education model combined with nutritional care can effectively improve the self-management behavior, relieve anxiety and depression, and improve nutritional status for patients with ascites caused by hepatitis B-related cirrhosis.

Keywords: Empowerment education model, nutritional care, hepatitis B cirrhosis, ascites, self-management, psychology, nutritional status

Introduction

The incidence of hepatitis B is approximately 25% to 30% and without treatment it may eventually lead to cirrhosis, where about 15% of patients with cirrhosis develop to decompensated cirrhosis [1, 2]. Studies have shown that the 5-year survival rate for patients with compensated cirrhosis is 86%, while patients with decompensated cirrhosis may experience complications such as hepatic encephalopathy, ascites, esophageal rupture and bleeding due to portal hypertension, and the 5-year survival rate is only 14% [3, 4]. Ascites caused by hepatitis B-related cirrhosis is the most common clinical manifestation of the decom-

pensated period. It is characterized by having a long course, recurrence, high difficulty in treatment, and many complications, and most of the patients will have negative emotions such as anxiety and depression, which has a poor effect on their prognosis [5, 6].

Self-management includes the management of diet, daily life, medication, and disease monitoring. It is a self-care capacity developed by patients during the course of disease. Effective self-management can improve the autonomy of patients and help to eliminate unhealthy behaviors. The empowerment education model is a way to empower the patients with the responsibility for self-management, enabling

Effects of empowerment education combined with nutritional care

patients to participate in self-management and achieve planned targets [7]. Previous studies have shown that the empowerment education models have been widely applied in health education for patients with chronic diseases such as mental illness and diabetes [8]. Hepatitis B cirrhosis and ascites patients can suffer from malnutrition, which accelerates the natural progression of the disease, so nutritional care is necessary.

Currently, there are no studies on the application of an empowerment education model combined with nutritional care in patients with ascites caused by hepatitis B-related cirrhosis. This study analyzes self-management behaviors and self-rating anxiety scale (SAS), self-rating depression scale (SDS) and nutritional indices by combining an empowerment education model with nutritional care to patients with hepatitis B cirrhosis, and exploring reasonable interventions to improve their survival time.

Materials and methods

Baseline data

A total of 104 patients with ascites caused by hepatitis B-related cirrhosis were enrolled and divided randomly into a control group and a study group, with 52 patients in each group. The study group included 33 males and 19 females, aged 28 to 75 years, with an average age of (51.85±10.51) years. The control group consisted of 30 males and 22 females, aged 27 to 79 years, with an average age of (52.62±10.64) years. There was no significant difference in gender and age between the two groups ($P>0.05$).

Inclusion criteria: Patients who were diagnosed with ascites due to hepatitis B-related cirrhosis; who had conscious minds and able to communicate and were able to complete the scale assessments independently. The study was approved by the medical ethics committee of the First People's Hospital of Wenling. All patients signed the written informed consent.

Exclusion criteria: Patients who had alcoholic hepatitis or other viral liver disease and who had severe organ dysfunctions and mental illness were excluded from the study.

Methods

The control group was given routine nursing. Theoretical courses were taught to all patients,

mainly including the causes and harms of ascites caused by hepatitis B-related cirrhosis, the relevant measures to prevent cirrhosis ascites, as well as the rational use of the corresponding therapeutic drugs, and the corresponding guidance for diet and exercise of patients. At the same time, the nursing staff also issued a health knowledge manual to the patients, and informed them of the methods for monitoring their conditions. The frequency of the theoretical course was once a month, and the duration of each teaching was 30 min, until the patient was discharged from the hospital. The study group received an empowerment education model [9] combined with nutritional care. The empowerment education model was designed as follows. An empowerment group was established with the head nurse as the team leader and three experienced nurses as members. Before the implementation of the empowerment education, they were all trained in liver cirrhosis, empowerment education-related methods and precautions. Empowerment education was divided into four steps, including question determination, emotional expression, goal setting, plan confirmation and behavior evaluation, and the specific intervention measures were formulated. During the implementation period, a group discussion (once a week) was held to discuss the effects of empowerment education and identify areas for improvement.

Health education was conducted within 6 hours after admission for 20 minutes and repeated every 3 to 5 days until discharge. Six hours after admission, patients were interviewed face-to-face based on their pathology and the results of the self-management assessment to deeply understand the patient's problems in disease control and determine key nursing points. On the 3rd day after admission, the interview was conducted again to establish a good nurse-patient relationship, encourage the patient to express their feelings and emotions, and guide them to participate in disease management. After communicating with patients, the empowerment group was responsible for assisting patients to set goals and formulate reasonable activity and diet plans. The nursing staff supervised the implementation of the plan, praised the patients who completed the plan, found the reasons for not completing the plan, encouraged the patients to solve the

Effects of empowerment education combined with nutritional care

Table 1. Comparison of general materials between the two groups (n, %) ($\bar{x} \pm s$)

Group	Case	Gender		Age
		Male	Female	
Study group	52	33 (63.46)	19 (36.54)	51.85±10.51
Control group	52	30 (57.69)	22 (42.31)	52.62±10.64
χ^2/t		0.362		0.371
P		0.547		0.711

problems, and finally guided the patients to re-establish the new goals.

Nutritional care: The nutritional status of patients was evaluated. A nutritional mixture of glucose, amino acids, fat emulsions, etc. was intravenously injected at a speed of 30 to 60 drops/min, and the daily input was 1800 to 3000 ml. Patient's vital signs were monitored during the infusion to prevent infusion failure.

Outcome measurements

Self-management behavior scores were compared between the two groups. The self-management behavior scale for patients with cirrhosis was used to evaluate the patients' self-management behavior. The scale includes 24 items, covering diet management, daily life management, medication management, disease monitoring management, and self-management behavior. A 4-level score (1 to 4 points) is determined for each item. A higher score indicates better self-management behavior.

The anxiety and depression scores of the two groups were compared as well. SAS and SDS were used to evaluate the anxiety and depression of the patients. There are 20 items in the SAS, scoring 1 to 4 points for every item. A lower score indicates milder anxiety. There are 20 items in the SDS, scoring 1 to 4 points for every item. A lower score indicates the more depressed the patient is [10]. Nutritional indices of the two groups, including upper arm circumference (AC), upper arm muscle circumference (AMC), triceps skin fold thickness (TSF), body mass index (BMI), albumin (ALB), prealbumin (PA), and hemoglobin (Hb) were measured.

Statistical analysis

All data were analyzed using SPSS 22.0. Count data were expressed as [n (%)] and compared by independent sample χ^2 test; measurement

data conformed to normal distribution were expressed as ($\bar{x} \pm s$). Independent sample t test was used for inter-group comparison while paired t test was used for intra-group comparison. The difference was statistically significant at $P < 0.05$.

Results

General data

There was no significant difference in terms of gender and age distribution between the two groups (**Table 1**, $P > 0.05$).

Self-management behavior

There was no significant difference in the total scores of dietary management, daily life management, medication management, disease monitoring management, and self-management behavior between the two groups before intervention ($P > 0.05$). After intervention, the total scores of above indicators were increased in the study group ($P < 0.05$), which were significantly higher than those in the control group (**Table 2**, $P < 0.05$).

Anxiety and depression score

Before intervention, there was no significant difference in the SAS and SDS scores between the two groups ($P > 0.05$). After intervention, the SAS and SDS scores of the two groups were decreased ($P < 0.05$), and the SAS and SDS scores of the study group were significantly lower than those of the control group (**Table 3** and **Figure 1**, $P < 0.05$).

Nutritional indices

There was no significant difference in AC, AMC, TSF, BMI, ALB, PA, Hb between the two groups before intervention ($P > 0.05$). After intervention, AC, AMC, TSF, BMI, ALB, PA, and Hb were increased in both groups ($P < 0.05$), and the indices of the study group was significantly higher than those of the control group (**Table 4**, $P < 0.05$).

Discussion

Hepatitis B is most commonly transmitted from mother to child at birth (perinatal transmission), or through horizontal transmission (exposure to infected blood). Most people lack knowl-

Effects of empowerment education combined with nutritional care

Table 2. Comparison of self-management behavior scores between the two groups before and after intervention ($\bar{x} \pm s$)

Group		Diet management	Daily life management	Medication management	Disease monitoring management	Total self-management behavior score
Study (52)	Before intervention	16.28±0.44	14.22±0.68	16.38±0.72	12.29±0.55	58.73±0.97
	After intervention	21.35±1.34*	21.19±1.46*	22.08±1.45*	20.12±1.78*	83.98±3.93*
	t	25.922	31.207	25.389	30.307	44.981
	P	<0.001	<0.001	<0.001	<0.001	<0.001
Control (52)	Before intervention	16.23±0.42	14.39±0.79	16.28±0.79	12.48±0.55	58.85±1.24
	After intervention	19.06±2.32	18.88±2.52	19.93±2.38	17.45±2.62	73.14±5.17
	T	8.656	12.260	10.496	13.387	19.382
	P	<0.001	<0.001	<0.001	<0.001	<0.001

Note: Compared with the control group after intervention, * $P<0.05$.

Table 3. Comparison of SAS and SDS scores between the two groups before and after intervention ($\bar{x} \pm s$)

Group	cases	SAS scores		t	P	SDS scores		t	P
		Before intervention	After intervention			Before intervention	After intervention		
Study	52	57.07±4.25	39.32±2.99	24.632	<0.001	44.59±9.42	31.90±8.68	7.144	<0.001
Control	52	56.87±4.26	46.95±2.98	13.76	<0.001	45.23±9.36	40.77±8.13	2.594	0.011
T		0.240	13.034			0.348	5.378		
P		0.811	<0.001			0.729	<0.001		

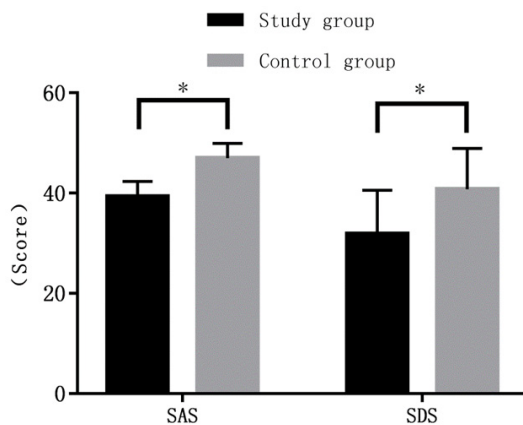


Figure 1. Comparison of the SAS and SDS scores between the two groups. The SAS and SDS scores of the study group were significantly lower than those of the control group ($P<0.05$). *indicates that the two groups are compared with the same index $P<0.05$.

edge of hepatitis B. As such, hepatitis B-related fears and concerns are prominent, aggravating patients' anxiety, hostility, paranoia, depression and other negative emotions. Patients with hepatitis B have a high prevalence of complications, so patients are prone to psy-

chological and social problems [11-13]. Social pressure and psychological disorders can negatively affect therapeutic efficacy, and the development and deterioration of the condition can be aggravated. Therefore, in the treatment of patients with ascites caused by hepatitis B cirrhosis, alleviating anxiety, depression and other adverse emotions of the patients is conducive to the patient's treatment [14-16]. It is necessary to give corresponding nursing interventions to patients to improve the curative effect of treatment and reduce the mortality rate.

Empowerment education centers on issues of patients through face-to-face interviews with patients after admission. The self-management behavior scale was used to guide and assist patients in developing personalized health guidance programs, and strengthen patient cooperation in solving existing problems, so that patients can fully master knowledge of hepatitis B cirrhosis and ascites to improve their self-management capabilities [17-19].

Empowerment education creates plans and goals for patients, assists patients in plan

Effects of empowerment education combined with nutritional care

Table 4. Comparison of nutritional indices between the two groups before and after intervention ($\bar{x} \pm s$)

Group		AC (cm)	AMC (cm)	TSF (cm)	BMI (kg/m ²)	ALB (g/L)	PA (g/L)	Hb (g/L)
Study (52)	Before	23.54±4.15	15.35±0.69	11.02±3.58	17.33±2.62	28.49±2.08	0.19±0.05	130.7±11.73
	After	26.94±3.04*	21.21±2.38*	13.88±2.97*	23.22±5.28*	36.71±2.52*	0.33±0.07*	27.02±3.02*
	t	4.766	17.053	4.434	7.206	18.141	11.736	61.725
	P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Control (52)	Before	23.37±2.39	15.01±0.76	10.37±2.27	17.45±2.56	28.6±2.51	0.18±0.05	82.62±13.75
	After	25.5±3.73	18.87±3.92	12.08±2.63	20.37±3.6	33.52±3.22	0.26±0.07	110.75±10.43
	t	3.467	6.971	3.549	4.767	8.69	6.706	11.754
	P	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001

Note: Compared with the control group after intervention, * $P < 0.05$.

implementation, strengthens patients' self-confidence in rehabilitation, enables patients to actively participate in self-management, and improves their self-management behaviors [20, 21]. Hepatitis B patients with cirrhosis and ascites suffer from malnutrition, so nutritional support is needed. Enteral nutrition can protect the structural integrity and functional integrity of intestinal mucosal cells, and reduce the occurrence of gastrointestinal mucosal atrophy and intestinal barrier damage [22, 23].

In this study, the total scores of dietary management, daily life management, medication management, disease monitoring management, and self-management behavior of the study group were significantly increased after intervention, and the indicators of the study group were significantly higher than those of the control group. The results showed that the empowerment education model combined with nutritional care can effectively improve the patient's self-management. Empowerment education establishes a trustworthy nurse-patient relationship by repeated communication, and assists patients to formulate plans and goals. The self-confidence obtained from disease knowledge enables patients to actively participate in the treatment process, thereby improving patients' self-management behavior [24]. The results of this study also showed that AC, AMC, TSF, BMI, ALB, PA, Hb were increased in the two groups after intervention, and the indicators of the study group were significantly higher than those of the control group. It implied that the empowerment education model combined with nutritional care can effectively improve the nutritional status of patients. Nutritional care can provide patients with

enteral nutrition support. Improvements in the nutritional status of patients enable them to actively cope with the disease.

Studies have shown that over 80% of patients with hepatitis B cirrhosis and ascites will suffer from moderate or severe anxiety and depression, which seriously affects the treatment effect and prognosis [25, 26]. Therefore, we should not only reduce the patient's pain, but also eliminate the patient's negative emotions through communication. The results of this study showed that the SAS and SDS scores of the two groups decreased after intervention, and the scores of the study group were significantly lower than those of the control group. The results showed that the negative emotions such as anxiety and depression can be alleviated by the empowerment education model combined with nutritional care. The reason may be that the empowerment education model combined with nutritional care has established a good nurse-patient relationship with patients through communication, and at the same time, enabled patients to know more about the disease, thereby reducing their fear and anxiety caused by the disease, making them face the disease positively and receive treatment in a good mood.

In summary, patients with hepatitis B cirrhosis and ascites may face social pressure and psychological problems due to discrimination. Most patients have moderate or severe anxiety and depression. This negative emotion impacted the treatment of patients. The empowerment education model enables patients to understand the relevant knowledge of the disease and improve self-confidence in treatment through communication, and at the same time

guides and assists patients to formulate plans, goals and implement them, and improve their self-management. Nutritional care gives patients enteral nutritional support and improves their nutritional status. The empowerment education model combined with nutritional nursing can effectively improve patients' self-management behavior, relieve anxiety and depression, and improve nutritional status.

Disclosure of conflict of interest

None.

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Effects of empowerment education combined with nutritional care

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