Original Article
Effect of comprehensive nursing on the pain, anxiety and malnutrition of hepatitis B patients

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Abstract: Objective: To explore the effect of comprehensive nursing on pain, anxiety and malnutrition of hepatitis B patients. Methods: Totally 100 cases of hepatitis B patients received treatment in our hospital from July 2017 to July 2018 were divided into a study group (64 cases) and a control group (36 cases) for comprehensive nursing and routine nursing. The liver function, nutritional indexes, cognition of relevant nursing knowledge, VAS score, HAMD and HAMA scores, QOL score, total effective rate and incidence of adverse reactions were detected. Results: Compared with the control group, the study group had lower liver function indexes and higher nutrition indexes, suggesting that the liver function of patients in the study group recovered better. Besides, the VAS score of the study group was lower, suggesting better pain relief in the study group. Moreover, the study group had higher scores of related nursing knowledge and lower scores of HAMD and HAMA, indicating that the nursing method in the study group was more effective in reducing depression and anxiety. Higher QOL score, higher total effective rate and lower incidence of adverse reactions of the study group revealed that the nursing mode adopted in this group was better for the recovery of patients. Conclusion: Comprehensive nursing can effectively alleviate the pain of hepatitis B patients, relieve their anxiety and other negative emotions, and improve their malnutrition.

Keywords: Comprehensive nursing, hepatitis B, ALT, TBIL, AST

Introduction

Hpatitis B caused by chronic hepatitis B virus infection, as a global problem, has infected hundreds of millions of people worldwide [1]. The main risks of this disease are progressive liver fibrosis caused by hepatitis B, and subsequent liver cirrhosis, hepatocellular carcinoma and eventual death [2, 3]. Inhibiting the DNA replication of hepatitis B virus to prevent the further development of the disease and prevent the progression of a series of complications such as liver fibrosis caused by the disease are the main strategies for the treatment of hepatitis B [4, 5]. Clinically, drug therapy is widely used. Nucleotide analogues with lower titer have a higher risk of resistance, and some drugs, such as entecavir, have a higher genetic disorder, but its use can still easily increase the risk of resistance [6]. In addition, although oral administration of nucleotide analogues with

higher potency and safety is usually well tolerated by patients, there is still a risk of adverse reactions after long-term use [7, 8]. Therefore, besides treatment, it is also vital to nurse the patients after treatment.

Comprehensive nursing is a set of clinical nursing methods which standardize the responsibility and concept of the medical team and nursing procedures through the application of nursing management system [9-11]. This kind of nursing method can provide all-round care for patients' psychological state, liver and kidney functions and adverse drug reactions, and at the same time, regulate the patients' diet accordingly. These measures are helpful to the recovery of patients [12]. The advantage of comprehensive nursing is that it can be adjusted according to the changes of patients' own conditions [13]. In some post-operative nursing studies, this nursing method has been found to

have a great effect on relieving negative emotions such as anxiety and tension of patients, and can also promote the rehabilitation of patients during and after treatment. As a result, comprehensive nursing is widely used in many post-disease surgeries [14, 15]. However, the effect of this nursing method on the relief of pain, anxiety, and malnutrition in patients with hepatitis B is unclear. The purpose of this study was to examine the clinical effects of comprehensive nursing for patients with hepatitis B by observing the improvement in these indicators.

Materials and methods

General data

Totally 100 patients with hepatitis B who received treatment in our hospital from July 2017 to July 2018 were selected as the research objects and divided into a study group and a control group. Among them, 64 cases in the study group received comprehensive nursing, and 36 cases in the control group received routine nursing. The patient's family members were informed of the study and signed a consent form. The ethics committee of our hospital approved the study. There was no significant difference in general data between the two groups (P>0.05).

Inclusion criteria: patients were diagnosed with hepatitis B, with an age of over 18 years, without communication and understanding obstacles, and were mentally normal. Exclusion criteria: patients were allergic to drugs; patients were in gestation or lactation period; patients had slight willingness in joining the experiment; patients had communication barriers; patients had mental illness; patients had recently participated in or were currently participating in other clinical trials.

Methods

Before nursing, the two groups of patients were treated with antiviral nucleotide analogue drugs, and were given conventional drugs. The patients were asked to take oral drugs that promote gallbladder function, reduce enzyme and protect liver. Patients in the control group received routine nursing, including health education and regulation of diet, work and rest, and other habits. On this basis, patients in the research group adopted comprehensive nursing intervention. The specific plan was as follows: the patients finished relevant examinations within one day after admission. After that, the medical staff made an accurate and comprehensive assessment of the patient's personal situation (including patient's living habits, family status, education level, and awareness of the disease and related complications), and tailored a nursing plan for each patient according to his/her conditions. Then, health education was given to the patient. The medical staff only issued the relevant health manual, but also explained the relevant knowledge of hepatitis B to the patients and their families face to face, including the cause of the disease, the treatment process, how to use drugs, how to prevent related complications such as liver fibrosis and cirrhosis, and how to nurse at home. Health education was conducted once a week for 2 hours each time, and the number of times was adjusted according to the patient's own situation. After that, psychological counseling was carried out for the patients. After evaluating the depression and anxiety of patients, the medical staff selected the way of psychological counseling for patients according to their severity of depression. Medical staff would let patients know that negative emotions tend to worsen their illness, and help them establish their confidence to actively cooperate with treatment by creating a better interpersonal atmosphere and treatment environment and giving patients appropriate encouragement. In terms of medication and eating habits, medical staff gave relevant guidance to patients. As for health education, they explained the purpose, method, dosage, time and precautions of medication to patients. In other nursing, they urged patients to strictly follow the doctor's advice. Adverse reactions such as headache, abdominal pain, high fever, nausea and vomiting were treated. During the course of medication, relevant guidance was given to the patient's diet. Their diet should be light, balanced in nutrition, with high fiber content. Alcohol, tobacco, greasy and spicy food were avoided to reduce the burden on the liver. One day before discharge, the patients and their family members were given post-discharge nursing guidance, including how to take medicine, diet, exercise and follow-up after discharge, to guide the patients and their family members to master the basic essentials of family nursing and disinfection and isolation. After that, regular follow-up visits were conducted.

Detection indicators

Liver function indexes: At the time of admission and 30 d after nursing, the liver function monitoring indexes were observed. Full automatic biochemical analyzer and matching reagents were used to detect glutamic pyruvic transaminase (ALT), total bilirubin (TBIL), and aspartate aminotransferase (AST).

Nutritional indexes: At the time of admission and 30 d after nursing, blood was drawn from the patient, and 5 ml venous blood was collected. Samples were centrifuged at 1500×g at 4°C for 10 min in time and stored at -20°C. After that, the nutritional indexes of the patients were detected by ELISA. A part of plasma was extracted to detect the nutritional indexes of serum albumin (ALB), prealbumin (PA) and transferrin (Tf).

Cognition of relevant knowledge: On admission and 14 d after nursing, patients' cognition of disease-related knowledge was evaluated. A questionnaire designed by our hospital was used to investigate patients' cognition of disease. The contents of the questionnaire included etiology, medication, exercise and rest, diet, and self-protection knowledge.

VAS score: Visual Analogue Scale (VAS) [16] was used to compare the pain of the two groups on admission and 14 d after nursing care, with a range of 0-10 points. The higher the score was, the higher the pain level was.

Anxiety and depression: The anxiety and depression of patients were evaluated when patients were admitted to hospital and 30 d after receiving nursing care. Hamilton Depression Scale (HAMD) and Hamilton Anxiety Scale (HAMA) [17, 18] were adopted. The higher the score was, the more serious the depression and anxiety were.

Quality of life: The QOL [19] score of the World Health Organization was used to evaluate the quality of life. The QOL scale includes 12 items such as appetite, mental and physical strength, sleep, etc., with a total score of 60 points. The higher the score was, the better the quality of life of patients was.

Total effective rate: The therapeutic effects of the two groups of patients were investigated. If the patient's hepatitis B virus deoxy-

ribonucleic acid (HBV-DNA) test was normal and the liver function indexes returned to normal, it was considered markedly effective. If the patient's HBV-DNA test was normal but the liver function index was abnormal, it was considered effective. If neither HBV-DNA test nor liver function index had been improved, it was considered to be ineffective.

Adverse reaction rate: The incidence of adverse reactions in the two groups of patients was investigated, including emaciation, insomnia, nausea-anorexia, myelosuppression, and fever.

Statistical methods

SPSS 19.0 (Asia Analytics Formerly SPSS China) was used for statistical analysis of the comprehensive data. Measurement data were represented as mean ± standard deviation (x ± sd), and t test was adopted. X^2 test was used for counting data. When P<0.05, the difference was statistically significant.

Results

General data

There were no significant differences between the two groups in terms of gender, age, average course of disease, education years, income, marital status, family type, and whether the patients were employed (P>0.05). More details were shown in **Table 1**.

Liver function indexes in the study group are lower than those in the control group

The liver function indexes at admission and 30 d after nursing were compared between the two groups. There was no remarkable difference in various indexes between the two groups at the time of admission. Thirty days after nursing, the liver function indexes decreased in both groups. ALT, TBIL and AST of the patients in the study group were notably lower than those in the control group (P<0.05). See **Figure 1**.

The nutritional indexes of the study group are higher than those of the control group

The nutritional indexes of the two groups of patients at admission and 30 d after nursing were compared. At the time of admission,

Table 1. General data of patients in the two groups

Classification	Study group (n=64)	Control group (n=36)	t/X^2	P
Gender			0.07	0.790
Male	32 (50.00)	19 (52.78)		
Female	32 (50.00)	17 (47.22)		
Age (years)	45.69±3.67	45.34±3.21	0.48	0.634
Average course of disease (year)	3.01±0.23	2.93±0.34	1.40	0.165
Education years (year)	13.12±2.97	12.97±3.15	0.24	0.813
Average revenue	5632.27±478.01	5597.45±495.33	0.35	0.731
Place of residence			0.09	0.761
Countryside	16 (25.00)	10 (27.78)		
Town	48 (75.00)	26 (72.22)		
Marital status (case)			0.32	0.569
Married	39 (60.94)	24 (66.67)		
Unmarried	25 (39.06)	12 (33.33)		
Family type			0.20	0.652
Core family	35 (54.69)	18 (50.00)		
Other	29 (45.31)	18 (50.00)		
On job			0.02	0.892
Yes	54 (84.38)	30 (83.33)		
No	10 (15.62)	6 (16.77)		

there was no considerable difference in each index between the two groups, while the nutritional indexes improved in both groups 30 d after nursing. ALB, Tf and PA of the patients in the study group were notably higher than those in the control group (P<0.05). See **Figure 2**.

The cognition of the study group on relevant nursing knowledge is better than that of the control group

The two groups were compared in terms of risk factors, medication, exercise and rest, diet, and self protection. There was no considerable difference in each score between the two groups at the time of admission, while the scores of related knowledge and cognition of the two groups were improved 14 d after nursing. The scores of the study group were significantly higher than those of the control group (P<0.05). See **Figure 3**.

The VAS score of the study group is lower than that of the control group

The VAS score was compared between the two groups. There was no remarkable difference in VAS score between the two groups on admission, but the score of the two groups decreased 14 d after nursing, and the score of the

study group was notably lower than that in the control group (P<0.05). See **Figure 4**.

The anxiety and depression scores of the study group are lower than those of the control group

The HAMD and HAMA scores of the two groups were compared. There was no significant difference in the two scores between the two groups at the time of admission. The two scores of the two groups decreased 14 days after nursing, and the two scores of the study group were notably lower than those in the control group (P<0.05). See **Figure 5**.

Study group has better quality of life than control group

The QOL score of the two groups were compared. There was no remarkable difference in QOL score between the two groups at the time of admission. The score of the two groups decreased 30 d after nursing, and the score of the study group was notably lower than that in the control group (P<0.05). See **Figure 6**.

The total effective rate of the study group is higher than the control group

Total effective rates in the two groups were compared. The total effective rate of the study
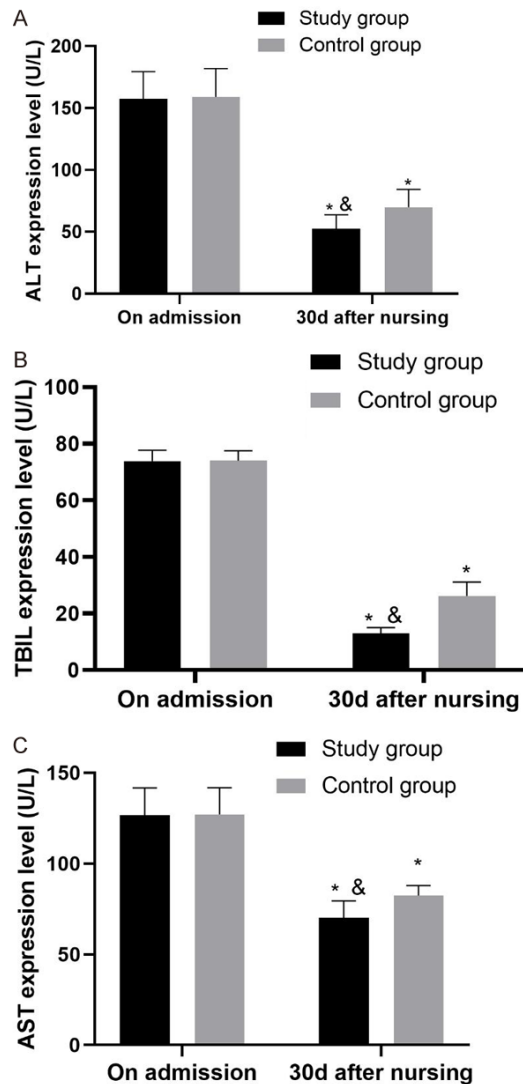
Figure 1. Liver function indexes. A. ALT: ALT index decreased in both groups 30 d after nursing, and ALT in the study group was notably lower than that in the control group (P<0.05). B. TBIL: TBIL indexes decreased in both groups 30 d after nursing, and TBIL of the study group was notably lower than that in the control group (P<0.05). C. AST: AST indexes decreased in both groups 30 d after nursing, and AST in the study group was notably lower than that in the control group (P<0.05). Notes: * means comparison with before treatment, P<0.05; & means comparison with control group, P<0.05.

group was considerably higher than that of the control group (P<0.05). See **Table 2**.

The incidence of adverse reactions is lower in the study group than in the control group

By comparing the incidence of adverse reactions between the two groups, it could be seen that the incidence of adverse reactions in
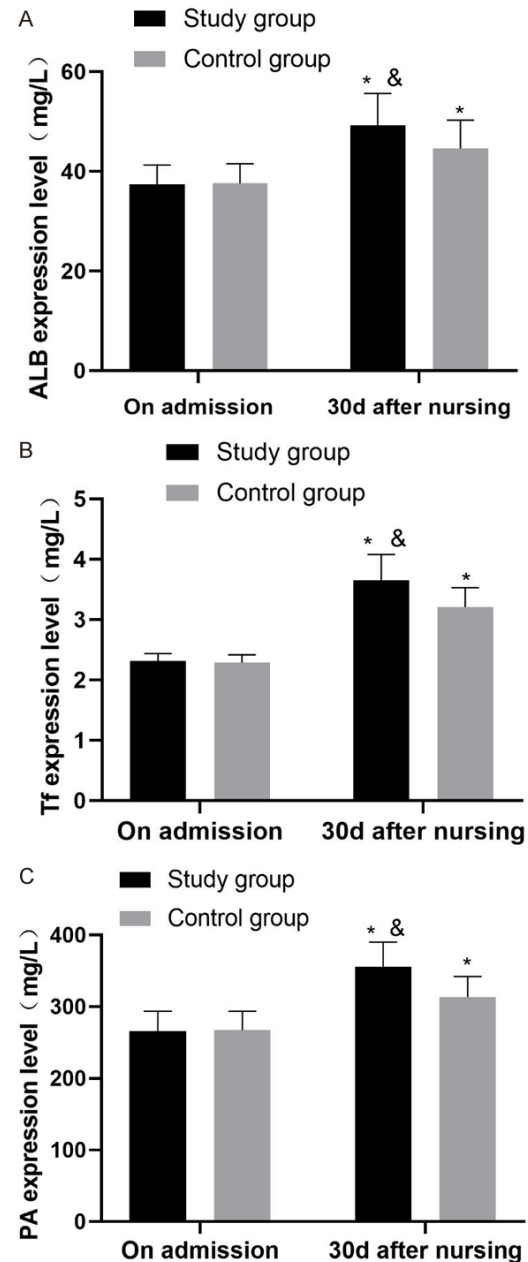

Figure 2. Nutritional indexes. A. ALB: ALB indexes improved in both group 30 d after nursing, and ALB of the study group was notably higher than that in the control group (P<0.05). B. Tf: Tf indexes improved in both groups 30 d after nursing, and Tf of patients in the study group was notably higher than that in the control group (P<0.05). C. PA: PA index improved in both groups 30 d after nursing, and PA of patients in the study group was notably higher than that in the control group (P<0.05). Notes: * means comparison with before treatment, P<0.05; & means comparison with control group, P<0.05.

the study group was significantly lower than that in the control group (P<0.05). See **Table 3**.
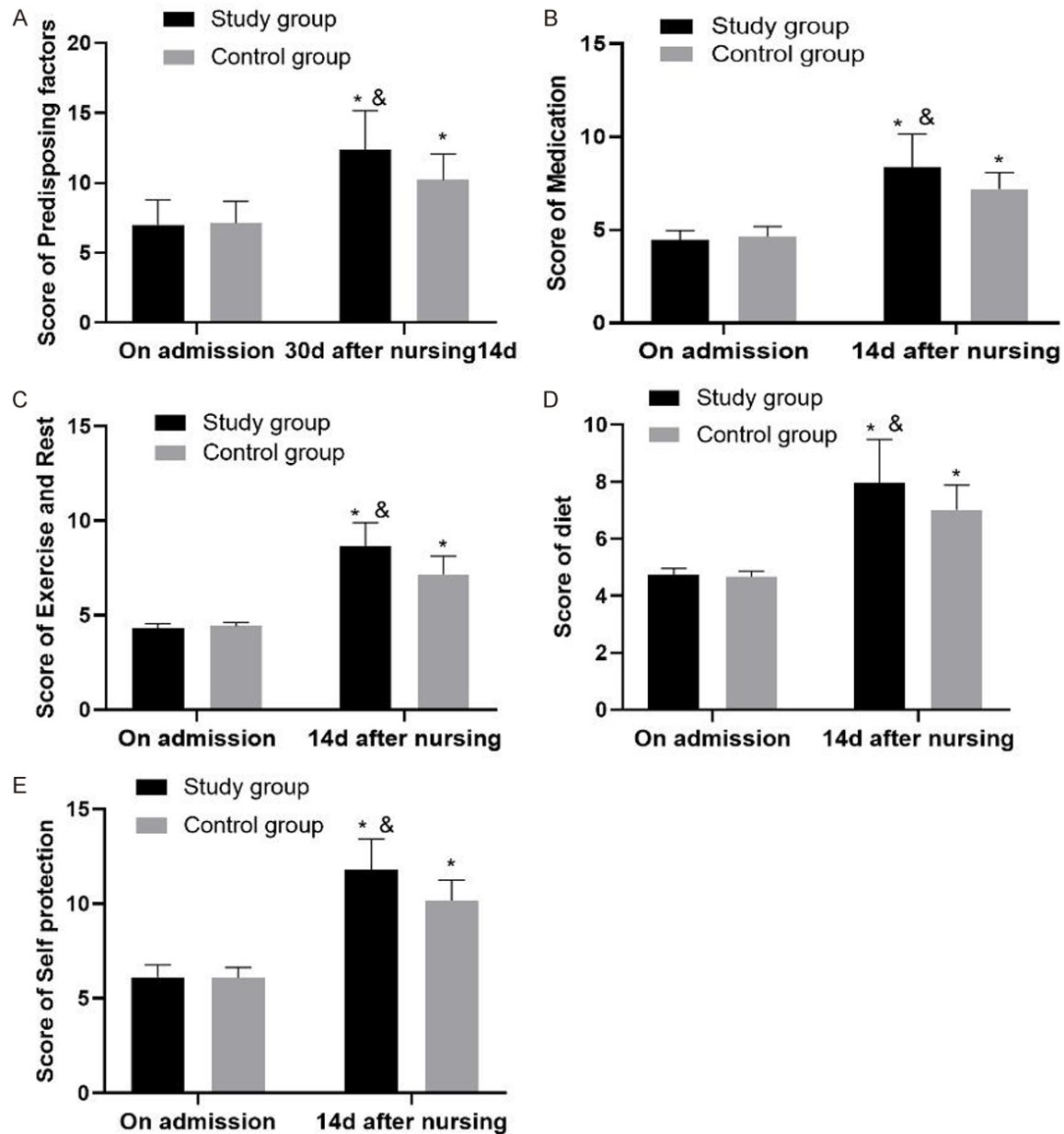
Figure 3. Scores of cognition about nursing knowledge. A. Predisposing factors: scores of predisposing factors improved in both groups 14 d after nursing, and the scores of predisposing factors in the study group were evidently higher than those in the control group (P<0.05). B. Medication: the score of medication improved in both groups 14 d after nursing, and the score of medication in the study group was evidently higher than that in the control group (P<0.05). C. Exercise and rest: the exercise and rest scores improved in both groups 14 d after nursing, and the exercise and rest scores of patients in the study group were evidently higher than those in the control group (P<0.05). D. Diet: the diet score improved in both groups 14 d after nursing, and the diet score of patients in the study group was evidently higher than those in the control group (P<0.05). E. Self protection: the self protection score improved in both groups 14 d after nursing, and the self protection score of patients in the study group was evidently higher than those in the control group (P<0.05). Notes: * means comparison with before treatment, P<0.05; & means comparison with control group, P<0.05.

Discussion

Blocking the hepatitis B virus has been a crucial means of preventing hepatitis B from developing into cirrhosis and hepatocellular carcinoma [20, 21]. The current method for treating chronic hepatitis B virus infection is to use nucleotide/nucleoside analogues, inter-
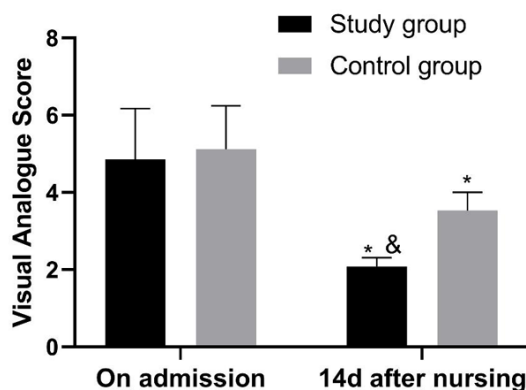
Figure 4. VAS score. VAS score improved in both groups 14 d after nursing. The VAS scores of the study group were remarkably higher than those in the control group (P<0.05). Notes: * means comparison with before treatment, P<0.05; & means comparison with control group, P<0.05.
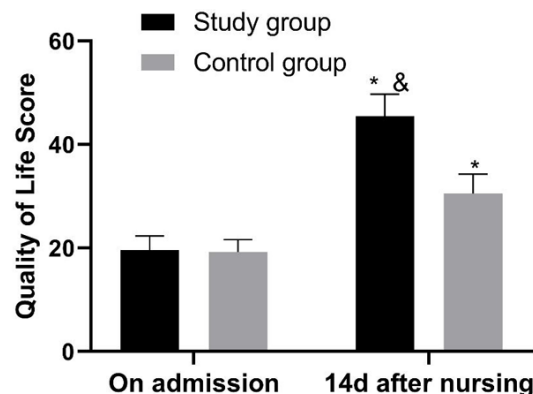

Figure 6. QOL score. Fourteen days after nursing, the QOL score improved in both groups, and the QOL score of the study group was remarkably higher than that in the control group (P<0.05). Notes: * means comparison with before treatment, P<0.05; & means comparison with control group, P<0.05.
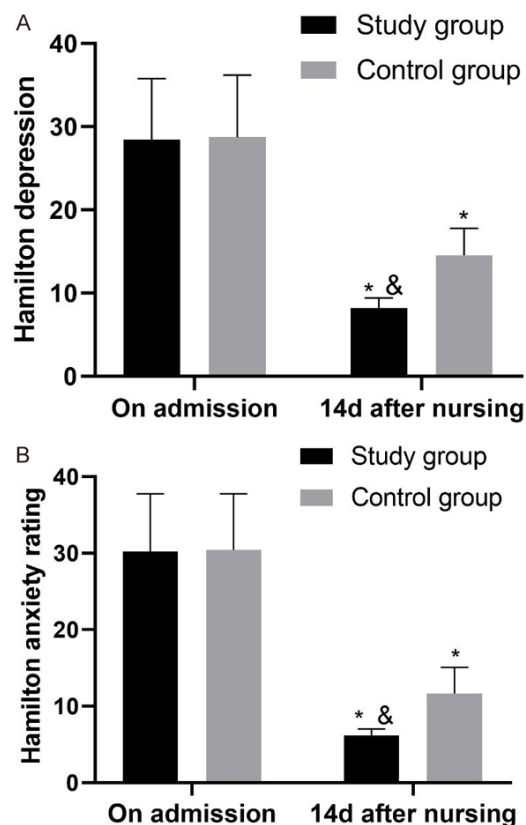

Figure 5. HAMD score and HAMA score. A. HAMD: HAMD score increased in both groups 14 d after nursing, and the HAMD score of the study group was notably higher than that in the control group (P<0.05). B. HAMA: HAMA score increased in both groups 14 d after nursing, and the HAMA score of the study group was notably higher than that in the control group (P<0.05). Notes: * means comparison with before treatment, P<0.05; & means comparison with control group, P<0.05.

feron, or inject pegylated interferon. However, this series of therapies have relatively large side effects and are not satisfactory [22]. Therefore, nursing after treatment is particularly important.

ALT level is closely related to liver health. Although high ALT level may not necessarily lead to liver disease, there may not be a healthy liver among hepatitis B patients, and higher ALT level means higher degree of liver cirrhosis [23]. TBIL, AST and a series of related liver function indexes can not only determine the severity of acute liver injury, but also help to predict the degree of cirrhosis and fibrosis in patients with hepatitis B [24]. Judging from this, in this experiment, the levels of ALT, TBIL and AST of the patients in the study group who received comprehensive nursing were lower than those in the control group who received routine nursing. In other words, comprehensive nursing can effectively relieve the level of liver cirrhosis and liver fibrosis of patients and has a great effect on the recovery of liver function than routine nursing. At the same time, according to the nutritional indexes of patients, ALB, PA and Tf in the study group were significantly higher than those in the control group after nursing. Tf, PA and ALB are three indicators used to judge the nutritional level of patients. A decrease in the three levels means a decrease in the nutritional level of patients, which may further worsen their condition. And an increase in the levels means that patients receive better nutritional support [25]. Judging

Table 2. Total effective rate of the two groups

Classification	Research group (n=64)	Control group (n=36)	X²	P
Markedly effective	40 (62.50)	16 (44.45)	-	-
Effective	23 (35.94)	12 (33.33)	-	-
Ineffective	1 (1.56)	8 (22.22)	-	-
Total effective rate %	63 (96.67)	28 (77.78)	12.01	<0.001

Table 3. Complication rates in the two groups

Classification	Research group (n=64)	Control group (n=36)	X²	P
Emaciation	0 (0.00)	2 (5.55)	-	-
Insomnia	2 (3.13)	4 (11.11)	-	-
Nausea-anorexia	0 (0.00)	1 (2.78)	-	-
Myelosuppression	0 (0.00)	1 (2.78)	-	-
Fever	0 (0.00)	1 (2.78)	-	-
Adverse reaction rate (%)	2 (3.13)	9 (25.00)	9.00	0.003

from the results of the expression level of the liver function index, the patient's liver fibrosis trend was relieved and the liver function gradually returned to normal. Therefore, its nutrition also came up with it. The liver function recovery of hepatitis B patients in the study group was better, and the improvement of nutrition level was more obvious. This suggests that comprehensive nursing can more effectively improve the liver function of patients and relieve nutritional disorders of patients. Comprehensive nursing itself has a better understanding of the personal situation of patients and more strict dietary guidance for patients. Although routine nursing is effective for patients, it is difficult for doctors and nurses to care for patients in all aspects. Comprehensive nursing staffs, however, even need to evaluate the overall situation of patients before making plans for implementation. Therefore, comprehensive nursing has more effect on patients' liver function and malnutrition.

This study also investigated the anxiety and depression of the patients. The results showed that the HAMA and HAMD scores of the patients in the study group were lower. Patients should be in a good mood if they need a good recovery. Negative emotions tend to aggravate the patient's condition [26], so it is necessary to avoid such emotions in patient care. In comprehensive nursing, medical staff would give patients and their families detailed explanations in health education so that they can fully understand the information about the treatment process, how to use drugs, and how to deal with complications. In this study, the health education of routine nursing was not so detailed. Therefore, patients in the study group had more sufficient confidence. In addition, in the process of comprehensive nursing, medical staff would provide special psychological counseling to help patients build confidence, so that depression and anxiety in the research group would be eliminated. It was precisely because of the detailed guidance on the treatment process and medication in health education that the patients in the study group had lower VAS score, higher total effective rate and lower incidence of adverse reactions. For patients, more detailed health education can reduce errors in the treatment process and medication. The pain and adverse reactions caused by mistakes are effectively reduced. The reduction of medication errors means that the genetic material of hepatitis B virus is better blocked. Combined with the results of liver function before, the treatment efficiency of the study group using comprehensive care is higher. Therefore, the quality of life improves. Gou et al. [27] found that comprehensive nursing can effectively improve the postoperative life quality of patients with liver cirrhosis and liver cancer, reduce the incidence of postoperative complications, and improve the survival rate, which is similar to this study.

There are still some deficiencies in this study. We failed to investigate whether the patients are satisfied with the nursing methods and the patients' cooperation during the operation. In future research, in addition to improving these deficiencies, other indicators caused by hepatitis B virus should be investigated to make the results more convincing.

To sum up, comprehensive nursing can effectively alleviate the pain of hepatitis B patients, relieve their anxiety and other negative emotions, and alleviate their nutritional disorders, which is worthy of clinical promotion.

Disclosure of conflict of interest

None.

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