ORIGINAL RESEARCH

Construction and Application of a Health Management Program for Patients with Esophageal and Gastric Variceal Hemorrhage after Endoscopic Treatment

Jingying Shan, BD; Liangwei Quan, BD; Qingtao Guo, BD; Zhenlin Zhang, BD; Shuyun Li, BD; Hui Wang, BD

ABSTRACT

Background • Cirrhotic portal hypertension and associated opening of collateral circulation, improper feeding or sudden increase of abdominal pressure are the causes of esophageal and gastric variceal bleeding. Esophageal and gastric variceal bleeding is one of the most common and serious complications during decompensation of cirrhosis. Endoscopic surgery is an effective method for treating esophageal and gastric variceal hemorrhage. Still, postoperative health management is required to reduce the occurrence of rebleeding and improve the quality of life of patients with esophageal and gastric variceal hemorrhage.

Objective • Our study aims to assess the impact of a health management program on the clinical efficacy, rebleeding rate, varicose vein disappearance, self-management ability, and quality of life of patients who have undergone endoscopic surgery for esophageal and gastric variceal hemorrhage.

Design • This was a retrospective study.

Setting • This study was performed in the Department of Gastroenterology, Taihe County People's Hospital, due that all the author came to take up positions in the hospital.

Participants • A total of 80 esophageal and gastric variceal hemorrhage patients who received endoscopic surgery in our hospital from January 2020 to January 2022 were selected as the research subjects and were divided into a study group and control group based on the random number table method, with 40 patients in each group. There were 59 males and 11 females, aged from 29 to 81 years old. For Child-Pugh classification of liver function, there were 27 cases in grade A, 34 cases in grade B and 19 cases in grade C.

Interventions • Patients in both groups received endoscopic treatment. Postoperative health management procedures were implemented in the observation group, including establishing a health management team, health management including self-psychological counseling, daily diet management, rest management, medication management, and complications prevention and management and procedure implementation including pre-discharge guidance and follow up after discharge. Routine health management was implemented in the control group, including understanding the lifestyle and disease control status of patients after treatment, giving health education and guidance, including diet, daily exercise, intervention drugs, psychological state, and other aspects, and reminding patients to return to the hospital outpatient clinic once a time after discharge.

Primary Outcome Measures • (1) clinical efficacy (2) rebleeding rate (3) varicose vein disappearance (4) self-management ability, and (5) quality of life.

Results • The total clinical effective rate was 92.5% in the observation group and 82.5% in the control group ($P < .05$). The rebleeding rate and varicose vein disappearance rate were 2.5% and 70.0% in the observation group, presented better relative to those of 12.5% and 55% in the control group, respectively ($P < .05$). After intervention, the scores of self-management ability [(18.27±3.11) points, (17.84±3.64) points, (17.17±3.10) points and (18.34±3.32) points vs (16.08±2.86) points, (15.10±2.86) points, (15.48±2.54) points and (16.18±2.84) points] and quality of life [(78.23±8.10) points, (79.06±6.62) points, (78.12±3.10) points and (80.15±7.12) points vs (64.11±6.46) points, (65.15±2.36) points, (65.48±2.57) points and (72.16±2.97) points] in the observation group were higher than the control group ($P < .05$).

Conclusion • The implementation of a health management program in esophageal and gastric variceal hemorrhage patients after endoscopic treatment is helpful to improve the clinical effect of endoscopic treatment, reduce the rebleeding rate and varicose veins, and improve the self-management ability and quality of life of patients, which has important clinical significance. (*Altern Ther Health Med.* [E-pub ahead of print.])

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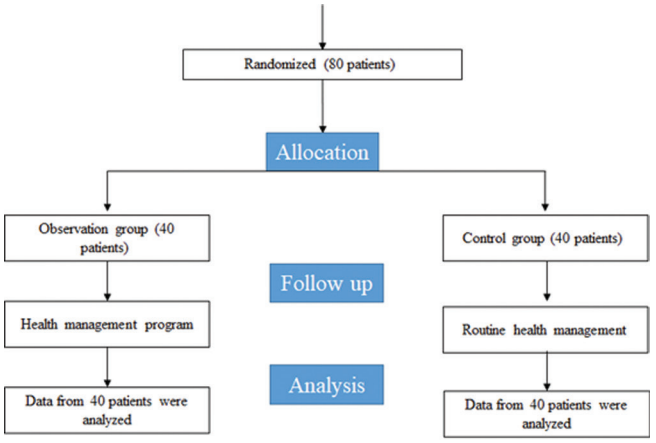
INTRODUCTION

Esophageal and gastric variceal bleeding (EGVB) is one of the most common and serious complications during decompensation of cirrhosis, which is usually with acute onset and severe with high fatality rate, posing a great threat to the health and life safety of patients.[1] Once esophageal and gastric varices are formed, about 1/3 of patients have ruptured bleeding, and the fatality rate per hemorrhage is as high as 20% to 30%, and the chance of untreated patients dying from bleeding within a year can reach 70%.[2] Clinically, the probability of death caused by first bleeding of patients is 50%-70%, and about 80% of patients will suffer from recurrent bleeding.[3] Based on this, active and effective measures should be taken in time to control bleeding and relieve varicose gastric fundus, which can effectively improve the prognosis of patients. In recent years, with the continuous development and maturity of gastrointestinal endoscopic diagnosis and treatment technology, endoscopic surgery, which is simple to operate and can effectively stop bleeding, has become an important method for the clinical treatment of EGVB. However, postoperative self-management is required to reduce the occurrence of rebleeding and improve the quality of life.[4] The health

Table 1. Basic clinical information in 2 groups

Characteristic		Control group (n=40)	Observation group (n=40)	*P* value
Gender (male/female)		30/10	29/11	>.05
Average age (years)		56.20±4.30	54.90±4.32	>.05
Primary diseases	Hepatitis B cirrhosis	24	21	>.05
	Alcoholic cirrhosis	12	14	
	Other diseases	4	5	
Child-Pugh classification of liver function	Grade A	13	14	>.05
	Grade B	19	15	
	Grade C	8	11	

Figure 1. Flowchart.



management after routine endoscopic therapy mainly consists of telephone follow-up and outpatient review, etc. Although it has certain effects, there are certain deficiencies, such as single content, lack of pertinence, and limited by time and space. Some patients have relatively insufficient cognition of the disease and poor self-management ability, leading to poor prognosis of patients, which will affect the clinical effect.[5] Therefore, it is necessary to explore a process and way to strengthen the postoperative health management of EGVB patients. In recent years, with the development of medical technology, health management procedures have been gradually applied in clinical practice and achieved good results. As reported previously, integrated health management model is effectiveness in improving the health of older adults with diabetes.[6] WeChat platform health management and refined continuous nursing model can effectively improve the life quality and reduce postoperative complications of acute myocardial infarction patients after percutaneous coronary intervention.[7] However, the application of health management program on patients who have undergone endoscopic surgery for EGVB remains unclear.

In this paper, our study aimed to assess the impact of a health management program on the clinical efficacy, rebleeding rate, varicose vein disappearance, self-management ability, and quality of life of patients who have undergone endoscopic surgery for EGVB.

DATA AND METHODS

Patient Selection

Eighty EGVB patients who received endoscopic treatment in our hospital from January 2020 to January 2022 were included in the study.

Inclusion criteria: (1) Cirrhosis with portal hypertension was confirmed by symptom, clinicopathological, and imaging tests; (2) Through clinical gastroscopy and symptom detection, varicose veins or with active bleeding could be seen; (3) Indications of endoscopic surgery; (4) The patient and his/her family were informed and consented to the relevant research; (5) Patients with good compliance and could cooperate with postoperative follow-up.

Exclusion criteria: (1) Gastrointestinal bleeding caused by other causes; (2) Other severe digestive diseases; (4) Complicated with diseases of the blood system and immune system; (5) Abandoned follow-up or failed to complete follow-up. This study was approved by our hospital's Ethics Committee. Patients were divided into two groups based on the chaotic table method, both of which were 40 cases (Figure 1). There was no significant difference in the basic clinical information between the two groups ($P > .05$, Table 1), indicating good comparability.

Methods

Treatments. All patients were given symptomatic treatment, including hemostasis, dilatation, somatostatin, and vital signs monitoring, after diagnosis upon admission. Medical tissue glue or endoscopic ligation: A routine endoscopic examination was performed to determine the severity and scope of varicose veins, confirm the bleeding sites, and select varicose veins. Intravenous injection was used to inject liquid into the varicose vein mass or rupture, with rapid injection of 2-5 mL lauromacrogol into each point, and then 0.5-1 mL α-n-butyl cyanoacrylate medical adhesive was injected to ensure no leakage of receding needles, and then the endoscope was withdrawn. The multi-band 0 hair lasso was installed. After entering the microscope and finding the varicose vein from the dentate line of the cardia, the spiral was ligated from bottom to top, and the 4-7 rings were ligated until there was no clear varicose vein, and endoscopic observation confirmed that there was no active bleeding and then retreats. After the operation, the patient's vital signs were closely monitored, bed resting, and fasting for 24-48 h.

Health management. Control group: patients in this group were subjected to routine health management, and telephone follow-up was conducted after discharge in order to understand the lifestyle and disease control status of patients after treatment. At the same time, health education and guidance were given, including diet, daily exercise, intervention drugs, psychological state, and other aspects. The nurses answered the questions raised by patients in a timely manner and reminded patients to return to the hospital outpatient clinic once a time after discharge.

Observation group: patients in this group constructed and applied the health management program at the same time as routine health management, as follows:

***Establishing a health management team*:** it consisted of 3 doctors and 3 nurses, all of whom had more than 6 years of

specialist diagnosis and treatment experience and had the title of attending doctors, who were responsible for evaluating patients' postoperative conditions and timely responding to patients' problems in postoperative treatment, intervention, return visit, and other aspects. The team members established follow-up records for patients and completed electronic follow-up records in time.

***Health management content*:** based on previous research and clinical analysis, and based on the patient's diagnosis and treatment and nursing needs, the management procedure content was formulated, including self-psychological counseling, daily diet management, rest management, medication management, and complications prevention and management. Follow-up was conducted every 4 weeks. The patients' symptoms, therapeutic effect, and examination results were evaluated. Electronic follow-up files were established for each patient, and their disease conditions were recorded in time as the basis for the next follow-up. The management contents were as follows:

A. Self-psychological counseling: EGVB patients were prone to negative, despair, and other pessimistic emotions; the nurses explained that positive and negative attitudes had completely different effects on the prognosis of the disease, according to the patient's different physical and psychological states to master language communication skills, speech focus, gained the trust of patients, explained successful treatment cases, reduced patients' psychological pressure, so that patients could actively cooperate with treatment. For example, nurses took the initiative to communicate with patients, using clear and simple language, gentle and caring tone. Nurses learned to listen and silence, with the patient's language, tone, expression, etc., to nod and eye attention, so that the patient felt that you were not only listening, but also had experienced his mood. For patients with low education level, nurses patiently explained to the patient some medical knowledge that the patient could accept, guided the patient to ask questions, and answered them, so that the patient could establish a good confidence in overcoming the disease.

B. Daily diet management: fasting in the early stage of bleeding and a warm and cool liquid diet could be entered after the bleeding was stable. A special diet manual was made. A specific diet was developed for different periods of time. Digestible, high calories-calorie, high-quality protein, rich vitamins, and adequate lipids dominated the diet. Grains, eggs, fish, and fruits were selected. The prohibited, selective, and recommended food groups were listed in the form of pictures. The cooking methods were listed in detail for selected ingredients. Patients with less moderate esophageal varices could gradually transition to soft food, and patients with heavy varicose veins controlled the amount of food eaten, and the number of meals eaten, and the food form was semi-liquid. In hepatic encephalopathy, a low protein diet was given to prevent elevated blood ammonia and aggravated coma. Patients with ascites were given a low-sodium diet with a sodium limit of 2 g/d. The corresponding recipe for low protein and low sodium diet was constructed in the diet manual. At the same time, patients were taught to eat slowly to avoid rebleeding due to injury of esophageal and gastric mucosa.

C. Rest management: The nurses explained the importance of disease recovery and bed rest to patients and emphasized that fatigue may aggravate liver metabolism and was not conducive to liver cell repair. The nurses arranged appropriate exercises for patients on a step-by-step basis. After the operation, bed rest was the main method. During the postoperative recovery period, according to the muscle strength of the patient's limbs, excluding the presence of lower limb edema and other complications, the activity schedule was made, and the bedside activities or walking activities were selected. The activity time did not exceed 1 hour, and the fatigue was felt. After discharge, patients could carry on their daily life normally. Activities and exercises were mainly conducted at slow and uniform speeds, such as walking and Tai chi, etc., avoiding activities with too fast speed and too high intensity, and staying up late was strictly prohibited.

D. Medication management: patients were instructed to follow the doctor's advice strictly, and adverse reactions were closely observed. The nurses explained the damage of antipyretic and analgesic drugs and hormone drugs to gastric mucosa, which could easily cause stress bleeding. The list of prohibited and cautiously used drugs was drawn up according to the effects of drugs, and patients were informed to follow the doctor's advice after discharge. When drugs were combined with other diseases and needed to be used, the follow-up doctor was contacted in time to ensure the safety of the drugs. Oral solution and suspension were preferred for drugs that need to be taken for a long time. The same dosage form tablets were preferred to have a smaller volume, and try to avoid choosing larger volume or capsule preparation.

E. Complications prevention and management: the nurses explained the causes of rebleeding caused by poor compliance, guided family members to learn to observe the patient's personality, behavior, consciousness, and stool color changes, learned and could find early gastrointestinal bleeding, hepatic encephalopathy signs, so as to timely detection and treatment. Once the patient appeared heavily bleeding, the patient tried to maintain a stable mood, turn the head to one side, avoid choking, prevent suffocation, and receive timely medical treatment.

Procedure implementation: A. Pre-discharge guidance. Two days before discharge, doctors and nurses visited patients at the bedside to inform them of the health management plan so that patients could be familiar with the follow-up content and obtain their approval. The patient's current situation was comprehensively evaluated, and the medical staff explained the health management procedures to the patient and family members, including carrying out health management, mastering psychological self-counseling, rest, and other guidance. On the day of discharge, discharge guidance designed by the department was issued, including discharge precautions, education methods, department contact information, etc. The method and time of education were

Table 2. Comparison of clinical therapeutic effects between the two groups (n, %)

Groups	Cases	Obvious effective (%)	Effective (%)	Ineffective (%)	Total effective (%)
Observation group	40	25 (62.50)	12 (30.00)	3 (7.50)	37 (92.50)
Control group	40	18 (45.00)	15 (37.50)	7 (17.50)	33 (82.50)
χ^2					13.41
P value					0.00

Table 3. Comparison of rebleeding rate and varicose vein disappearance rate between the two groups after treatment (n, %)

Groups	Cases	Rebleeding [percentage (%)]	Varicose vein disappearance [percentage (%)]
Observation group	40	1 (2.50)	28 (70.00)
Control group	40	5 (12.50)	22 (55.00)
χ^2		5.39	12.08
P value		.00	.00

discussed with the patients, and the contact information of the patients and their caregivers was collected. After discharge, patients could create a follow-up file for them through the electronic follow-up system (or WeChat group) and input their basic information.

B. Follow up after discharge. The hospital electronic follow-up system was used to improve the archival information, the follow-up was carried out within the prescribed time, the follow-up content and effect were marked, and the file was kept in time. If the patient died, lost contact, or refused follow-up, the patient was placed on the end follow-up list. The first follow-up was limited to 7 days after discharge. Standard communication methods were used to understand the patient's current situation and ask if he needed help. Health education on diet and activity was strengthened to help patients improve their awareness and ability to manage symptoms. The nurses guided patients to receive adjuvant therapy on time and established long-term self-care mechanisms, confirmed whether the patient had any questions, and determined the time of the return visit according to the follow-up content.

Observation indexes

Rebleeding and disappearance of varicose veins: the rate of hemostasis and disappearance of varicose veins 6 months after operation were observed and recorded.

Clinical effect:[8] the effect was evaluated according to the improvement of symptoms and signs before and after treatment. Obvious effect: after treatment, the morphology of esophageal variceal veins was improved to moderate, the red sign was eliminated, and the variceal vein mass area was reduced by more than 50%. Effective: the red sign was improved, and the varicose vein mass area was reduced by 25%~50%. Ineffective: repeated symptoms with no obvious worsening trend. Total effectiveness was the sum of obvious and effective.

Self-management ability: The self-management scale is a tool used to measure and assess an individual's self-management ability. Through the use of the scale, individuals can fully understand their self-management ability in drugs, psychology, diet, and symptoms, find their own problems, and make targeted improvement and improvement. Before intervention and 3 months after intervention, the self-management scale was applied to evaluate the four dimensions, including drugs, psychology, diet, and symptoms, with each score ranging from 5 to 20 points. The higher the score, the better self-management ability.[9]

Quality of life: The Short Form 36 Health Survey (SF-36) is a universal measurement scale developed by the Medical Outcomes Study (MOS) and commonly used to assess health status. Before intervention and 3 months after intervention, the SF-36 scale was used to evaluate the quality of life of patients,[10] including physiological function, social function, health status, emotional function, and other dimensions, with 100 points for each item. The higher the score, the better the quality of life was.

Statistical analysis

SPSS 22.0 software (IBM, Armonk, New York, USA) was used for statistical processing. Measurement data was expressed by ($\bar{x} \pm s$), independent value *t* test was used for comparison between the two groups. Count data was expressed by case number (%) and χ^2 test was for comparison between the two groups. $P < .05$ was considered statistically significant.

RESULTS

Clinical Efficacy

After 3 months of treatment, the total clinical effective rate was 92.5% in the observation group, presented higher than that of 82.5% in the control group ($P < .05$), as shown in Table 2, indicating that health management program had effective clinical efficacy in patients with EGVB after endoscopic treatment.

Rebleeding and Varicose Vein Disappearance

After 6 months of postoperative follow-up, there were no cases lost to follow-up. The rebleeding rate and varicose vein disappearance rate were 2.5% and 70.0% in the observation group, presented better relative to those of 12.5% and 55% in the control group, respectively, with statistical significance ($P < .05$), as shown in Table 3. All these results suggested that health management program could effectively reduce the rebleeding rate and promote the varicose vein disappearance rate in patients with EGVB after endoscopic treatment.

Self-Management Ability

After health management intervention, the scores of self-management indicators were elevated in both groups relative to before intervention ($P < .5$). Those in the observation group were higher than those in the control group, with statistical significance ($P < .05$), but no significant difference before intervention ($P > .05$), as shown in Table 4. All these results suggested that health management program could effectively promote the self-management ability of patients with EGVB after endoscopic treatment.

Table 4. Comparison of self-management ability between the two groups before and after intervention ($\bar{x} \pm s$, points)

Groups	Drug management		Psychological management		Diet management		Symptom management	
	Before	After	Before	After	Before	After	Before	After
Observation group (n=40)	12.23±2.40	18.27±3.11[a]	11.71±2.49	17.84±3.64[a]	12.67±2.49	17.17±3.10[a]	11.70±2.44	18.34±3.32[a]
Control group (n=40)	12.41±2.29	16.08±2.86[a]	11.67±2.52	15.10±2.86[a]	12.60±2.24	15.48±2.54[a]	11.63±2.50	16.18±2.84[a]
t	0.85	7.41	1.01	5.38	0.20	8.22	0.51	7.24
P value	.07	.00	.10	.01	.08	0.00	.09	.00

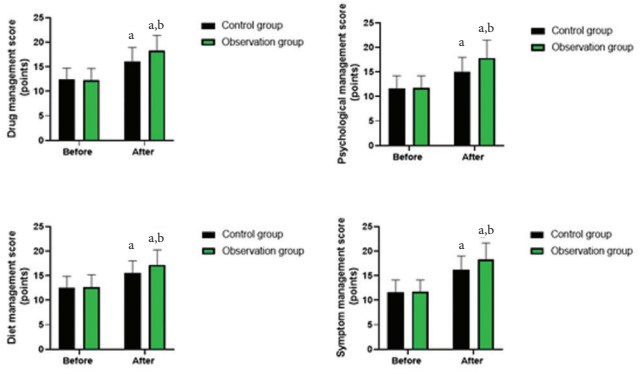
[a]Comparison before and after intervention in the same group, $P < .05$ indicates statistical significance.

Table 5. Comparison of quality of life before and after intervention between the two groups ($\bar{x} \pm s$, points)

Groups	Physiological function		Social function		Physical condition		Emotional function	
	Before	After	Before	After	Before	After	Before	After
Observation group (n=40)	50.13±5.43	78.23±8.10[a]	52.70±6.19	79.06±6.62[a]	50.67±6.49	78.12±3.10[a]	55.78±2.89	80.15±7.12[a]
Control group (n=40)	51.01±6.09	64.11±6.46[a]	53.03±6.51	65.15±2.36[a]	50.22±6.16	65.48±2.57[a]	56.13±2.50	72.16±2.97[a]
t	0.91	14.44	0.91	5.38	0.22	8.56	0.51	7.24
P value	.09	.02	.12	.01	.08	.00	.09	.00

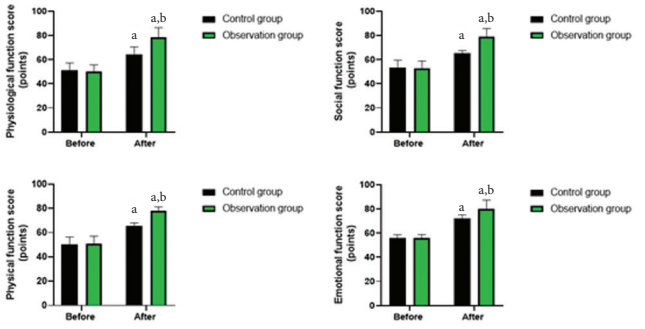
[a]Comparison before and after intervention in the same group, $P < .05$ indicates statistical significance.

Figure 2. Comparison of self-management ability between the two groups before and after intervention.



[a]$P < .05$, compared with before intervention
[b]$P < .05$, compared with control group

Figure 3. Comparison of quality of life before and after intervention between the two groups.



[a]$P < .05$, compared with before intervention
[b]$P < .05$, compared with control group

Quality of Life

After the intervention evaluation, the life quality score was elevated in both groups relative to before intervention ($P < .05$), and those in the observation group was higher than that of the control group; the difference was statistically significant ($P < .05$), but there was no significant difference before the intervention ($P > .05$), as shown in Table 5. All these results suggested that health management program could effectively promote the quality of life of patients with EGVB after endoscopic treatment.

DISCUSSION

After endoscopic surgery, patients with EGVB need a good lifestyle and comprehensive convalescence to obtain better surgical results. From the clinical point of view, whether the patient can implement and adhere to self-management after discharge is crucial to the postoperative efficacy of EGVB and other recurrent diseases, so the nursing staff must invest more energy and resources in the postoperative follow-up.

Health education is an important part of quality care. With the transformation of medical models, it is imperative for nursing staff to carry out continuous and effective health education for patients as the main body of hospital health education and to improve patients' knowledge of diseases and self-management awareness through a variety of means.[11] Strengthening health education for patients and their families can give full play to the support function of families through joint training and joint participation to guide patients in forming and strengthening good living habits so as to enhance the effect of health education. The construction and application of the post-discharge health management program make up for the low efficiency of post-discharge nursing, and the hospital carries out clinical health management by actively establishing contact with patients. For patients who cannot be contacted through the network, door-to-door contact can be made to solve the problems raised by patients, discourage patients' bad behaviors, and improve patient compliance.[12,13] Although routine health management has discharge guidance, the follow-up is basically maintained, and there is no method for patients to maintain their self-management ability. The lack of procedures leads to the decline of patients' disease management ability after discharge to a certain extent, and the postoperative recovery effect is not ideal.[14-16] Health management programs are established and applied with a focus on "continuity." Through the design of diversified and comprehensive health management measures and procedures,

the self-management ability of EGVB patients is improved so that patients can reduce the possibility of disease recurrence by restricting and managing their own lifestyle. Health education procedure is a reasonable and effective nursing method that attaches importance to the professional collaboration between physicians and nurses and believes that the follow-up management and control of patients' conditions cannot be separated from the active participation of medical staff. Through health education, the scientific and targeted follow-up measures can be improved, and the quality of nursing can be continuously improved.[17]

From the results of this study, the overall clinical effective rate of the observation group was 92.5%, presented higher relative to that of 82.5% in the control group ($P < .05$). The rebleeding rate and varicose disappearance rate were 2.5% and 70.0% in the observation group, presented better relative to those of 12.5% and 55% in the control group ($P < .05$). All these results suggested that health management procedures for EGVB patients after endoscopic surgery could effectively promote the clinical therapeutic effective rate of endoscopic surgery, promote the postoperative recovery, thereby reduce the rebleeding rate and promote the varicose disappearance rate. Consistently, Yang et al. have indicated that dietary nursing and high-quality nursing intervention can reduce the rebleeding rate of patients with gastric bleeding.[18] After the intervention, the scores of self-management ability and quality of life in 2 groups were improved, and the scores in the observation group were significantly higher than those in the control group ($P < .05$). At the same time, the self-care ability score of patients in the observation group was significantly higher than that of the control group, indicating that the health education program had a positive significance for improving patients' self-care ability.[19,20] Consistently, Konstadina Griva et al. have indicated that self-management intervention in effective in improving health in hemodialysis patients, which promotes self-report adherence and reduces end-stage renal disease-related complications.[21] Wang et al. have proposed that health literacy and self-management efficacy can improve the health-related quality of life of patients with hypertension.[22] In the implementation of health management procedures, our department set up a sub-specialty team equipped with experienced physicians and nurses. It designated special diet manuals and popular science videos, which were updated regularly to guide patients to a healthy lifestyle online and offline. Our team members strengthened postoperative health education, enhanced patients' disease awareness, enhanced their consciousness and initiative, guided and improved patients' independent health behaviors, helped them to establish long-term self-care activity habits, improved patients' self-management ability, and let patients receive treatment with a positive attitude, thereby prolonging the survival time of patients after surgery. The experimental results showed that the quality of life score of patients in the observation group was higher than that of the control group because the application of health education procedures broke the traditional pattern of the doctor-patient relationship, realized and promoted the complementary advantages of medical resources, infiltrated communication and psychology into daily follow-up, enhanced the coordination between doctors and patients, allowed patients to get a good nursing experience, enhanced patient collaboration, benignly controlled the condition, and improved the overall quality of life of patients.[23] Consistently, an individualized self-management program improves health-related quality of life and functionality in hospitalized severe chronic obstructive pulmonary disease patients.[24]

There are some limitations to our study. First, the sample size was relatively small, which affected the accuracy of the results. Second, the follow-up time is short, and the long-term impact of health management programs on the prognosis of EGVB patients after endoscopic surgery is unclear. Therefore, further large-scale and long-term studies will be carried out to validate our findings. In addition, healthcare providers from different backgrounds should be patient-centered and improve patient self-management awareness to provide comprehensive care for EGVB patients.

In conclusion, health management procedures for EGVB patients after endoscopic surgery can effectively improve the clinical nursing effect and promote the outcome of patients' disease, thus reducing the incidence of rebleeding and varicose veins and improving patients' self-management ability and quality of life, which is worthy of clinical promotion and application. In the future, we will optimize the follow-up after discharge, in order to better promote the quality of life and reduce the rebleeding rate of EGVB patients after endoscopic surgery. For healthcare practitioners and policy makers, personalized health management should be developed according to the actual situation of patients, so as to better promote the postoperative recovery and reduce the rebleeding rate.

REFERENCES

1. Kovacs TOG, Jensen DM. Varices: Esophageal, Gastric, and Rectal. *Clin Liver Dis*. 2019;23(4):625-642. doi:10.1016/j.cld.2019.07.005
2. Liu R, Sun Y, Xu K, Shi H, Sheng S, Kong D. A Histogram Model to Predict the Risk of Bleeding from Oesophageal and Gastric Variceal Rupture in Cirrhosis. *J Coll Physicians Surg Pak*. 2022;32(5):586-590. doi:10.29271/jcpsp.2022.05.586
3. Salahshour F, Mehrabinejad MM, Rashidi Shahpasandi MH, et al. Esophageal variceal hemorrhage: the role of MDCT characteristics in predicting the presence of varices and bleeding risk. *Abdom Radiol (NY)*. 2020;45(8):2305-2314. doi:10.1007/s00261-020-02585-5
4. Jakab SS, Garcia-Tsao G. Evaluation and Management of Esophageal and Gastric Varices in Patients with Cirrhosis. *Clin Liver Dis*. 2020;24(3):335-350. doi:10.1016/j.cld.2020.04.011
5. Roveron G, Antonini M, Barbierato M, et al. Clinical Practice Guidelines for the Nursing Management of Percutaneous Endoscopic Gastrostomy and Jejunostomy (PEG/PEJ) in Adult Patients: An Executive Summary. *J Wound Ostomy Continence Nurs*. 2018;45(4):326-334. doi:10.1097/WON.0000000000000442
6. Chao J, Yang L, Xu H, Yu Q, Jiang L, Zong M. The effect of integrated health management model on the health of older adults with diabetes in a randomized controlled trial. *Arch Gerontol Geriatr*. 2015;60(1):82-88. doi:10.1016/j.archger.2014.10.006
7. Xu M, Yang X, Liu L, Dai Y, Xu M, Lin S. Effect of the WeChat Platform Health Management and Refined Continuous Nursing Model on Life Quality of Patients with Acute Myocardial Infarction after PCI. *J Healthc Eng*. 2021;2021:5034269. doi:10.1155/2021/5034269
8. Stanley AJ, Laine L. Management of acute upper gastrointestinal bleeding. *BMJ*. 2019;364:l536. doi:10.1136/bmj.l536
9. Dollo V, Chambers G, Carothers M. Endoscopic retrieval of gastric and oesophageal foreign bodies in 52 cats. *J Small Anim Pract*. 2020;61(1):51-56. doi:10.1111/jsap.13074
10. Zampelis V, Ornstein E, Franzén H, Atroshi I. A simple visual analog scale for pain is as responsive as the WOMAC, the SF-36, and the EQ-5D in measuring outcomes of revision hip arthroplasty. *Acta Orthop*. 2014;85(2):128-132. doi:10.3109/17453674.2014.887951
11. Koya Y, Shibata M, Watanabe T, et al. Influence of gastroesophageal flap valve on esophageal variceal bleeding in patients with liver cirrhosis. *Dig Endosc*. 2021;33(1):100-109. doi:10.1111/den.13685
12. Triantos C, Kalafateli M. Endoscopic treatment of esophageal varices in patients with liver cirrhosis. *World J Gastroenterol*. 2014;20(36):13015-13026. doi:10.3748/wjg.v20.i36.13015

13. Ma JL, He LL, Jiang Y, et al. New model predicting gastroesophageal varices and variceal hemorrhage in patients with chronic liver disease. *Ann Hepatol*. 2020;19(3):287-294. doi:10.1016/j.aohep.2019.12.007
14. Mousa N, Abdel-Razik A, Sheta T, et al. Endoscopic management of acute oesophageal variceal bleeding within 12 hours of admission is superior to 12-24 hours. *Br J Biomed Sci*. 2021;78(3):130-134. doi:10.1080/09674845.2020.1857049
15. Kan W, Yang R, Tang M. Application research of chronic disease health management in an urban community based on the PRECEDE-PROCEED model in the long-term management of diabetes mellitus. *Am J Transl Res*. 2021;13(7):8142-8149.
16. Seid MA, Bayou NB, Ayele FY, Zerga AA. Utilization of Routine Health Information from Health Management Information System and Associated Factors Among Health Workers at Health Centers in Oromia Special Zone, Ethiopia: A Multilevel Analysis. *Risk Manag Healthc Policy*. 2021;14:1189-1198. doi:10.2147/RMHP.S285604
17. Raskind IG, Shelton RC, Comeau DL, Cooper HLF, Griffith DM, Kegler MC. A Review of Qualitative Data Analysis Practices in Health Education and Health Behavior Research. *Health Educ Behav*. 2019;46(1):32-39. doi:10.1177/1090198118795019
18. Yang F, Wang M, Ye J. Effects of dietary nursing and high-quality nursing intervention in emergency patients with gastric bleeding. *Minerva Gastroenterol (Torino)*. 2022;68(4):497-499. doi:10.23736/S2724-5985.22.03236-3
19. Chrvala CA, Sherr D, Lipman RD. Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. *Patient Educ Couns*. 2016;99(6):926-943. doi:10.1016/j.pec.2015.11.003
20. Chang YL, Tsai YF, Hsu CL, Chao YK, Hsu CC, Lin KC. The effectiveness of a nurse-led exercise and health education informatics program on exercise capacity and quality of life among cancer survivors after esophagectomy: A randomized controlled trial. *Int J Nurs Stud*. 2020;101:103418. doi:10.1016/j.ijnurstu.2019.103418
21. Griva K, Nandakumar M, Ng JH, Lam KFY, McBain H, Newman SP. Hemodialysis Self-management Intervention Randomized Trial (HED-SMART): A Practical Low-Intensity Intervention to Improve Adherence and Clinical Markers in Patients Receiving Hemodialysis. *Am J Kidney Dis*. 2018;71(3):371-381. doi:10.1053/j.ajkd.2017.09.014
22. Wang C, Lang J, Xuan L, Li X, Zhang L. The effect of health literacy and self-management efficacy on the health-related quality of life of hypertensive patients in a western rural area of China: a cross-sectional study. *Int J Equity Health*. 2017;16(1):58. doi:10.1186/s12939-017-0551-9
23. Shaw J, Patidar KR, Reuter B, et al. Focused Education Increases Hepatocellular Cancer Screening in Patients with Cirrhosis Regardless of Functional Health Literacy. *Dig Dis Sci*. 2021;66(8):2603-2609. doi:10.1007/s10620-020-06583-x
24. Lopez-Lopez L, Valenza MC, Rodriguez-Torres J, Torres-Sanchez I, Granados-Santiago M, Valenza-Demet G. Results on health-related quality of life and functionality of a patient-centered self-management program in hospitalized COPD: a randomized control trial. *Disabil Rehabil*. 2020;42(25):3687-3695. doi:10.1080/09638288.2019.1609099