Dietary Management in Elderly Gastric Cancer Patients after Gastrectomy

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Introduction. To discuss and analyze the diet management measures for elderly patients with gastric cancer after gastrectomy by data mining and database building.

Methods. Firstly, "gastric cancer patients + diet nursing" was used as the key word for network retrieval from the academic journal platforms such as CNKI, Wanfang, VIP and so on. On this basis, the methods of frequency analysis, association rule analysis and cluster analysis were used to analyze and organize the actual collected literature data.

Results. The analysis and summary of the literature in the corresponding field showed that the implementation of diet management measures for elderly patients with gastric cancer after gastrectomy could improve their nutritional indicators, gastrointestinal function, quality of life, and psychological and emotional state. However, in the specific diet management practice, we still need to pay attention to the details and improve the pertinencies.

Conclusion. The diet management effect of elderly patients with gastric cancer after gastrectomy is better, but attention should be paid to formulate the corresponding diet management plan according to the actual situation of patients, focusing on the risk factors that can cause patients to develop malnutrition symptoms after surgery.

Keywords. senile gastric cancer; Gastrectomy; After operation; Diet Management

INTRODUCTION

Gastric cancer is a malignant tumor disease of the stomach, which is common in elderly

patients [1]. Patients with early gastric cancer often have no special manifestations, but patients with advanced gastric cancer may have obvious abdominal pain, loss of appetite, nausea, vomiting, hematemesis, melena and other symptoms, which seriously threaten their lives [2-3]. For elderly patients with gastric cancer, how to take effective treatment countermeasures is of great significance [4-5]. For elderly patients with gastric cancer, some scholars believe that gastrectomy can be performed [6-8]. However, the patient's physiological state changes after surgery, and if the diet is not appropriate, the risk of malnutrition will be significantly increased, which is very unfavorable to the prognosis. The reason is that after gastrectomy, the structure of the patient's digestive system is bound to undergo tremendous changes, and compared with the normal state, the digestive function of the stomach has been seriously affected. On this basis, patients will have a considerable period of time after the operation can not eat normally, at this time the body's normal metabolism of nutrients must not be supplemented in time, so it is easy to appear symptoms of malnutrition. Therefore, in addition to professional treatment, effective nursing countermeasures should be taken to reduce the risk of malnutrition and ensure the life safety of elderly patients with gastric cancer [9]. Diet management is a mode of management intervention specifically aimed at diet. However, the current diet management scheme lacks sufficient focus and pertinency, so it is often difficult to achieve ideal results [10]. Based on the above situation, this study attempts to analyze and demonstrate the diet management measures for elderly patients with gastric cancer after gastrectomy based on the analysis and summary of literature data according to the idea of data mining. In short, data mining is the process of summarizing and sorting out the internal rules from massive data. Diet nursing intervention for patients with gastric cancer is a very broad work. In addition, the physical conditions of patients after surgery are inevitably different, so it is more targeted to summarize the common diet nursing measures in clinical practice through data mining.

MATERIALS AND METHODS

Literature Sources

The literature on "postoperative diet nursing of elderly patients with gastric cancer" was searched in China National Knowledge Infrastructure (CNKI), Wanfang Database, VIP database and China Biology Medicine Disc by subject search. The search keywords were "gastric cancer", "postoperative" and "diet nursing". The literature search period was from December 2013 to December 2023. The language is limited to Chinese.

The actual literature included randomized controlled trials, clinical review experiments and clinical observational literature. All the patients in the literature were diagnosed with gastric cancer and had undergone gastric resection. The patients were of any gender, age or region. The actual postoperative diet nursing measures mainly include simple diet nursing and diet nursing measures combined with other theories.

In the process of screening literature, the diet nursing research on patients with gastric cancer undergoing chemotherapy, the diet nursing research on patients with gastric cancer undergoing conservative treatment, reviews, conference reports and theoretical discussions were excluded. Finally, the clinical research carried out by different authors in the same unit was excluded.

Database Establishment and Data Normalization

Excel2021 software was used to establish the literature item database of "postoperative diet management of gastric cancer patients". The focus was to input the title of each literature, treatment measures of gastric cancer patients and diet nursing content into Excel table, and then the construction of the database was completed in this study.

Data Processing

In addition to using conventional bibliometric methods for literature statistics, this study also introduced Apriori algorithm in association rules. The application of the algorithm in

this study mainly involves three indicators: (1) support: support (A≥B) =P (A∪B), which represents the probability of "A" and "B" appearing at the same time. (2) confidence: confidence (A ≥B) =Support (A ∪B) /support(A), which represents the ratio of the probability of both "A" and "B" to the probability of "A". (3) Lift: Lift={P (A ∪B) /P(A)}/P (B), denotes the ratio of the proportion of transactions containing "A" and "B" to the proportion of transactions containing "B". If the data analysis confirmed that the association rule met both the minimum support and the minimum confidence, it was considered as a "strong association rule". On this basis, "lift degree" actually reflects the actual level of correlation between "A" and "B" in the temporal association rule. In the case of elevation > 1, higher data prove that "A" is more associated with "B". The degree of uplift =1 means that "A" and "B" are independent. If the elevation is < 1, it indicates a negative relationship between the two. This study mainly uses the Apriori algorithm in the association rules to try to analyze and judge the correlation between postoperative diet management and nutritional indicators, nutritional status or gastrointestinal function in elderly patients with gastric cancer.

RESULTS

Results of Literature Screening

After screening and excluding repeated literatures, a total of 227 literatures related to postoperative diet management in elderly patients with gastric cancer were collected. Among them, 96 literatures belonged to simple postoperative diet management, and 131 literatures belonged to postoperative diet management under other theoretical guidance or other nursing measures.

Content of Postoperative Diet Management for Patients with Gastric Cancer

By analyzing the actual screening of 227 literatures, it can be seen that the diet management of patients with gastric cancer after gastrectomy roughly includes the investigation and understanding of patients' eating habits, the analysis of patients' condition and physical

condition, diet intervention and diet guidance. The main purpose of understanding patients' dietary habits and analyzing patients' conditions and physical conditions is to explore and understand their previous dietary preferences, and then determine whether there is an impact on their conditions or physical conditions, or to develop a targeted diet plan for them as a starting point. Diet intervention and diet guidance mainly aims to guide patients to correct their dietary habits, clarify the importance of healthy diet after surgery and the corresponding dietary precautions, which roughly includes the content of two links: diet intervention guidance during hospitalization and diet intervention guidance after discharge. In terms of details, nearly 60% of the 227 literatures proposed that it was necessary to participate in the corresponding diet management and health science education measures according to the age, gender and education of patients, so as to highlight the pertinness of postoperative diet management. For elderly patients with gastric cancer, the general consensus is that it is necessary to carry out the practice of postoperative diet management from the point of view of details, and the literature emphasizes that the use of concise and clear language that patients can understand should be used to ensure the effect of diet management. On this basis, a few literatures pointed out that the family members should be involved in the nursing intervention to ensure the actual nursing effect. If the diet nursing practice is carried out under the guidance of other theories, the formal implementation of postoperative diet management practice will also involve the establishment of diet management groups, the formulation of diet management plans and other links, and in the process of diet management, the details of the relevant links will be analyzed and controlled based on specific theoretical concepts. The postoperative diet management around the specific nursing model involves other links of nursing intervention practice, so it should be more targeted.

To Explore the Relationship Between Postoperative Diet Management and Nutritional Indicators and Nutritional Status in Patients with Gastric Cancer

The direct impact of scientific and rigorous diet management programs is the improvement

of nutritional indicators and nutritional status of patients. In this study, with the help of weka3.9.6 platform, the correlation between diet management and nutritional indicators and nutritional status of patients in 227 literatures was discussed and analyzed. The minimum support was set to 5% and the minimum confidence was set to 50%. Three association rules were obtained, and the degree of improvement was more than 1, and the highest degree of improvement was 9.22. See Table 1 below for specific data:

Table 1: Summary of association rules between postoperative diet management and nutritional indicators and nutritional status of patients with gastric cancer

Dietary management interventions	Nutritional indicators (status)	Confidence (%)	Degree of lift
Dietary Protocol Planning	TRF；AIB；PAB	100	9.22
Dietary interventions Dietary interventions	TRF；AIB；PAB	75	3.28
Dietary guidance	TRF；AIB；PAB	60	2.62

To Explore the Relationship Between Postoperative Diet Management and Gastrointestinal Function in Patients with Gastric Cancer

For elderly patients with gastric cancer after surgery, the implementation of postoperative diet management can also alleviate the interference caused by negative diet habits on their gastrointestinal function, and help them adapt to the body's nutritional metabolism pattern after surgery as soon as possible. According to the literature, most scholars' quantitative analysis of the recovery of gastrointestinal function of patients is mainly based on the time of the first anal ventilation, the time of the first anal defecation, the time of the first fluid intake and the overall length of hospital stay, and the core is to judge the actual recovery of gastrointestinal function of patients through these indicators.

weka3.9.6 platform was still used to analyze the literature related to the discussion of patients' gastrointestinal function. In the case of a minimum support of 5% and a minimum confidence of 50%, the lifting degree of the association rules shown in Table 2 below is all > 1. Among them, the improvement degree of diet plan, intervention of wrong eating habits and guidance of correct eating habits were almost at the same level. It is suggested that the implementation of diet management measures in patients with gastric cancer after gastrectomy can significantly improve their gastrointestinal function.

Table 2: Summary of association rules between postoperative diet management

and gastrointestinal function in patients with gastric cancer

Dietary management interventions	Gastrointestinal function index	Confidence (%)	Degree of lift
Dietary Protocol Planning	The time of first anal ventilation/anal defecation	80	1.51
Dietary interventions	Time of first fluid intake	75	1.41
Dietary guidance	Length of stay	74	1.39

To Compare the Relationship Between Postoperative Diet Management and Quality of Life, Psychological and Emotional State in Patients with Gastric Cancer

For elderly patients with gastric cancer, nursing intervention for dietary habits can also have an impact on their postoperative quality of life and psychological and emotional state. In this part, weka3.9.6 platform was used to analyze and summarize 227 literatures related to the quality of life and psychological and emotional state of patients. As shown in Table 3 below, the improvement degree of postoperative diet management on the quality of life and psychological and emotional state of elderly patients with gastric cancer was also greater than 1.

Table 3: Summary of association rules between postoperative diet management

and quality of life and psychological and emotional state of patients with gastric cancer

Dietary management interventions	Quality of life/psycho-emotional status	Confidence (%)	Degree of lift
Dietary Protocol Planning	Quality of life	92	1.72
Dietary interventions	Quality of life	88	1.64

Dietary guidance	Quality of life	73	1.56
Dietary Protocol Planning	Anxiety/depression mood	81	1.51
Dietary interventions	Anxiety/depression mood	70	1.49
Dietary guidance	Anxiety/depression mood	69	1.49

DISCUSSION

The incidence of gastric cancer in elderly patients is relatively high [11-12]. Once the disease is diagnosed, surgical treatment should be performed as soon as possible [13-14]. If not treated in time, cancer metastasis may occur, which seriously threatens life [15-16]. At present, gastrectomy can be performed for elderly patients with gastric cancer. However, after gastrectomy, the patient's metabolism changes, the intake and absorption of nutrients are blocked, the nutritional risk is high, and it is easy to have problems such as malnutrition, which not only affects the healing of the wound, but also increases the risk of complications. With the deepening of research on elderly patients with gastric cancer, some scholars believe that diet management can be implemented for elderly patients with gastric cancer after gastrectomy [17-18]. Studies have shown that diet management can significantly reduce the risk of malnutrition in elderly patients with gastric cancer and play a role in adjuvant therapy [19-20]. However, it should be noted that the current diet management plan for elderly patients with gastric cancer is always lack of enough pertinentness. Therefore, it is necessary to find the entry point of diet management for elderly patients with gastric cancer based on the actual situation of patients, so as to improve their quality of life after surgery. Based on the above situation, this paper attempts to sort out and summarize the literature involved in postoperative diet management of elderly patients with gastric cancer according to the idea of data mining, and tries to use the weka3.9.6 platform to mine the association rules behind the relevant literature data, and then cooperate with the Apriori algorithm to conduct in-depth research on the literature data of related links. Meanwhile, the application practice of Apriori algorithm is mainly to clarify the actual effects of postoperative diet management on nutritional status, gastrointestinal function,

quality of life, and psychological and emotional state of elderly patients with gastric cancer. These are the research indicators that relevant experts, scholars and clinical medical staff focus on in the existing literature. Therefore, quantitative analysis of the relationship between these three indicators and postoperative diet management can provide new help and new ideas for the innovation and reform of postoperative diet management mode in elderly patients with gastric cancer in follow-up clinical nursing work.

Based on the above research content, this study tried to formulate the following nursing intervention plan: first, the patients were organized to carry out nutritional risk screening (2002) before surgery, and then the patient's age, gender and other demographic information, disease severity, physical nutritional status, complications were systematically controlled. The nutritional status item involved the assessment of body weight change and food intake. A body-mass score of less than 18.5kg/m2 was assigned 3 points. For patients who are not convenient for weight testing, serum albumin concentration testing is feasible. If the test value is less than 30g/L, the score is 3 points. ③ In the age item, 1 point was added for those who were over 70 years old. The maximum total score is 7 points, and a score of more than 3 points is considered a nutritional risk. Secondly, dietary health education. It shows that the relationship between gastrectomy and diet, emphasizing improper diet, will aggravate the body's stress response, leading to the aggravation of the disease. In addition, patients need to be guided to clarify inappropriate diet, which will also affect the progress of postoperative rehabilitation and the progress of disease rehabilitation. Patients should pay attention to their own diet and actively correct bad eating habits. Finally, postoperative dietary management. One day after surgery, the patient was instructed to eat a small amount of plain boiled water, a small amount of multiple times. Two days after surgery, liquid diet, such as rice soup and vegetable soup, was instructed. Three days after surgery, they were instructed to take 1 spoon of short peptide and drink 100ml of plain boiled water 4 to 6 times a day. On the fourth day after operation, the patients were instructed to take 2 to 3 spoons of short peptides and to drink 100ml of plain boiled water, 4

to 6 times a day. Five days after operation, they were instructed to take 2 to 3 spoons of total nutrients and to drink 100ml of plain boiled water 4 to 6 times a day. Six days after surgery, she was instructed to take 3 spoons of total nutrients and drink 100ml of plain boiled water 6 to 8 times a day. Combined with steamed egg 1 part, 1~2 times/day. On the 7th day after operation, they were instructed to take 3 spoonful of total nutrients and drink 100ml plain boiled water 6 to 8 times a day. 1 serving (about 50g) of cooked noodles, 1~2 times/day. Two to three weeks after surgery, patients can be allowed to eat a small amount of steamed buns, rice cakes and other foods, or choose soft steamed buns, dumplings and poultry foods for patients to eat. During the postoperative rehabilitation period to discharge, the patient gradually started semi-liquid diet and ordinary diet, gradually increased the types of nutrients, and ate more easily digestible, high protein and vitamin foods. Instructions were given for 5 to 6 meals per day.

In the practice of diet management, it is necessary to systematically control the levels of ADL, PA, ALB and other nutritional indicators of patients, and then adjust the diet management plan according to the changes of patients' indicators. For example, patients with low PA levels can be encouraged to include foods rich in protein or vitamins in their daily diet. If necessary, patients can also be treated by oral amino acid capsules, intravenous albumin, or fresh plasma [21]. On this basis, it is recommended to screen patients with nutritional risk score and ADL score at 1, 2, 3 and 6 months after surgery, so as to systematically control the prognosis and recovery of patients and ensure the pertinacy of diet management practice. For patients with older age and stage III tumors, it is recommended to develop a more detailed diet management plan, so as to systematically control the prognosis and recovery of patients. In order to ensure the pertinence of diet management practice, it is recommended to guide patients' family members to participate in it, urge patients to eat their daily diet, and help them enjoy life after surgery in a scientific way.

CONCLUSION

Summarizing the above, it is necessary to pay attention to the practice of diet management for elderly patients with gastric cancer, so that they can maintain a healthy and stable state of life after surgery and improve their quality of life.

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