

Original Article

Effects of comprehensive nursing care on patients with duodenal ulcer

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Abstract: The aim of this study was to investigate the clinical effect of comprehensive nursing care on patients with duodenal ulcer. A retrospective research was performed in 128 cases of patients with duodenal ulcer. 64 patients in the control group underwent routine nursing. 64 patients in the observation group received comprehensive nursing care based on routine nursing. Gastrointestinal function scores, anxious and depressive mood, nutritional status, life quality, and satisfaction in nursing were compared between two groups. When compared with patients in the control group at discharge, GIS (21.5 ± 3.6 vs 14.5 ± 2.9) and GSR scores (34.5 ± 5.6 vs 26.3 ± 4.9), HAMA (10.5 ± 1.9 vs 7.6 ± 1.4) and HAMD scores (10.3 ± 1.6 vs 7.2 ± 1.1) in the observation group were decreased significantly (all $P < 0.001$). Meanwhile, the levels of plasma albumin (32.5 ± 2.6 g/L vs 35.1 ± 3.0 g/L) and transferrin (2.1 ± 0.4 g/L vs 2.4 ± 0.6 g/L), QLQ-C30 scores (75.6 ± 5.2 vs 81.7 ± 6.1), and satisfaction in nursing (72.7% vs 94.5%) in the observation group was significantly higher than those in the control group (all $P < 0.05$). The comprehensive nursing care provides patients with relieved gastrointestinal function, improved anxious and depressive mood, increased nutritional status, enhanced life quality and better nursing satisfaction.

Keywords: Comprehensive nursing, duodenal ulcer, therapeutic effect

Introduction

With the advent of accelerated pace of life, increased social pressure and changed eating habits, the incidence of peptic ulcer has been increasing year by year. According to the epidemiological reports, the incidence of peptic ulcer reaches approximately 5-10% [1, 2]. Duodenal ulcer has been a common clinical chronic disease. The lesions are usually located in the anterior duodenal wall. It may lead to the upper gastrointestinal hemorrhage, abdominal pain, perforation and other clinical symptoms and it is characterized by acute onset, critical condition, and high mortality, seriously threatening the life quality, physical and mental health of patients [3-5]. At present, under the guidance of the increasingly normative framework for quality use of medicines including acid inhibitor and *Helicobacter pylori* eradication, and so on, it is of great importance to conduct effective nursing care for patients with duodenal ulcer [6]. Some studies reported that the effective nursing care could enhance the therapeutic effect and improve quality of life in patients

with duodenal ulcer [7]. Patients' symptoms could be relieved to some extent by conventional nursing intervention, but it is not significant. There are the following limitations for conventional nursing intervention: it only provides routine health education, regular nursing guidance, and passive counseling services; it ignores patients' psychological changes and hospitalization environment; it pays little attention to diet and attaches less importance to nursing guidance after discharge [8]. All of these lead to the poor efficacy. Comprehensive nursing care, as a brand-new nursing interventional model, strengthens integrated and comprehensive services, establishes a positive image of nurse and keep a good relationship between patients and nurse based on conventional nursing [9, 10]. Compared with conventional nursing intervention, comprehensive nursing begins when patients are admitted. The patients' physical and psychological functions and self-care ability are evaluated, and their nutritional status, moods, and hospitalization environment are focused. The patients and their family members are also invited to take

active part in intervention projects, with a purpose to improve the trust between patients and nurses. So far, there are few reports on clinical effects of comprehensive nursing care for patients with duodenal ulcer. In this study, we investigated the effects of comprehensive nursing on gastrointestinal function, anxiety and depression mood, nutritional status, life quality, and satisfaction in nursing for patients with duodenal ulcer. The study is of importance to provide a scientific basis for developing clinical nursing intervention.

Materials and methods

Subjects

128 patients with duodenal ulcer admitted to our hospital from January 2018 to December 2019 were enrolled as subjects in this study. These patients were assigned to the control group (n=70) and the observation group (n=70). Patients from the control group underwent conventional nursing care, while those in the observation group received comprehensive nursing care. The inclusion criteria were as follows: Patients were diagnosed with duodenal ulcer according to the diagnostic criteria issued by Japanese Society of Gastroenterology in 2015 [11]; patients had an age of more than 18 years and no history of gastrointestinal surgery. The exclusion criteria were as follows: Patients had digestive tract malignancies; patients with severe liver and kidney dysfunction, cardiovascular and cerebrovascular diseases, hematological disease and mental disorder; the hormone drugs were taken in recent 6 months; patients were unable to cooperate in this study; patients with incomplete medical records. According to the inclusion and exclusion criteria, data regarding patients with duodenal ulcer were collected and analyzed retrospectively. This experiment was approved by the hospital ethics committee and all patients in this study provided written informed consent.

Methods

Patients from the control group were given with the following conventional nursing: Patients' vital signs were recorded. Patients underwent laboratory tests, gastrointestinal endoscopy or imageological examination. The regular health education including notifications of drugs and possible adverse reactions was provided. Me-

dicine was given according to doctors' advice and on schedule. Based on conventional nursing interventions, patients from the observation group underwent the following comprehensive nursing cares [12, 13]: (1) Health guidance: At admission, patients in this hospital were informed of knowledge concerning duodenal ulcer, cautions and therapeutic regimens. Nurses tried to relieve patients and their families of doubts and fears moods about duodenal ulcer and tell them cases of successful therapy of duodenal ulcer to help them correctly understand this disease. Nurses helped patients to complete examinations after admission, and abnormal indexes were monitored in real-time. Nurses also helped patients to watch videos and read manuals of health education. (2) Psychological intervention: Nurses tried to understand the psychological changes of these patients in hospital. Psychological guidance was given timely to minimize anxiety and depression moods in patients. Nurses helped patients to establish beliefs in overcoming this disease and keep a good nurse-patient relationship. Nurses also helped patients to improve their activity in cooperating with nursing and treatment. Scientific accompany and more care were provided. (3) Diet care: The diets of high calorie, high-quality protein and rich vitamins were provided to enhance patients' resistibility and immunity. The foods were usually easy to chew and digest. The hot or spicy stimulating foods were not provided to patients with duodenal ulcer. Patients were asked to follow the principle of diet for peptic ulcer. Any drugs causing gastrointestinal damages were avoided from admission to discharge. (4) Environmental intervention: A quiet, healthy, warm and comfortable environment for patients was established in the ward. Nursing staffs paid attention to patients' physical and mental conditions and helped them to shift their attentions via broadcasting and music. In order to ensure adequate rest of patients, the visiting hours were restricted. Patients were provided with sleep guidance including foot bath and music playing. (5) Discharge instruction: Nurses told patients to keep a good eating habits and mentality. And patients were also informed of the effect of irregular eating habits and bad living habits on duodenal ulcer. The medicines after discharge were taken on time and the regular follow-up was needed. Patients visited doctors in time when their conditions or indexes were abnormal.

Outcome measures

Gastrointestinal function scores including gastrointestinal symptom score (GIS) and gastrointestinal Symptom Rating Scale (GSRS) were examined to evaluate gastrointestinal function of patients in both groups at admission and discharge [14, 15]. GIS scores included 10 items regarding nausea, stomach distension, vomiting, spastic upper abdominal pain, early satiety, stomach upset, inappetence, heartburn, epigastric pain and retrosternal discomfort. A 5-point scoring method (0-4 scores) was used to examine each item. The total GIS scores were 40 points. Higher scores indicated the severer gastrointestinal symptoms. GSRS scores included 15 items in term of diarrhea, digestive function, bellyache, reflux, constipation and so on. A 7-point scoring method (1-7 scores) was applied to examine each item. GSRS scores ranged from 15 to 105. Higher scores indicated worse gastrointestinal function.

Hamilton Anxiety Scale (HAMA) [16] and Hamilton Depression Scale (HAMD) [17] were used to assess the mental state of patients in two groups at admission and discharge. HAMA scores were composed of 14 items and scores were examined by a 5-point scoring method. The judgment criteria were as follows: 7 points was the cut-off value. The scores below 7 points were considered to be free of anxiety, while the scores equal to and more than 7 points indicated anxiousness. HAMD scores included 17 items. Most of items were examined by a 5-point scoring method. The judgment criteria were as follows: The scores below 7 points indicated that patients were without depression, while the scores equal to and more than 7 points were considered as depression.

Plasma albumin and transferrin levels were measured to evaluate the nutritional status of patients in both groups at admission and discharge [18]. The venous blood was drawn from elbow vein in patients with fasting condition in both groups. The levels of plasma albumin and transferrin were detected at admission and discharge and compared between two groups.

Life quality of patients was compared between two groups. Quality of Life Questionnaire-Core30 (QLQ-C30) [19] was performed to evaluate quality of life in both groups at admission

and discharge. QLQ-C30 included 30 questions regarding physiological function, emotional function, role function, social function and cognitive function. A lower score indicated worse life quality.

The nursing satisfaction was assessed in terms of ward environment, health education, nursing staff's technology and work attitude, and nursing results [20]. The total scores had 100 points. The judgment criteria were as follows: The scores more than 90 points indicated high satisfaction; the scores between 70 and 90 points indicated satisfaction; the scores below 70 points indicated dissatisfaction. The rate of nursing satisfaction was calculated according to the following formula: Nursing satisfaction = (the number of patients with high satisfaction + the number of patients with satisfaction) / total number of patients × 100%.

Statistical analysis

All the data in this experiment were analyzed using SPSS software (IBM, USA), version 22.0. Measurement data were presented in the form of mean ± SD (standard deviation). Independent samples t-tests were used for comparison between two groups. Paired t-tests were performed for comparisons between at admission and discharge. Count data were presented as case/percentage [n (%)]. Chi square tests were conducted for comparisons between two groups. A *p* value of less than 0.05 indicated statistically significant differences.

Results

Comparison of basic information of patients between two groups

As seen in **Table 1**, the significant differences were not found between two groups in items including gender, age, body mass index (BMI), course of disease, underlying diseases such as diabetes and hypertension and so on (all *P* < 0.05), and they were therefore comparable.

Comparison of gastrointestinal dysfunction scores between two groups

As shown in **Table 2**, in term of GIS (31.2 ± 4.5 vs 31.4 ± 4.7) and GSRS scores (65.3 ± 6.9 vs 65.2 ± 6.7), the significant differences were not found between two groups at admission.

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Table 1. Comparison of basic information

Indexes	Control group (N=64)	Observation group (N=64)	T/ χ^2 value	P value
Age (year)	52.8 ± 5.6	53.4 ± 5.9	0.590	0.556
Male/famle (n)	39/25	41/23	0.133	0.715
Course of disease (months)	17.8 ± 2.9	18.2 ± 3.3	0.728	0.468
BMI (kg/m ²)	20.9 ± 1.5	21.2 ± 1.4	1.170	0.244
Hypertension (n)	16	14	0.174	0.676
Diabetes (n)	11	15	0.772	0.380
Hyperlipidemia	9	11	0.237	0.626

Note: BMI: Body mass index.

Table 2. Comparison of GIS and GSRs scores between the control group and the observation group

Group	GIS score		GSRs score	
	At admission	At discharge	At admission	At discharge
Control group	31.2 ± 4.5	21.5 ± 3.6	65.3 ± 6.9	34.5 ± 5.6
Observation group	31.4 ± 4.7	14.5 ± 2.9	65.2 ± 6.7	26.3 ± 4.9
T value	0.246	12.110	0.083	8.816
P value	0.806	<0.001	0.934	<0.001

Note: GIS: Gastrointestinal symptom score; GSRs: Gastrointestinal symptom rating scale.

Table 3. Comparison of HAMA and HAMD scores between groups

Group	HAMA score		HAMD score	
	At admission	At discharge	At admission	At discharge
Control group	14.2 ± 2.3	10.5 ± 1.9	14.9 ± 2.4	10.3 ± 1.6
Observation group	14.4 ± 2.6	7.6 ± 1.4	14.7 ± 2.1	7.2 ± 1.1
T value	0.461	9.830	0.502	12.770
P value	0.646	<0.001	0.617	<0.001

Note: HAMA: Hamilton anxiety scale; HAMD: Hamilton depression scale.

Compared with those in two groups at admission, GIS and GSRs scores were remarkably decreased at discharge (all $P < 0.001$). GIS (21.5 ± 3.6 vs 14.5 ± 2.9) and GSRs scores (34.5 ± 5.6 vs 26.3 ± 4.9) in the observation group at discharge were significantly lower than those in the control group, and there were significant statistical differences (all $P < 0.001$).

Comparison of HAMA and HAMD scores between two groups

As shown in **Table 3**, the significant differences were not found between two groups at admission for HAMA (14.2 ± 2.3 vs 14.4 ± 2.6) and HAMD scores (14.9 ± 2.4 vs 14.7 ± 2.1). Compared with those at admission, HAMA and HAMD scores in both groups at discharge were significantly decreased (all $P < 0.001$). At dis-

charge, HAMA (10.5 ± 1.9 vs 7.6 ± 1.4) and HAMD scores (10.3 ± 1.6 vs 7.2 ± 1.1) in the observation group were significantly lower than those in the control group, and there were statistically significant differences (all $P < 0.001$).

Comparison of nutritional status between two groups

As seen in **Figure 1**, the levels of plasma albumin and transferrin differed insignificantly between two groups at admission (30.1 ± 2.3 g/L vs 29.8 ± 2.0 g/L; 1.7 ± 0.3 g/L vs 1.8 ± 0.5 g/L); the corresponding levels in both groups at discharge were obviously higher than those

at admission (all $P < 0.001$). At discharge, the levels of plasma albumin and transferrin in the observation group were significantly higher than those in the control group (32.5 ± 2.6 g/L vs 35.1 ± 3.0 g/L, $t = 5.239$, $P < 0.001$; 2.1 ± 0.4 g/L vs 2.4 ± 0.6 g/L, $t = 3.330$, $P < 0.001$).

Comparison of QLQ-C30 between two groups

As seen in **Figure 2**, there were no significant differences between two groups at admission (61.7 ± 4.1 vs 62.1 ± 4.5 , $P > 0.05$). Compared with those at admission, QLQ-C30 scores in both groups at discharge were obviously increased (all $P < 0.001$). QLQ-C30 scores at discharge from the observation group were remarkably higher than those in the control group (75.6 ± 5.2 vs 81.7 ± 6.1) ($t = 6.088$, $P < 0.001$).

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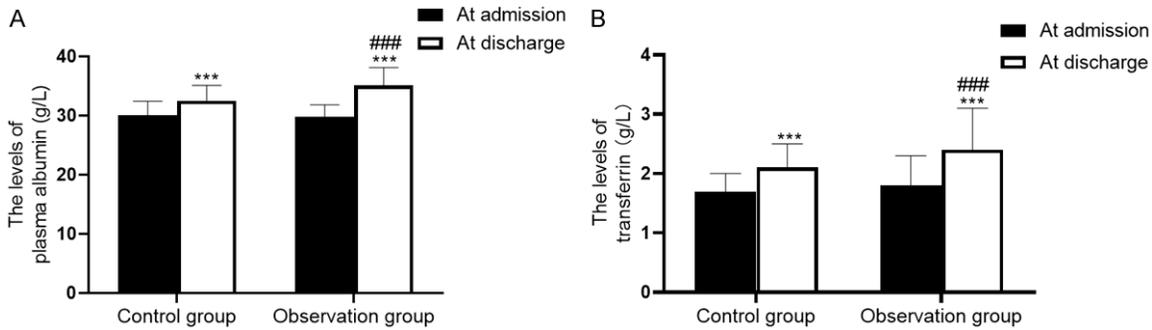


Figure 1. Comparison of nutritional status between two groups. A: Plasma albumin; B: Transferrin. Compared with the same group at admission, ***P<0.001; Compared with the control group at discharge, ###P<0.001.

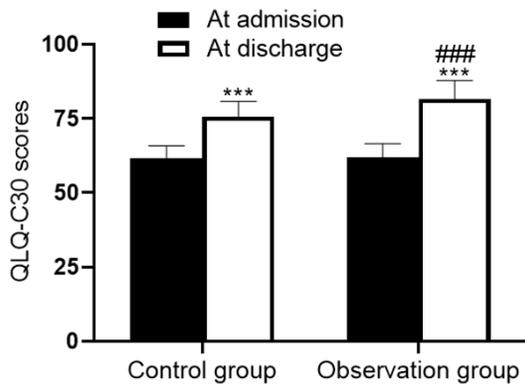


Figure 2. Comparison of QLQ-C30 between two groups. QLQ-C30: Quality of Life Questionnaire-Core30. Compared with the same group at admission, ***P<0.001; Compared with the control group at discharge, ###P<0.001.

Comparison of nursing satisfaction between two groups

The rate of patient satisfaction with nursing care in the observation group was 94.5% (52/55), significantly higher than that of the control group [72.7% (40/55)], and they were significantly different ($\chi^2=9.565$, $P=0.002$, **Table 4**).

Discussion

Duodenal ulcer is a common clinical digestive disease. During hospitalization, patients usually suffer from unhealthy emotions such as anxiety and depression, which seriously influences the treatment effects and brings the burden to patients and their families. Previous studies showed that long-term unhealthy emotions could impair the immune function in patients through regulating levels of hormones, which reduced the ability to resist infection [21].

Some studies also reported that unhealthy emotions could impact the life quality of patients [22]. At present, in clinical practices duodenal ulcer is usually treated by proton pump inhibitors, and surgery may be considered for duodenal ulcer complication such as bleeding and perforation. The nursing interventions in coordination with clinical therapy could remarkably improve therapeutic effect. With the changes in concepts of clinical nursing interventions and the increasing renewal in the nursing intervention modes, the clinical nursing interventions have played an important role in improving the patients' prognosis [23]. The comprehensive nursing intervention is reported as a holistic nursing program base on high-quality nursing and it is mainly focused on clinical practices. It is reported that comprehensive nursing intervention could obviously improve treatment of compliance, reduce unhealthy emotions, improve clinical symptoms and life quality, ultimately bringing satisfaction towards clinical outcomes [24].

In this study, the comprehensive nursing intervention as a new nursing care program was performed in patients with duodenal ulcer. It included health guidance, psychological intervention, diet care, environmental intervention and discharge instruction. Life quality is defined as a self reflection and feeling of individual in psychological, physical and social aspects. The results revealed that the QLQ-C30 score in patients from the observation group was significantly higher than that in the control group. It is indicated that comprehensive nursing interventions could maximally promote the recovery of physical and psychological health and improve patients' life quality. The reasons are as follows: patients with duodenal ulcer underwent

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Table 4. Comparison of nursing satisfaction (n)

Group	High satisfaction	Satisfaction	Dissatisfaction	Rate nursing satisfaction
Control group	25	21	18	71.9%
Observation group	33	24	7	89.1%
χ^2 value				6.015
P value				0.014

health guidance and psychological nursing interventions had more confidence in their own life and fewer negative effect of this disease on patients' life. Chang et al [25] reported that nursing interventions and rehabilitation exercise could remarkably improve the quality of life in patients with the esophagus cancer. Thus it can be seen that comprehensive nursing interventions could effectively enhance patients' life quality.

During hospitalization, unhealthy emotions could impact therapeutic effect in patients with duodenal ulcer. At present, HAMA and HAMD scores are considered as authoritative tools for evaluating psychological status in patients. The results of this research revealed that HAMA and HAMD scores in both groups were remarkably higher than normal values. It is suggested that unhealthy emotions usually exist in patients with duodenal ulcer. Fang et al also reported the similar results [26]. Moreover, HAMA and HAMD scores in the observation group were remarkably lower than those in the control group. It is indicated that comprehensive nursing interventions play an auxiliary role in helping patients to achieve the best physical and psychological conditions.

The recovery of gastrointestinal function is very important in the process of treatment for duodenal ulcer. GIS and GSRs scores are considered as common tools for assessing gastrointestinal function in patients. This study revealed that GIS and GSRs scores in the observation group at discharge were remarkably lower than those in the control group. It is likely that diet care helped patients to keep regular and good eating habits, decreased gastrointestinal injuries by raw or cold and hot or spicy stimulating foods, and improved gastrointestinal symptoms. In addition, it is reported that the reduction of unhealthy emotions could facilitate gastrointestinal function recovery [27].

Nutritional status is an important indicator for evaluating the prognosis of patients with duo-

denal ulcer. The levels of plasma albumin and transferrin are recognized as common indexes for assessing the nutritional status of patients. This study showed that levels of plasma albumin and transferrin in the observation group at discharge were higher than those in the control group. It is suggested that comprehensive nursing interventions could significantly improve nutritional status of patients. This is of the result of diet care and the recovery of gastrointestinal function. In term of the nursing satisfaction, comprehensive nursing intervention could enhance the professional abilities, make nurses to better understand the importance of nursing interventions, and provide patients with more meticulous nursing care. Some studies reported that good nursing interventions could improve rates of nursing satisfaction and keep a better nurse-patients relationship [28]. This study revealed that compared with that in the control group, the rate of nursing satisfaction in the observation group was remarkably higher. Results reported by Lebret et al were consistent with ours [29].

In summary, comprehensive nursing interventions provided duodenal ulcer patients with improved unhealthy emotions and nutritional status, enhanced recovery of gastrointestinal function, and increased life quality and rate of nursing satisfaction. It is worth generalizing in clinical practices of nursing. However, this study is single-centered, and is conducted with a small sample size, a very short follow-up and no subgroups comparisons. In order to provide more scientific results, a multi-centered, randomized control, and long-time follow up study needs to be performed.

Disclosure of conflict of interest

None.

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