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Original Article

The effect of continuing nursing services on colostomy patients

Huan Hu*, Jiayu Zheng*, Lei Gao

*Department of Gastrointestinal Surgery, The Central Hospital of Wuhan, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei Province, China. *Equal contributors and co-first authors.*

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Abstract: Objective: To explore the effects of continuing nursing services on the self-care abilities, quality of life, and negative emotions of colostomy patients after their hospital discharge. Methods: One hundred and eight colostomy patients were randomly divided into a control group and a research group. The fifty-four patients in the control group were given routine nursing, and the fifty-four patients in the research group were given continuing nursing in addition to the routine nursing, that is, making a continuing nursing plan and providing nursing guidance and services to the patients after their hospital discharge. The changes in the patients' mastery of disease knowledge, their self-care abilities, mental status, quality of life, complications, and nursing satisfaction before and after the intervention were compared in the two groups. Results: Compared with before the intervention, the disease knowledge mastery, self-care ability, and quality of life scores in the two groups were all increased, and the research group's scores were higher than the control group's ($P<0.05$). The self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores in both groups were decreased after the intervention compared with the scores before the intervention, and the research group's scores were lower than the control group's scores ($P<0.05$). The incidences of complications in the research group were lower than they were in the control group (3.70% VS 14.81%), and the nursing satisfaction was higher than it was in the control group (96.30% VS 79.63%) ($P<0.05$). Conclusion: Continuing nursing services for colostomy patients can significantly improve the patients' knowledge of their disease and their self-care abilities, improve their mental state, reduce the incidences of complications, and improve their quality of life and nursing satisfaction, which has clinical significance.

Keywords: Continuing nursing services, colostomy patients, self-care ability, mental state, life quality

Introduction

Colorectal cancer is a common malignant tumor of the gastrointestinal tract in clinical practice. The patients' early symptoms are not obvious. As the disease progresses, symptoms, including change in bowel habits, hematochezia, and local abdominal pain, gradually occur. The morbidity and mortality of colorectal cancer are the fourth highest among the malignant tumors of the digestive system [1, 2]. Most patients with colorectal cancer who undergo radical surgery need to receive a temporary ostomy, which can replace the traditional urethra or anus for excretion. However, due to the absence of a sphincter, the patients cannot control the excretory process, so the ostomy bags are indispensable for the long term, and they negatively affect patients' mental state and quality of life [3]. During hospitalization, most of the colostomy patients' health problems can be solved with the help of the medical staff, but the cancer patients need to face not only the colostomy itself, but also the need for care after their discharge from the hospital, as a series of potential complications like colostomy hemorrhage and stenosis may be caused by improper nursing care [4, 5]. Patients are often under great psychological pressure, so the nursing intervention after the hospital discharge is particularly important, as conventional nursing can't meet the patients' demands [6, 7]. Continuing nursing aims to ensure that patients receive different levels of care in various situations through a series of action designs. Currently, there are few clinical studies on the application of continuing nursing to colostomy patients [8-10]. Thus, this study

explored the effect of continuing nursing service on self-care abilities of colostomy patients after their hospital discharge.

Materials and methods

General information

One hundred and eight colostomy patients treated in our hospital from December 2017 to February 2019 were selected and randomly divided into a control group and a research group, with 54 patients in each group.

Inclusion criteria: Patients diagnosed rectal cancer or colon cancer through colonoscopy and intraoperative biopsy; patients who received a radical resection to treat colon cancer; patients who received a temporary stoma; patients between 18-70 years old; patients who were able to take care of themselves before their surgery; patients or their families who can use WeChat software to communicate after simple training; patients who were willing to sign an informed consent. Exclusion criteria: patients who were unable to take care of themselves due to physical weakness or disability before their surgery; patients who had a cognitive impairment; patients who had a serious mental illness or mental abnormality; patients who couldn't cooperate with the study.

This study was approved by the medical Ethics Committee of The Central Hospital of Wuhan, Tongji Medical College, Huazhong University of Science and Technology.

Methods

The patients in the control group received routine nursing from the time of their admission to three months after their hospital discharge. The responsible nurse explained the method of using stoma products and related precautions, such as how to replace the urine collection bag and the ostomy bag. The responsible nurse encouraged the patients, and shared some successful cases with them to relieve their negative emotions and to enhance their confidence in the treatment. Dietary guidance was also given, and the diet mainly contained easy-to-digest, nutritious food rich in protein and vitamins. Moreover, the patients received medication guidance and took their medicine strictly following the doctor's advice. Within three months after their hospital discharge, the patients were followed up by the responsible nurse by telephone once a month. The patients were given the contact information of the resident physician and the nurses, and they were told to return to the clinic promptly if they experienced an abnormal condition.

The research group was given continuing nursing services in addition to the nursing the control group received from their admission to the hospital to three months after their discharge, and the details were as follows:

First, a nursing group was set up with, one head nurse who was selected as the team leader, and three nurses, one attending physician and one stomatologist as the group members. Each member of the group had received two months of training related to continuing nursing and passed the examination. Among them, the head nurse was responsible for the process of the work, the attending physician and a nurse were mainly responsible for the relevant work of stoma care during the patients' hospital stays, and the colostomy physician and the other two nurses were responsible for the diet guidance and stoma care after discharge.

Second, a continuous nursing plan was made. The responsible nurse recorded each patient's diet, excretions, sleep, mental state and complications three days before their hospital discharge. In addition, the responsible nurse established personal profiles and formulated the nursing plan according to the patient's personal situation after their discharge. The patient was guided to join the stoma nursing group via WeChat, a social networking software. If the patient could not access it, his or her family members could operate on his or her behalf. The contents of the continuing nursing care were as follows.

(1) Telephone follow-up. The patients were followed up by telephone for the first time within 72 hours after discharge, and then followed by telephone once a week. The follow-up included asking about the basic situation of the stoma (the shape, size and skin around the stoma), the complications (stenosis, bleeding and infection around the stoma), the psychological state (patients would be given timely guide if his or her psychological state was understood), medication use (to make sure that the patients had followed the doctor's instructions), and living habits (sleep, diet, etc.,) and then asking about

the current problems and guiding the patients to correct them.

(2) WeChat follow-up. The nursing group regularly shared knowledge related to the disease and its nursing care, videos about changing the ostomy bag and so on. They would answer the patients' questions promptly, and communicate with the patients using the software as well. The patients were required to send photos of their stoma to the WeChat group on Friday mornings so that the medical staff could monitor the patients' recovery and guide them. The medical staff also shared relevant knowledge on how to prevent complications regularly, such as promptly cleaning up the stoma ooze and secretions, and promptly changing the dressing and protecting the surrounding skin to reduce the incidence of stoma infection.

(3) Outpatient follow-up. A stoma clinic was established, and the patients were required to visit once a month. The nurses in the group evaluated the basic situation of the stoma, assisted the patients to change their stoma bags, and corrected any bad habits related to the patients' stoma nursing.

(4) Fraternity. Once a month, the nursing group organized a group chat to let the patients and nurses communicate face to face, and they invited patients with better recoveries to speak on the stage.

Outcome measures

The self-care abilities of the two groups were compared one day after the operation and three months after the discharge. The grasp of related knowledge of the disease, the mental state, the changes in the quality of life, the occurrence of complications and the nursing satisfaction were compared in the two groups at one day after the operation and three months after the discharge.

The primary outcome measures included: (1) Self-care ability. The self-care ability scale (ESCA) was used to evaluate this, including its four dimensions, namely self-concept, self-care responsibility, health knowledge level, and self-care skills. The score ranges were 0-36, 0-56, 0-32, and 0-48. The higher the score, the stronger the patient's self-care ability. (2) Mastery of disease knowledge. The self-designed disease knowledge questionnaire was used for the evaluation, including complication management, drug use knowledge, ostomy bag changing, etc., the score of which ranged from 0 to 100. The higher the score, the better the disease knowledge. (3) Mental state. The self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were used to evaluation the patients' mental states. The SAS and SDS scores ranged from 20 to 80 points, and the higher the score, the more serious the anxiety and depression. (4) Complications. The complications included bleeding, periostomy infection, stoma stenosis, periostomy dermatitis, etc., The incidence of complications (%) = the number of cases of complications/the total number of cases × 100%.

The secondary outcome measures included: (1) Quality of life. The SF-36 scale was used and included four dimensions, namely, physical function, role function, social function, and psychological function. The possible score of each dimension ranged from 0 to 50. The higher the score, the better the quality of life. (2) Nursing satisfaction. The self-designed satisfaction questionnaire was used to evaluate the nursing quality, nursing attitude, health education, etc., with the possible scores ranging from 0-50. Scores of 45-50 were defined as satisfied, 35-44 as generally satisfied, and 0-35 as dissatisfied. The satisfaction rate (%) = the number of satisfied cases/the total number of cases × 100%. General satisfaction rate (%) = general number of satisfied cases/total number of cases × 100%. Satisfaction = satisfaction rate + general satisfaction rate.

Statistical analysis

SPSS 20.0 software was used to process the data. The measurement data were presented as the mean ± standard deviation ($\bar{x}$ ± sd). Independent sample t tests were used for the inter-group comparisons, and paired sample t tests were used for the intra-group comparisons. The enumeration data were expressed as a percentage and analyzed using chi-square tests. $P<0.05$ was considered statistically significant.

Results

General information

There were no statistically significant differences in the two groups in terms of gender, age,

Table 1. Comparison of the general information ($\bar{x}$ ± sd) in the two

Group	Control group (n=54)	Research group (n=54)	χ^2/t	P
Sex (%)			0.037	0.847
Male	29 (53.70)	30 (55.56)		
Female	25 (46.30)	24 (44.44)		
Age	53.8±6.8	54.2±7.0	0.301	0.764
Primary disease (%)			0.156	0.693
Rectal cancer	32 (59.26)	34 (62.96)		
Colon Cancer	22 (40.74)	20 (37.04)		
Education level (%)			0.148	0.700
Junior middle school and primary school	27 (50.00)	29 (53.70)		
High school or above	27 (50.00)	25 (46.30)		
BMI (kg/m^2)	21.38±2.35	21.14±2.17	0.498	0.620
Underlying diseases (%)			0.264	0.792
Diabetes	18 (33.33)	17 (31.48)		
Hypertension	34 (62.96)	36 (66.67)		
Coronary heart disease	14 (25.93)	15 (27.78)		
TNM stage of the tumor (%)			0.333	0.564
Stage II	25 (46.30)	28 (51.85)		
Stage III	29 (53.70)	26 (48.15)		

Note: BMI: body mass index.

Table 2. Comparison of the disease knowledge before and after intervention in the two ($\bar{x}$ ± sd)

Group	Before intervention	After intervention	t	P
Control group (n=54)	65.69±8.52	73.69±6.94	5.350	0.000
Research group (n=54)	66.34±7.81	82.74±9.05	10.082	0.000
t	0.413	5.831		
P	0.680	0.000		

primary disease, education level, body mass index (BMI), combined underlying disease, tumor stage, or other general information (P> 0.05). See **Table 1**.

Mastery of disease knowledge

The mastery of disease knowledge scores increased in both groups compared with the scores before the intervention, and the scores in the research group were higher than the scores in the control group (P<0.05). See **Table 2**.

Self-care abilities

Compared with the self-care ability scores before the intervention, the scores in both groups increased, and the scores in the research group was higher than the scores in the control group (P>0.05). See **Table 3** and **Figure 1**.

Mental state

Compared with the SAS and SDS scores before the intervention, the scores in both groups decreased, and the scores in the research group were significantly lower than they were in the control group (P< 0.05). See **Table 4** and **Figure 2**.

Quality of life

Compared with the life quality scores before the intervention, all the life quality scores in the two groups increased, and the scores in the research group were significantly higher than the scores in the control group (P<0.05). See **Table 5** and **Figure 3**.

Complications

The incidence of complications in the research group was 3.70%, which was significantly lower than the incidence in the control group (14.81%), and the difference was statistically significant (P<0.05). See **Table 6**.

Nursing satisfaction

The nursing satisfaction in the research gr oup was 96.30%, higher than it was in the

Table 3. Comparison of the self-care abilities before and after the intervention in the two ($\bar{x}$ ± sd)

Group	Control group (n=54)	Research group (n=54)	t	P
Self-concept				
Before intervention	12.13±1.96	12.54±2.01	1.073	0.286
After intervention	17.63±2.57***	24.97±2.41***	21.567	0.000
Self-care responsibility				
Before intervention	30.84±3.27	29.88±3.36	1.505	0.135
After intervention	35.69±3.17***	42.58±2.98***	11.637	0.000
Health knowledge Level				
Before intervention	12.65±1.85	12.79±1.67	0.413	0.681
After intervention	15.89±1.89***	22.58±3.15***	13.383	0.000
Self-care skill				
Before intervention	17.96±2.32	18.34±2.27	0.860	0.392
After intervention	25.36±3.33***	34.57±3.68***	13.637	0.000

Note: ***P<0.001, compared with the group before the intervention.

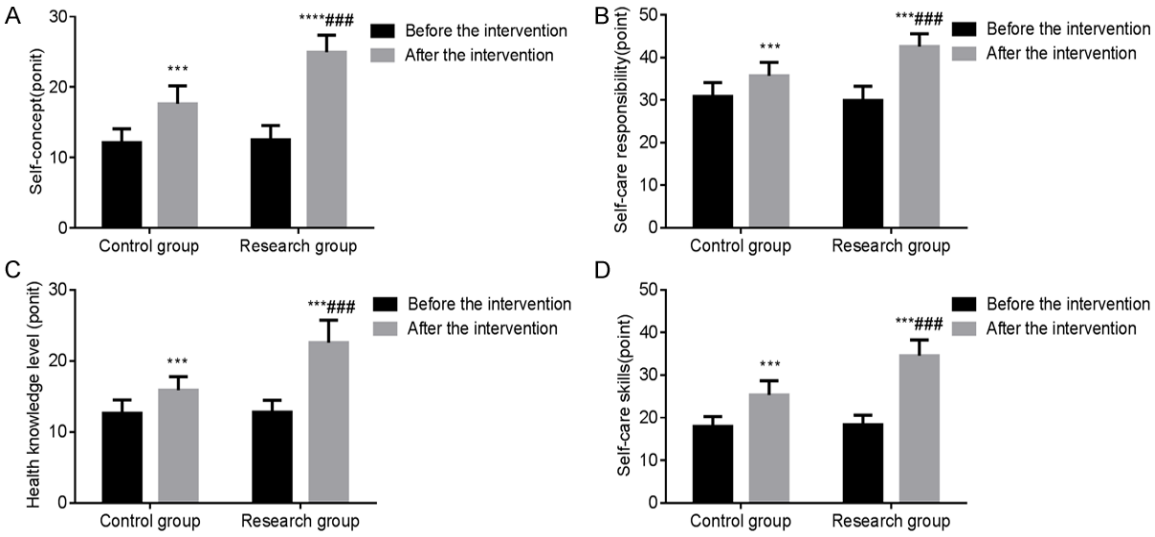

Figure 1. Comparison of the self-care abilities in the two groups before and after the intervention. A: Comparison of the self-concept scores; B: Comparison of the self-care responsibility scores; C: Comparison of health knowledge level scores; D: Comparison of the self-care skills scores. Compared with before the intervention of this group, ***P<0.001; compared with the control group, ###P<0.001.

Table 4. Comparison of the psychological states before and after the intervention in the two ($\bar{x}$ ± sd)

Group	SAS scores		SDS scores	
	Before the intervention	After the intervention	Before the intervention	After the intervention
Control group (n=54)	52.36±5.12	40.08±5.35***	53.20±5.36	42.36±3.74***
Research group (n=54)	52.03±4.87	30.36±4.85***	53.03±5.12	35.68±3.68***
t	0.343	9.891	0.169	9.356
P	0.732	0.000	0.867	0.000

Note: ***P<0.001, compared with the group before the intervention.

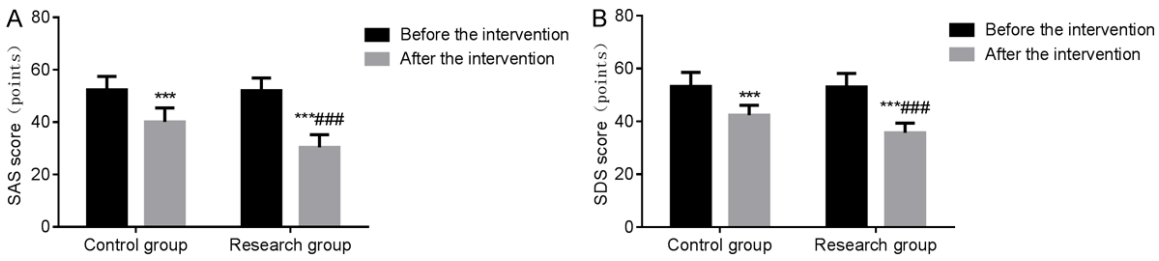

Figure 2. Comparison of the psychological states in the two before and after the intervention. A: Comparison of the SAS scores; B: Comparison of the SDS scores. Compared with that before the intervention of this group, ***P<0.001; Compared with the control group, ###P<0.001. SAS: Self-rating anxiety scale; SDS: self-rating depression scale.

Table 5. Comparison of the quality of life before and after the intervention in the two ($\bar{x}$ ± sd)

Group	Control group (n=54)	Research group (n=54)	t	P
Physical function				
Before intervention	12.13±1.96	12.54±2.01	1.073	0.286
After intervention	17.63±2.57***	24.97±2.41***	21.567	0.000
Role function				
Before intervention	30.84±3.27	29.88±3.36	1.505	0.135
After intervention	35.69±3.17***	42.58±2.98***	11.637	0.000
Social function				
Before intervention	12.65±1.85	12.79±1.67	0.413	0.681
After intervention	15.89±1.89***	22.58±3.15***	13.383	0.000
Psychological function				
Before intervention	17.96±2.32	18.34±2.27	0.860	0.392
After intervention	25.36±3.33***	34.57±3.68***	13.637	0.000

Note: ***P<0.001, compared with the quality of life of the group before the intervention.

control group (79.63%) (P<0.05). See **Table 7**.

Discussion

With the changes in lifestyle and diet, the morbidity of colorectal cancer is increasing, bringing a heavy burden to patients' families and society. Ostomy is a common auxiliary method for the treatment of colorectal cancer, and it can save patients' lives and prolong their survival times. However, it also causes many problems for patients, especially in psychological and physiological problems, which seriously reduces their quality of life [11, 12]. It has been clinically found that the postoperative care of stoma patients is a big problem. If the postoperative care is not in place, some complications may occur, which may increase patients' pain [13, 14]. The nursing of colostomy patients requires a professional nursing technique [15, 16]. However, most patients and their families cannot master it during the patient's short stay in the hospital, and patients' self-care abilities after their discharge are poor. Self-care ability is a self-care activity carried out by patients themselves to sustain life and health, and remain comfortable [17, 18]. Self-care can help patients themselves within the scope of their ability to reduce the occurrence of related complications, which is of great significance for improving patients' quality of life [19].

Continuing nursing service is the extension of in-patient nursing, and it can provide medical care, rehabilitation guidance, and other services to patients in need [20, 21]. The results of this study showed that compared with before the intervention, the disease knowledge mastery, self-care ability, and life quality scores before the intervention, the scores in the two groups all increased after the intervention, and the SAS and SDS scores all decreased, and the improvement of the above indicators in the research group was better than it was in the control group. The incidence of complications in the research group was lower than it was in the control group, and the nursing satisfaction was higher than it was in the control group. Jiu et al. found that the complication rate of patients receiving continuing care for intracranial tumor surgery (23.81%) was significantly lower than that of the controls (41.27%) [22]. Wen showed that the self-care ability of patients with percutaneous coronary intervention of coronary heart disease receiv-

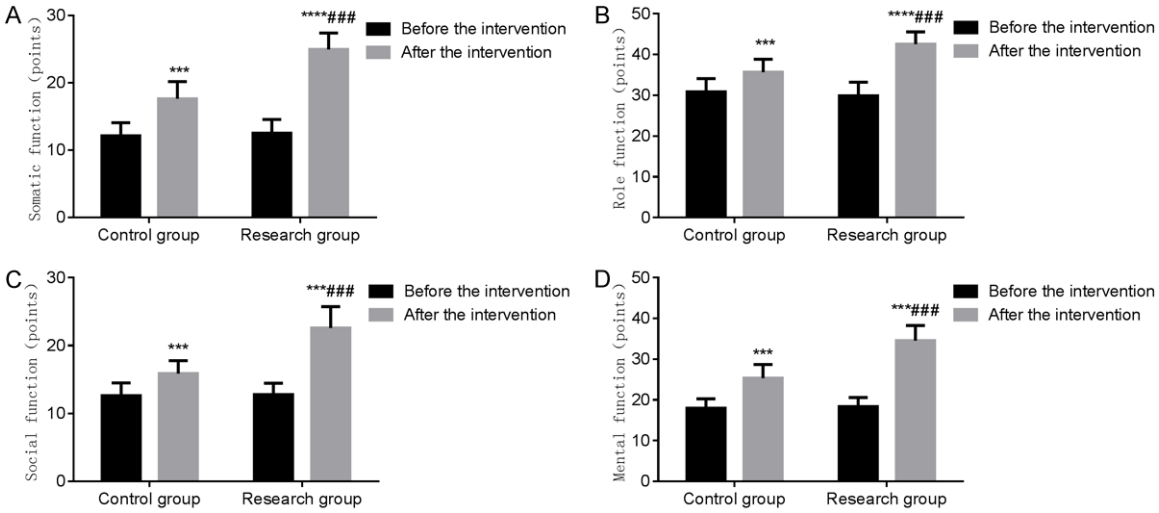

Figure 3. Comparison of the quality of life in the two before and after the intervention. A: Comparison of the somatic function scores; B: Role function rating comparison; C: Comparison of the social function scores; D: Comparison of the psychological function scores. Compared with before the intervention of this group, ***P<0.001; compared with the control group, ###P<0.001.

Table 6. Comparison of the complications in the two (n (%))

Group	Bleeding	Peristomy infection	Peristomy stenosis	Peristomy dermatitis	Total
Control Group (n=54)	2 (3.70)	2 (3.70)	1 (1.85)	3 (5.56)	8 (14.81)
Research group (n=54)	0 (0.00)	1 (1.85)	1 (1.85)	0 (0.00)	2 (3.70)
χ^2	0.509	0.000	0.000	1.371	3.967
P	0.475	1.000	1.000	0.242	0.046

Table 7. Comparison of the nursing satisfaction in the two (n (%))

Group	Satisfaction	General	Dissatisfaction	Overall satisfaction rate
Control group (n=54)	21 (38.89)	22 (40.74)	11 (20.37)	43 (79.63)
Research group (n=54)	37 (68.52)	15 (27.78)	2 (3.70)	52 (96.30)
χ^2		9.534		7.083
P		0.002		0.008

ing continuing care was significantly higher than it was in patients without continuing care, which was basically consistent with this study [23]. These findings indicated that continuing nursing service can effectively improve the knowledge of diseases related to patients' stomas, relieve adverse emotions, reduce the incidences of complications, and improve their self-care abilities, nursing satisfaction, and quality of life.

The possible reasons for the good effect of continuing nursing service may be the following. First of all, in a the nursing working group, the division of labor is clear-cut and each member is being charged with specific responsibilities, so the nursing group could provide more comprehensive and high-quality continuing nursing services for patients. Moreover, the personal information of each patient was created to help the nursing group formulate a personalized nursing program schedule customized according to each patient's mental state, stoma conditions, and living habits, so as to ensure the pertinence of the nursing programs [24]. In addition, through telephone, WeChat, and outpatient follow-up, the medical staff can timely grasp the stoma situation of each patient, give psychological counseling, relieve their bad emotions, and enhance their confidence at the same time [25, 26]. Meanwhile, the nursing group not only pushed health

knowledge regularly to make the patients understand stoma and related nursing knowledge to effectively improve their self-care ability, but also they shared knowledge related to ostomy complications to reduce their incidence [27]. Besides, regular group chats could promote communication between nurses and patients, make the patients feel cared for and improve their ability to communicate with others, which was of great significance for alleviating their bad emotions and improving their quality of life. To sum up, deploying a continuing nursing service among colostomy patients can help colostomy patients learn about colostomy, encourage them to face related nursing problems, master colostomy nursing skills, take the initiative to bear the responsibility for self-nursing care, reduce the complications, and their mental and physical burdens, and thus improve their quality of life.

However, due to the small cohort in this study and the short observation time, the results may be biased to some extent. Therefore, the clinical study scale should be expanded and the observation time should be extended for further discussion.

In summary, continuing nursing services for patients with stoma can significantly improve the patients' disease knowledge and self-care abilities, improve their psychological state, reduce the occurrence of complications, improve their quality of life, and promote the recognition of nursing services. The advantages are significant and worthy of further promotion.

Disclosure of conflict of interest

None.

Address correspondence to: Lei Gao, Department of Gastrointestinal Surgery, The Central Hospital of Wuhan, Tongji Medical College, Huazhong University of Science and Technology, No. 14 Gusaoshu Road, Jianghan District, Wuhan 430000, Hubei Province, China. Tel: +86-027-65696190; E-mail: gaoleiu73t@163.com

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