

Original Article

Micro video incentive nursing intervention improves the psychological state and quality of life in patients with rectal cancer after enterostomy

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Abstract: Background: To investigate effect of micro video incentive nursing intervention on psychological state and quality of life among rectal cancer patients with enterostomy. Methods: In this retrospective study, 100 patients with rectal cancer who underwent enterostomy from January 2020 to June 2022 were recruited into this study. Among them, 51 patients received micro video incentive nursing intervention (the experimental group), while the other 49 patients received routine nursing intervention (the control group). The psychological status, nutritional status, quality of life and disease rehabilitation of the two groups were observed; moreover, multiple regression analysis was applied to analyze the relationship between psychological status and micro video incentive nursing intervention. Results: The micro video incentive nursing intervention had obvious effect on rectal cancer patients with enterostomy. The HAMA and HAMD scores were significantly improved after nursing intervention in the experimental group compared to control group (both $P < 0.05$). The PG-SGA score was significantly improved after nursing intervention in the experimental group compared to control group ($P < 0.05$). Moreover, the regression analysis showed that being single, divorced or separated, widowed, as well as micro video incentive nursing intervention, physiological function, psychological function, physical pain, emotional function, social function, and mental health had a significant correlation with patients' psychology state. The results of multiple regression analysis showed that psychological function had obvious relation with micro video incentive nursing intervention. Conclusions: Micro video incentive nursing intervention for rectal cancer patients with enterostomy plays a positive role in improving the quality of life of patients and improving their negative emotions.

Keywords: Micro video incentive nursing intervention, rectal cancer patients with enterostomy, psychology state, quality of life

Introduction

Rectal cancer is a common malignant tumor of the digestive tract. The incidence rate and mortality are increasing annually [1]. According to statistics, in 2018, the number of new cases of colorectal cancer worldwide was 1.0966 million and the number of deaths was 880,000 [2, 3]. In the same year, 376,000 new cases and 191,000 deaths from rectal cancer occurred in China [4]. At present, rectal cancer has become a serious public health problem threatening life.

Enterostomy, as the main treatment for patients with colorectal cancer, can effectively solve

their postoperative defecation problems and prolong their survival. According to a report [5], more than 100,000 colorectal cancer patients receive enterostomy every year in China. Enterostomy refers to the operation of removing the cancerous part of the intestinal canal and fixing the opening of the intestinal canal to the abdominal wall to replace the anus for defecation [6]. Although the operation saves patient's lives, it leads to changes in the anatomical structure of the body. The defecation site is transferred from the anus to the abdomen. However, the colostomy changes the patient's original mode of defecation and makes the patient unable to control defecation independently, which seriously affects their

quality of life and health. Therefore, nursing intervention for rectal cancer patients undergoing permanent colostomy has become a key focus of clinical concern [7]. The patients often feel afraid, lost, and even self-loathing. Because of the change in the defecation mode, the patient's physical function and social interaction are also seriously affected [7]. The stoma may have exhaust sound, odor, fecal leakage and other conditions, and the patient is often troubled by this, making them unwilling to contact others, and thus causing a sense of shame [8]. The sense of shame refers to a kind of negative experience that patients feel discriminated against or treated unfairly because they suffer from certain diseases [9]. Yuan [10] et al. found that 44% of 209 patients with colostomy had a high score of a sense of shame through their investigation. Therefore, the nursing guidance for patients with enterostomy is mainly intended to help them understand how to replace the stoma bag, know the weight and usage of skin protectant, know how to use and replace the stoma bag, and know the products and tools needed in the process, and teach the patients the skills and methods needed in the specific operation process, and take corresponding nursing measures, as well as strengthen communication with patients, so that patients can more easily understand their own condition, and thus psychologically accept enterostomy.

Motivation refers to the psychological process of arousing people's enthusiasm and creativity, arousing people's internal motivation, and inducing patients to move towards the desired goals [11, 12]. Micro video motivational nursing intervention is a new nursing concept that encourages and promotes patients, improves their hope and builds their confidence. It encourages and promotes patients' physiological and psychological requirements, establishes a friendly relationship with patients [13], provides continuous physiological and psychological support, increases their vitality, corrects their treatment attitude, and improves their anxiety, depression and other negative emotions, as well as promotes patients to actively cooperate with the treatment, shortens the treatment time, promotes rehabilitation and improves the quality of life. Some studies have pointed out that motivational nursing intervention can help patients improve hope, build confidence, alleviate anxiety, depression and other

negative emotions, thus promoting disease recovery and helping patients return to society faster [14, 15].

Therefore, it is very important to extend micro video incentive nursing intervention to patients to improve their compliance behavior, treatment effect and psychological state and provide the patients with medical and psychological guidance at the same time. The aim of the present study is to evaluate the application effect of micro video incentive nursing intervention in rectal cancer patients with enterostomy, so as to reduce nursing workload and improve the quality of life of rectal cancer patients with enterostomy.

Materials and methods

Study design

In this retrospective study, the data of rectal cancer patients with enterostomy were collected. Among them, 51 patients received micro video incentive nursing intervention (the experimental group), while 49 patients received routine nursing intervention (the control group). The study was approved by the Ethics Committee of Ganzhou People's Hospital.

Inclusion and exclusion criteria

Inclusion criteria: ① Rectal cancer patients undergoing enterostomy; ② The patient could accurately answer questions asked by the medical staff, and there was no mental illness; ③ The patient was aged ≥ 18 years.

Exclusion criteria: ① The patients had mental abnormalities; ② The patients had other endocrine disorders and respiratory and circulatory diseases; ③ The patients had severe liver, kidney or other organ dysfunction; ④ The patient's treatment compliance was poor and couldn't complete the relevant investigation of this study independently; ⑤ The patients received chemoradiotherapy.

Interventions

The control group: The patients receive routine nursing intervention. At the time of admission, the physical and mental health of the patients was evaluated, hygiene was targeted, diet care and medication guidance were given, and finally health education was carried out.

The experimental group: based on routine nursing intervention, micro video incentive nursing intervention was conducted. During the patients' treatment, the micro-video was played on the patients' telephone for repeated viewing. Each micro-video lasted approximately 10 minutes. This micro-video was designed by our team comprised of an academic expert, an associate chief nurse, two specialist nurses, and a researcher. The main contents of this micro-video health education program involved knowledge of self-management, diet, and family support. Goals of care: ① Master the basic information of the patient. After operation, communicate with patients after they are sober, understand and master the patient's personality, interpersonal skills, family environment, education level and psychological state. In addition, communication with the patient's family members to understand the patient's psychological state, so as to find problems that cannot be found when communicating with the patient, and formulate scientific nursing intervention strategies, dredge the patient's bad mood and improve the patient's treatment compliance. In addition, it can also introduce the latest progress in clinical treatment of rectal cancer and the necessity of permanent colostomy after operation to patients and their families, and introduce successful treatment cases, so that patients can establish confidence in coping with the disease and can accept the change of defecation habits after colostomy in a healthy attitude. ② Use encouraging language in the micro video nursing. On the basis of the patient's physical condition, education level and psychological state, give the patient praise and encouragement in the form of videos and voice, and improve the patient's confidence in treatment and rehabilitation. Through language and micro video stimulation, patients can feel valued and enhance their treatment confidence. ③ Micro video inspired self-care. After the completion of routine health education, nurses record videos to help patients set self-care goals, such as correctly using the bag, changing the way of bag, initially mastering the changes of skin color around the bag, etc., and encourage patients to complete self-care goals by video to improve their self-care ability. ④ Micro video incentive diet care. According to the patient's rehabilitation, diet preference, etc., make a video diet plan. The video encourages patients to keep

good eating habits to reduce their gastrointestinal irritation, avoid increasing their burden of ostomy care, and improve their quality of life.

⑤ Micro video incentive family support. The video method encourages the patient's family members to enhance their physiological and emotional support for the patient, so as to improve the patient's self-care ability and maintain their emotional stability. The video stimulates patients to continuously improve their self-care ability after discharge; during video follow-up, learn about the patient's self-care and actively encourage them to improve their sense of self-efficacy and belief in healthy life.

Observation outcome

The primary observation indices were psychology state evaluation index and QLQ-C30. We used Hamilton Anxiety Scale (HAMA) [16] and Hamilton Depression Scale (HAMD) [17] to assess the anxiety and depression of the subjects. HAMA includes 14 items reflecting anxiety symptoms, mainly involving two kinds of factor structures: somatic anxiety and mental anxiety. The reliability coefficient of the total score is 0.93. The higher the score, the more serious the anxiety state is. Moreover, the quality of life scale was investigated by the quality-of-life scale (QLQ-C30) developed by the European cancer investigation and treatment research group [18]. The higher the score, the higher the quality of life.

The secondary endpoints were nutritional status. The nutritional status was evaluated using the patient generated subjective global nutrition assessment (PG-SGA) scale provided by the patient. The scale was composed of patient self-assessment and medical staff assessment, including weight change, food intake, factors affecting diet, activity and physical function, disease and nutritional requirements, as well as metabolic stress state. There are 7 parts of physical examination (muscle consumption), among which the first 4 parts are evaluated by patients themselves and the last 3 parts are evaluated by medical staff. The higher the total score, the worse the nutritional status of the assessed person.

Statistical analysis

All the data in this study were confirmed by more than two medical staff and entered into

Micro video incentive nursing intervention for rectal cancer after enterostomy

Table 1. Comparison of clinical data between the two groups

	Experimental group (n=51)	Control group (n=49)	t/ χ^2	P
Age (years)	53.1±6.91	52.4±7.1	3.25	0.241
Sex			3.28	0.422
Male (n %)	32 (62.3%)	28 (57.1%)		
Female (n %)	19 (37.7%)	21 (42.9%)		
BMI	22.7±2.28	21.4±2.76	1.209	0.332
Smoking	31 (60.7%)	30 (61.9%)	1.96	0.591
Marital status			17.83	0.242
Married	19 (37.7%)	15 (30.2%)		
Single	13 (26.2%)	9 (19.0%)		
Divorced or separated	10 (19.6%)	10 (20.6%)		
Widowed	7 (13.7%)	12 (23.8%)		
Unknown/missing	2 (3.3%)	3 (6.3%)		
Ostomy site			9.95	0.062
Sigmoid colostomy	28 (54.1%)	30 (61.9%)		
Transverse colostomy	15 (29.5%)	12 (23.8%)		
Ileostomy	8 (16.4%)	7 (14.3%)		
The time of first exhaustion	10.2±1.12	11.4±1.76	2.225	0.219
The time of first eating	5.52±1.88	6.09±2.01	2.674	0.243

Note: Compared with the control group, significant difference as $P < 0.05$. BMI: Body Mass Indexes.

the computer. All the data in this study were processed by SPSS 19.0 statistical analysis software. Descriptive statistics were used to summarize overall data, describing demographic characteristics of the groups, and the comparison between the two groups before intervention and after intervention was compared with t test. Factors that were statistically significant at the $P < 0.05$ level in the univariate analysis was entered into multivariate analysis. Multiple regression analysis (stepwise method) was used to find the factors relevant to psychological state of rectal cancer patients with enterostomy. $P < 0.05$ indicated that the difference was statistically significant.

Results

Clinical data

Among the 100 postoperative patients with rectal cancer, the age of the patients in the experimental group (n=51) was 32-83 years, with an average age of (53.1±6.91) years old, and the age of the patients in the control group (n=49) was 32-80, with an average age of (52.4±7.1) years old. There was no significant difference in gender, age, BMI (Body mass indexes), marital status, the time of first exhaustion, the time of first eating and ostomy site between the two groups (all $P > 0.05$) (Table 1).

Assessment of the psychology state of the patients

As shown in Table 2, the score of HAMA and HAMD were lower than those before intervention ($P < 0.05$). Moreover, the difference of score of HAMA and HAMD between two groups was obvious ($P < 0.05$). The results indicated that the psychology state was improved after micro video incentive nursing intervention.

Assessment of the quality of life of the patients

The quality of life of patients (QLQ-C30) (physiological function, psychological function, physical pain, emotional function, social function, and mental health) of the experimental group improved more significantly compared with control group, the difference was statistically significant ($P < 0.05$) (Figure 1).

Assessment of the nutritional status of the patients

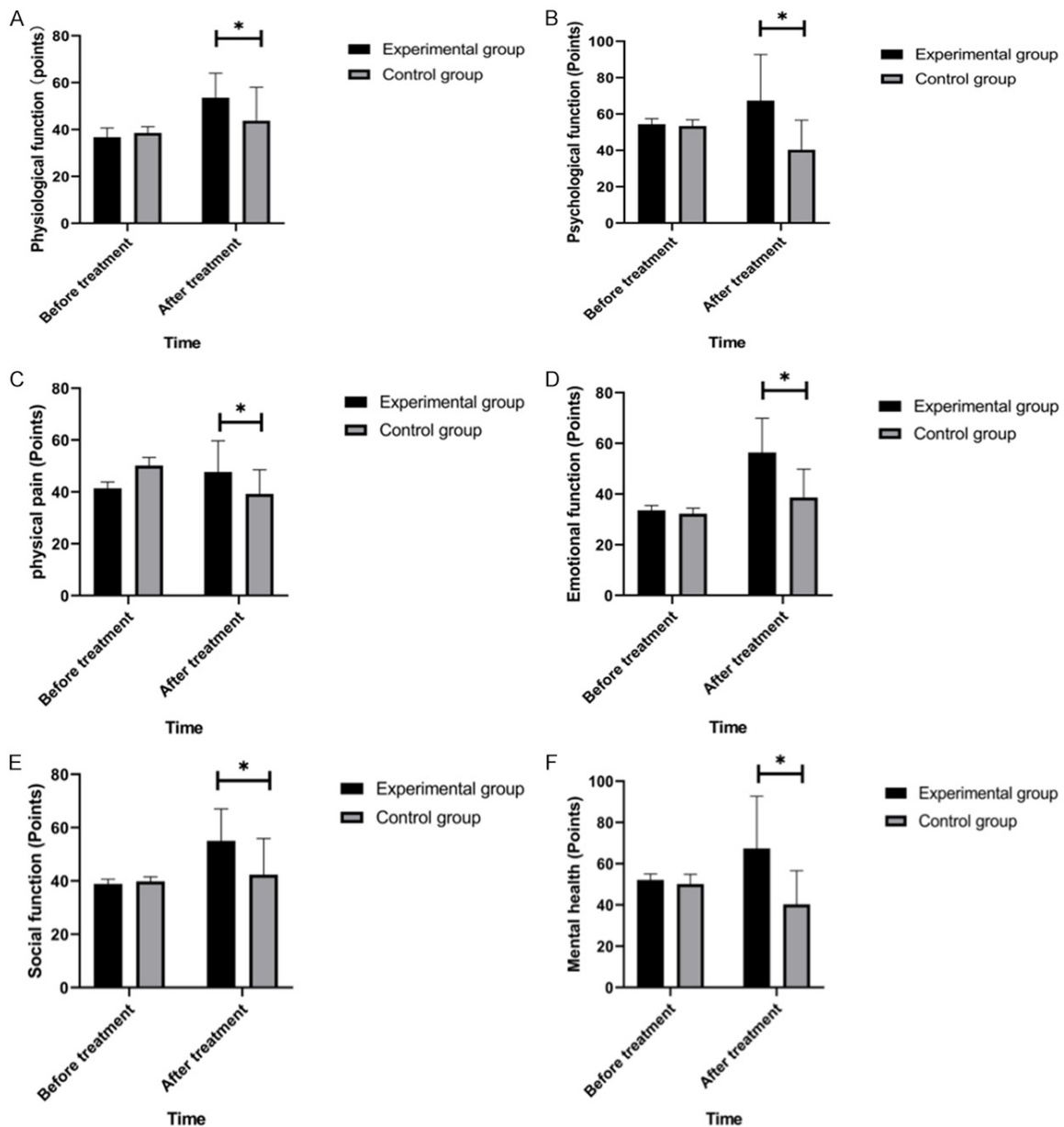
As shown in Table 3, the score of PG-SGA had no difference between two groups before intervention ($P > 0.05$). Moreover, the difference of score of PG-SGA between two groups was obvious ($P < 0.05$). The results indicated that the nutritional status was improved after micro video incentive nursing intervention.

Micro video incentive nursing intervention for rectal cancer after enterostomy

Table 2. Comparison of psychology state evaluation index between the two groups after micro video incentive nursing intervention (points, $\bar{x} \pm s$)

	time	Experimental group (n=51)	Control group (n=49)	t	P
HAMA	Before intervention	13.37±2.10	13.19±2.01	0.52	0.096
	After intervention	7.63±2.35	10.09±2.42	5.78	0.002
	χ^2	24.9	5.78	-	-
	P	0.001	0.02	-	-
HAMD	Before intervention	12.67±2.37	12.31±2.09	0.54	0.272
	After intervention	6.31±2.89	9.39±2.32	6.32	0.001
	χ^2	16.91	7.15	-	-
	P	0.002	0.001	-	-

Note: Compared with the control group, significant difference as $P < 0.05$. HAMA: Hamilton Anxiety Scale; HAMD: Hamilton Depression Scale.



Micro video incentive nursing intervention for rectal cancer after enterostomy

Figure 1. Comparison of quality of life between the two groups after intervention. A: Physiological function; B: Psychological function; C: Physical pain; D: Emotional function; E: Social function; F: Mental health. Note: Compared with control group, * $P < 0.05$.

Table 3. Comparison of nutritional status between the two groups after micro video incentive nursing intervention (points, $\bar{x} \pm s$)

	time	Experimental group (n=51)	Control group (n=49)	t	P
PG-SGA	Before intervention	6.7±2.07	6.97±2.38	1.164	0.222
	After intervention	5.45±1.79	7.1±3.1	2.708	0.009
	χ^2	4.21	2.25	-	-
	P	0.032	0.076	-	-

Note: Compared with the control group, significant difference as $P < 0.05$. PG-SGA: Patient-Generated Subjective Global Nutrition Assessment.

Table 4. The relation of patients' psychology state with independent variables

Indexes	rho	P
Age	-0.071	0.454
BMI (kg/m ²)	-0.070	0.461
Smoking	0.064	0.511
Married (Marital status)	-0.043	0.743
Single (Marital status)	0.557	<0.001
Divorced or separated (Marital status)	0.428	<0.001
Widowed (Marital status)	0.458	<0.001
Micro video incentive nursing intervention	0.431	<0.001
Sigmoid colostomy	0.276	0.073
Transverse colostomy	0.174	0.064
Ileostomy	0.374	0.074
Physiological function	0.098	<0.001
Psychological function	-0.072	<0.001
Physical pain	0.439	<0.001
Emotional function	0.864	<0.001
Social function	0.764	<0.001
Mental health	-0.329	<0.001
PG-SGA	0.338	0.084

Note: The person correlation analysis method is used for normal distribution data and Spearman correlation analysis method is used for non-normal distribution data. Rho: Rank correlation coefficient. BMI: Body Mass Indexes. PG-SGA: Patient-Generated Subjective Global Nutrition Assessment.

The relation of patients' psychology state with independent variables

The influencing factors of psychological state of rectal cancer patients with enterostomy were analyzed by regression analysis, the results demonstrated that single ($\rho = 0.557$, $P < 0.001$), divorced or separated ($\rho = 0.428$, $P < 0.001$), widowed ($\rho = 0.458$, $P < 0.001$), micro video incentive nursing intervention ($\rho =$

0.431, $P < 0.001$), physiological function ($\rho = 0.098$, $P < 0.001$), psychological function ($\rho = -0.072$, $P < 0.001$), physical pain ($\rho = 0.439$, $P < 0.001$), emotional function ($\rho = 0.864$, $P < 0.001$), social function ($\rho = 0.764$, $P < 0.001$), and mental health ($\rho = -0.329$, $P < 0.001$) showed a significant correlation with patients' psychology state and quality of life. The age ($\rho = -0.071$, $P = 0.454$), BMI ($\rho = -0.070$, $P = 0.461$), smoking ($\rho = 0.064$, $P = 0.511$) and PG-SGA ($\rho = 0.338$, $P = 0.084$) showed no significant correlation with patients' psychology state (**Table 4**).

Multiple regression analysis

As shown in the multiple regression analysis, it showed that psychological function had obvious relation with micro video incentive nursing intervention ($\beta = 0.384$; $P < 0.001$) (**Table 5**).

Discussion

This study suggests that the micro video incentive nursing intervention had an obvious effect on rectal cancer patients with enterostomy. The quality of life was ameliorated in the experimental group. Moreover, the results of multiple regression analysis demonstrated that patients' psychological function has a significant correlation with micro video incentive nursing intervention.

The micro video incentive nursing intervention had impact on rectal cancer patients with

Table 5. Multiple regression analysis

Dependent variables	Independent variables	B	SE	β	P value
patients' psychology state	Psychological function	0.323	0.043	0.533	0.003
	Micro video incentive nursing intervention	1.488	0.594	0.384	<0.001

Note: B: nonstandard regression coefficient; SE: Standard Error; b: standardized regression coefficient; β : multiple correlation coefficient adjusted for the degrees of freedom.

enterostomy. This nursing measure is a novel style nursing intervention. Micro video incentive nursing intervention can provide seamless and considerate nursing after discharge, moreover, nurse communicate with the patient by telephone and micro video, so as to guide the patient's safe rehabilitation training [19-21]. The results of this study showed that the improvement of psychological state and quality of life in the experimental group were significantly better than those in the control group ($P < 0.05$). Research showed that micro video incentive nursing intervention is more helpful for physical recovery, and to correct their living habits and behaviors.

In recent years, the clinical nursing model has gradually changed from the traditional biological medical model to the modern biological psychological medical model [22-25]. More and more attention has been paid to the cure rate, functional reconstruction, quality of life and survival rate [26-28]. In clinic, more and more attention is paid to the implementation of micro video incentive nursing intervention, and the results achieved have clinical effect [29], which is consistent with our study. Moreover, micro video incentive nursing intervention is closely related to patient's psychological function, and micro video incentive nursing intervention could ameliorate patient's psychological function and quality of life.

During whole nursing period, the continuous nursing team understands the basic situation of patients, formulates the continuous nursing plan after discharge, regularly visits the knowledge mastery and problems of patients. This systematic, planned, targeted and convenient continuous nursing mode can more effectively improve the subjective enthusiasm of patients to participate in self-care, assist patients to solve the life problems, and that result agrees with the viewpoint of a previous study [30].

It is undeniable that our research has some limitations. Firstly, this study is only conducted

in our hospital, there is a certain selection bias, and it is recommended to conduct multi-center research. Secondly, this study only studied rectal cancer patients with enterostomy, and this may have selection bias. Finally, the sample size of this study is too small, which needs to be verified by further large sample research.

In summary, micro video incentive nursing intervention for rectal cancer patients with enterostomy plays a positive role in improving the quality of life of patients, improving their negative emotions and guiding patients to live a positive and healthy life.

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Disclosure of conflict of interest

None.

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Micro video incentive nursing intervention for rectal cancer after enterostomy

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