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Original Article

Effects of humanized nursing interventions on psychological well-being and quality of life in rectal cancer patients undergoing chemotherapy

Yan Zhang[1*], Hui Wang[1*], Wenjing Shan[2], Jia Cao[1], Yan Huang[2]

[1]Department of Radiation Oncology, Xijing Hospital, Fourth Military Medical University, Xi'an 710032, Shaanxi, China; [2]Department of Oncology, Xi'an International Medical Center Hospital, Xi'an 710100, Shaanxi, China. [*]Equal contributors.

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Abstract: Objective: To explore the effect of humanized nursing interventions on rectal cancer patients undergoing chemotherapy. Methods: A retrospective study was conducted on 110 rectal cancer patients admitted to Xijing Hospital of the Fourth Military Medical University. Patients were randomized into an observation group (n=55) and a control group (n=55) according to the type of nursing interventions received. The observation group received humanized nursing care, which included modifications to the hospitalization environment, psychological support, dietary guidance, and appropriate exercise. The control group received standard nursing care, including health education and medication management. Both interventions were administered throughout the hospitalization period. Due to serious adverse reactions during chemotherapy, some patients withdrew from the study, resulting in 54 patients in the observation group and 53 patients in the control group. Psychological status, quality of life, and nutritional status were assessed before and after the intervention, and complications and patient satisfaction were statistically analyzed. Results: Following the intervention, both groups showed a significant reduction in Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HAMD) scores upon discharge, and an increase in all dimensions of the Generic Quality of Life Inventory-74 (GQOLI-74), with more pronounced changes in the observation group (all $P < 0.05$). Upon discharge, hemoglobin (Hb), serum total protein (TP), and albumin (Alb) levels had decreased in both groups compared to pre-intervention levels, but the observation group exhibited higher levels of these indicators than the control group ($P < 0.05$). There was no significant difference in the overall incidence of adverse reactions between the two groups ($P > 0.05$), but nursing satisfaction was higher in the observation group than the control group ($P < 0.05$). Conclusion: Humanized nursing interventions significantly improve nutritional status, alleviate psychological distress, and improve the quality of life for rectal cancer patients undergoing chemotherapy.

Keywords: Rectal cancer, humanized nursing, psychological state, quality of life

Introduction

Rectal cancer is a prevalent malignancy of the digestive system with a pathogenesis that remains largely unclear. Current studies have pointed out that chronic inflammatory stimulation of the digestive tract may play a significant role in the development of rectal cancer [1, 2]. Due to the subtlety of early symptoms, most patients are diagnosed at advanced stages when the disease has already progressed, thereby diminishing the opportunity for surgical intervention [3]. Consequently, radiotherapy and chemotherapy are the main treatments for rectal cancer, but these can be lengthy and painful. The adverse effects and pain associated with these treatments often lead to psychological distress, including anxiety, depression, and even suicidal thoughts, all of which undermine treatment effectiveness and patients' quality of life [4-6]. Researchers [7] have pointed out that high-quality nursing care during radiotherapy and chemotherapy can mitigate these negative psychological states to a certain extent. However, nursing modes vary, underscoring the need for an optimized nursing approach for rectal cancer patients undergoing radiotherapy and chemotherapy.

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Humanized nursing is a people-oriented approach that extends beyond traditional medical care. It prioritizes humanistic values, addressing not only the physical health of patients but also their emotional and psychological needs, as well as their dignity. In this model, healthcare providers act not only as medical caregivers but also as supportive companions who offer personalized care with empathy, attentive listening, and compassion [8]. Humanized nursing has been increasingly adopted globally to improve the psychological well-being of patients with various diseases, with a specific focus on of rectal cancer patients [9]. Given this context, this study discusses the effect of humanized nursing on the psychological well-being and quality of life of rectal cancer patients receiving chemotherapy, aiming to identify additional intervention strategies to improve outcomes.

Materials and methods

General materials

This retrospective study included 110 patients with rectal cancer who were admitted to Xijing Hospital of the Fourth Military Medical University from October 2021 to January 2023. Patients were randomized into an observation group (n=55) and a control group (n=55) according to the nursing interventions they received. Inclusion criteria: Patients were eligible for inclusion if they were diagnosed with rectal cancer by pathologic biopsy, classified as stage III-IV according to the Tumor-Node-Metastasis (TNM) system, had undergone prior surgery for rectal cancer, and provided informed consent. Exclusion criteria: Patients were excluded if they had additional malignant tumors, other digestive system diseases, severe infections, mental illness, or a family history of mental illness, Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HAMD) scores ≤ 5 before enrollment, were deemed unable to tolerate chemotherapy, had severe anemia, or exhibited abnormal liver and kidney function. This study was approved by the Ethics Committee of Xijing Hospital, Fourth Military Medical University.

Methods

Both groups underwent hyperthermic intraperitoneal chemotherapy. Initially, 1000 mL of warmed normal saline at 45°C was injected into the abdominal cavity through an abdominal catheter. Subsequently, a dose of 5-fluorouracil (5-FU, Hainan Zhuotai Pharmaceutical Co., Ltd., specification: 0.25 g) at 0.5 g/m^2 and Nedaplatin (Jilin Hengjin Pharmaceutical Co., Ltd., specification: 50 mg) at 120 mg/m^2 were administered into the abdominal cavity. The treatment regimen included 3 cycles, with each cycle lasting 21 days.

The control group received standard nursing care during chemotherapy, including health education, medication adherence, monitoring of blood pressure and heart rate, indoor ventilation and other routine nursing. The observation group received humanized nursing care regarding the following aspects [10, 11]: (1) Hospital environment: The ward environment was maintained to be clean, organized and warm, with an appropriate temperature (20-25°C) and humidity (50%-60%), providing patients with conducive conditions for hospitalization and sleep. (2) Psychological nursing: Nurses engage in daily 30-minute communication sessions with patients to understand their preferences and family background, encouraging emotional expression to alleviate loneliness. Nurses closely monitored patients' psychological changes, analyze the reasons for emotional fluctuations, and provide targeted psychological counseling, comfort and encouragement to enhance patients' sense of care, attention, and self-confidence. (3) Dietary intervention: Patients received dietary guidance based on the *Dietary Guide for Cancer Patients* (WS/T559-2017) to ensure adequate nutrition and facilitate digestion and absorption. Recommendations included 200-400 g of cereals daily, increased intake of fish, poultry and eggs, reduced fat consumption, soft, easily digestible meats for those with gastrointestinal tract injuries from chemotherapy, and daily intake of about 50 g of beans, 300 g-500 g of vegetables, and 200 g-300 g of fruits. (4) Physical activity: Patients were encouraged to engage in appropriate daily exercises such as weiqi or Tai Chi, tailored to their conditions, to promote digestion and enhance immune function. The interventions in both groups lasted throughout the patients' hospitalization period.

Outcome measures

Primary outcome measures: The evaluation of all indicators was conducted before interven-

tion (during hospitalization) and at discharge. Upon discharge, patients exhibited stable vital signs, were free from infections and other complications, and reported well-controlled pain.

(1) Mental state: The mental state was evaluated using the HAMA and HAMD scales [12, 13]. A HAMA score ≥ 7 suggests possible anxiety, while a HAMA score < 7 suggests the absence of anxiety. For the 17-item HAMD scale, a score of 7-17 suggests possible depression, whereas a HAMD score < 7 suggests the absence of depression. Higher scores on these scales reflect more severe levels of anxiety and depression. (2) Quality of life: Quality of life was evaluated using the Generic Quality of Life Inventory-74 (GQOLI-74) [14]. Material life state scores ranged from 16 to 80, while social, physical, and psychological function scores ranged from 20 to 100. Higher scores indicate better life quality. (3) Nutritional status: Hemoglobin (Hb), serum total protein (TP) and albumin (Alb) levels were monitored by an automatic hematology analyzer (Shenzhen Kubell Biotechnology Co., Ltd., China).

Secondary outcome measures: (1) The incidence of adverse reactions, including gastrointestinal reactions, bone marrow suppression, and alopecia was compared between the two groups. Total incidence of adverse reactions = number of adverse reaction cases/total number of cases × 100%. (2) Patient satisfaction with nursing care was evaluated using a self-developed satisfaction questionnaire. Satisfaction = (satisfaction + general satisfaction) cases/total cases × 100%.

Statistical analysis

SPSS 20.0 was used for statistical analysis. Enumerated data were expressed as n (%) and compared using the chi-square test. Normally distributed measured data were shown as mean ± standard deviation ($\bar{x}$ ± s). The paired t-test was used to compare pre- and post-intervention data within the same group, while the independent t-test was used for comparison between groups. A significance level of $P < 0.05$ indicates a significant difference.

Results

General information

Among the 55 patients in the observation group, 1 patient withdrew due to severe adverse reactions, leaving 54 patients who completed the study. In the control group, 2 patients withdrew for the same reason, with 53 completing the study. No deaths were reported in either group during the hospitalization period. There were no significant differences in general data between the two groups (all P > 0.05), indicating comparability (**Table 1**).

Mental state

At discharge, both the HAMA and HAMD scores showed a significant reduction in both groups after the intervention, with the observation group showing a significantly greater decrease (all P < 0.05) (**Table 2**).

Quality of life

The GQOLI-74 scores were significantly improved in both groups at discharge compared to pre-intervention levels, with the observation group demonstrating a more pronounced improvement (all $P < 0.05$) (**Table 3**).

Nutritional indexes

Although the levels of Hb, TP and Alb decreased in both groups at discharge compared to pre-intervention levels, the observation group maintained significantly higher levels of these nutritional indices than the control group (all P < 0.05) (**Table 4**).

Adverse reactions

The total incidence of adverse reactions in the observation group was slightly lower than that of the control group; however, this difference did not reach statistical significance ($P > 0.05$) (**Table 5**).

Nursing satisfaction

Nursing satisfaction was significantly higher in the observation group, with 90.74% (49/54) reporting satisfaction compared to 75.47% (40/53) in the control group (P=0.035) (**Table 6**).

Discussion

Chemotherapy for rectal cancer is a protracted process that involves the administration of a combination of chemotherapy drugs, which can lead to side effects including bone marrow sup-

Table 1. General information of patients in the two groups (n, $\bar{x} \pm s$)

Index	Observation group (n=54)	Control group (n=53)	χ^2/t	*P*
Gender (n)			0.767	0.381
Male	28	23		
Female	26	30		
Age (year)	57.5±6.4	58.3±5.9	0.672	0.503
BMI (kg/m^2)	23.22±3.03	23.64±2.18	0.842	0.412
TNM stage			0.887	0.642
Stage II	20	16		
Stage III	17	21		
Stage IV	17	16		
Time from diagnosis to participation in this study (months)	10.28±2.20	9.64±2.45	1.421	0.158
Distance between the lower margin of tumor and anal margin (cm)	7.68±2.11	8.03±2.30	0.820	0.414
Histopathological classification (n)			0.426	0.935
Adenocarcinoma	44	45		
Mucinous adenocarcinoma	6	5		
Undifferentiated carcinoma	2	2		
Others	2	1		

Note: BMI means body mass index; TNM means Tumor, Lymph Node and Metastasis.

Table 2. HAMA and HAMD scores of the two groups before and after intervention ($\bar{x} \pm s$) score

Group	Time	HAMA score	HAMD score
Observation group (n=54)	Before the intervention	7.85±1.33	8.26±1.18
	At discharge	6.56±1.04$^{*,\#}$	6.66±1.27$^{*,\#}$
Control group (n=53)	Before the intervention	7.92±1.25	8.45±1.35
	At discharge	7.23±1.18*	7.29±1.25*

Note: HAMA means Hamilton Anxiety; HAMD means Hamilton Depression; Compared with the same group before the intervention, $^{*}P < 0.05$; compared with the control group at discharge, $^{\#}P < 0.05$.

Table 3. GQOLI-74 scores of the two groups before and after the intervention ($\bar{x} \pm s$) score

Group	Time	Material life condition	Social function	Physical function	Psychological function
Observation group (n=54)	Before the intervention	59.96±5.05	65.59±5.39	70.05±5.44	67.77±4.48
	At discharge	66.66±6.59$^{*,\#}$	72.54±4.48$^{*,\#}$	77.57±5.83$^{*,\#}$	73.38±5.75$^{*,\#}$
Control group (n=53)	Before the intervention	60.04±5.88	65.90±5.36	69.87±5.89	68.05±5.44
	At discharge	63.33±5.49*	68.96±5.80*	73.37±5.09*	70.29±4.74*

Note: GQOLI-74 means Generic Quality of Life Inventory-74; Compared with the same group before the intervention, $^{*}P < 0.05$; compared with the control group at discharge, $^{\#}P < 0.05$.

pression and alopecia. This often results in reduced treatment compliance, poor psychological health, and even depression among patients, impacting both subsequent chemotherapy cycles and overall patients' quality of life [15]. Therefore, implementing appropriate and effective interventions is crucial for improving patients' psychological well-being and treatment effects. Humanized nursing, which emphasizes patient-centered care and humanistic values, aims to improve patients' quality of life by addressing their emotional needs [16].

The HAMA and HAMD scales are commonly used tools for evaluating patients' anxiety and depression, respectively, with higher scores

Table 4. Comparison of nutritional indexes between the two groups before and after intervention ($\bar{x} \pm s$) g/L

Group	Time	Hb	TP	Alb
Observation group (n=54)	Before the intervention	104.44±6.50	64.44±4.40	40.05±4.30
	At discharge	101.90±6.72*,#	62.36±5.06*,#	38.24±4.65*,#
Control group (n=53)	Before the intervention	105.23±7.55	63.95±4.95	40.88±4.58
	At discharge	98.77±6.97*	59.94±5.33*	36.06±4.42*

Note: Hb means hemoglobin; TP means total protein; Alb means albumin; Compared with the same group before the intervention, *$P < 0.05$; compared with the control group at discharge, #$P < 0.05$.

Table 5. Comparison of adverse reactions between the two groups [n (%)]

Group	Myelosuppression	Gastrointestinal reaction	Alopecia	Total incidence
Observation group (n=54)	10 (18.52)	7 (12.96)	3 (5.56)	20 (37.04)
Control group (n=53)	12 (22.64)	8 (15.09)	3 (5.66)	23 (43.40)
χ^2	0.278	0.101	0.001	0.450
P	0.598	0.751	0.981	0.502

Table 6. Comparison of patient satisfaction between the two groups [n (%)]

Group	Very satisfied	Satisfied	Basically satisfied	Dissatisfied	Total
Observation group (n=54)	40	9	3	2	49/54
Control group (n=53)	36	4	7	6	40/53
χ^2			4.576		
P			0.035		

indicating more severe symptoms. The GQOLI-74 is mainly used to evaluate patients' quality of life, where higher scores reflect better quality of life. In this study, patients in the observation group had lower HAMA and HAMD scores, along with higher GQOLI-74 scores at discharge compared to the control group. This indicates that humanized nursing interventions for rectal cancer patients undergoing chemotherapy significantly improved their psychological well-being and quality of life. Other studies have also highlighted the effectiveness of humanized nursing as a patient-centered approach that prioritizes the emotional well-being of patients [17]. This approach makes nursing care more empathetic and acceptable to patients, thereby improving their psychological state during the perioperative period and chemotherapy. Beltrán et al. also found that humanized nursing interventions can improve the quality of life in cancer patients [18]. The benefits observed in this study likely stem from the comprehensive nature of humanized nursing, which not only addresses the medical aspects of care but also emphasizes a people-oriented and compassionate approach, which can effectively alleviate anxiety, fear, depression and other negative emotions, thereby enhancing patients' overall quality of life through psychological and lifestyle interventions [19].

Rectal cancer, as a malignancy of the digestive system, is often accompanied by significant impairments in nutrient digestion and absorption, leading to varying degrees of malnutrition among patients [20, 21]. The levels of Hb, TP, and Alb in the blood are key indicators of patients' nutritional status, with higher levels reflecting better nutrition. In this study, although Hb, TP and Alb levels decreased in both groups after intervention, the observation group showed higher levels than the control group. These results suggested that while chemotherapy negatively affects the nutritional status of rectal cancer patients, humanized nursing has a milder impact on these nutritional indicators. This result is likely due to the comprehensive dietary guidance provided to the observation group based on the *Dietary Guide for Cancer Patients* (WS/T559-2017), which ensured a balanced intake of cereals, vegetables, fruits, meats, eggs, milk, while bal-

ancing coarse grains with wheat flour and rice, and reducing fat consumption. These measures not only ensured adequate nutritional intake, but also promoted digestion and absorption of patients, thus minimizing the negative impact on patients' nutritional status during chemotherapy. Luan et al. also reported that humanized nursing interventions maintained nutritional balance and adequacy in patients [22]. In this study, although adverse reactions such as gastrointestinal reactions, bone marrow suppression, and alopecia were observed in both groups - common side effects of chemotherapy - the overall incidence of these reactions differed significantly between the two groups. This may be attributed to the selection of the sample size in the study. Despite these findings, the nursing satisfaction within the observation group surpassed that of the control group, suggesting that humanized nursing significantly improved patient satisfaction during chemotherapy for rectal cancer. It is important to acknowledge the limitations of this study, including its single-center design and relatively small sample size. Further large-scale, multicenter clinical studies are still needed to validate the effects of humanized nursing on reducing adverse reactions in rectal cancer patients during chemotherapy.

In sum, humanized nursing has been shown to significantly improve nutritional status, alleviate psychological distress, and enhance the quality of life in rectal cancer patients undergoing chemotherapy.

Disclosure of conflict of interest

None.

Address correspondence to: Yan Huang, Department of Oncology, Xi'an International Medical Center Hospital, No. 777 Xitai Road, High-tech Zone, Xi'an 710100, Shaanxi, China. Tel: +86-18966709837; E-mail: 18966709837@163.com

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