

Application of Health Management Strategies Based on the Information-Motivation-Behavior Model in Postoperative Chemoradiotherapy Patients with Colorectal Cancer: A Retrospective Study

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Introduction. To explore the application of health management strategies based on the Information-Motivation-Behavioral (IMB) model in patients undergoing postoperative chemoradiotherapy for colorectal cancer.

Methods. A retrospective selection of 60 patients who underwent postoperative chemoradiotherapy for colorectal cancer from May 2021 to May 2023 was conducted. According to different nursing methods, the patients were divided into two groups of 30 each. The control group received routine care, while the observation group received health management strategies based on the IMB model. Both groups completed three months of care. The self-management levels, postoperative traumatic growth, compliance, and satisfaction of the two groups were compared.

Results. The scores for self-management levels in the observation group were higher than those in the control group after the intervention ($P < 0.05$). The scores for postoperative traumatic growth in the observation group were also higher than those in the control group after the intervention ($P < 0.05$). Compliance and satisfaction in the observation group were higher than those in the control group after the intervention ($P < 0.05$).

Conclusion. Health management strategies based on the IMB model have a good effect when applied to patients undergoing postoperative chemoradiotherapy for colorectal cancer. They can improve patients' self-management and postoperative traumatic growth levels, achieving higher compliance and satisfaction. This approach is worth promoting and applying.

Keywords. Information-Motivation-Behavioral (IMB) model; Health management strategies; Colorectal cancer; Postoperative chemoradiotherapy; Self-management; Postoperative traumatic growth; Compliance; Satisfaction

INTRODUCTION

Colorectal cancer is a common gastrointestinal malignancy with a high incidence rate. With changes in residents' lifestyles, the incidence of the disease is on the rise, ranking third among gastrointestinal diseases [1]. Research by Li Donglan et al. [2] indicates that colorectal cancer progresses relatively quickly, and as the disease course extends, it can metastasize via lymph nodes and blood, becoming a significant cause of death among residents. Surgery, a common treatment for colorectal cancer, can remove lesion tissues and slow disease progression, benefiting most patients [3]. To consolidate the effects of surgical treatment, postoperative chemoradiotherapy is often necessary for colorectal cancer patients, which can kill residual cancer cells and extend patients' lives. However, the high incidence of toxic side effects from chemoradiotherapy affects patients' treatment tolerance and quality of life [4].

The Information-Motivation-Behavioral (IMB) model, a new intervention mode, can help patients develop healthy habits and positively guide them to change their behaviors through information collection, motivational interviewing, and behavior modification. Currently, this nursing model is widely used in cancer screening, AIDS prevention, and diabetes, all achieving good results. However, there are few studies on its application in patients undergoing postoperative chemoradiotherapy for colorectal cancer [5]. This study aims to explore the application of health management strategies based on the IMB model in patients undergoing postoperative chemoradiotherapy for colorectal cancer, as reported below.

1 MATERIALS AND METHODS

1.1 General information

A retrospective selection of 60 patients who underwent postoperative

chemoradiotherapy for colorectal cancer from May 2021 to May 2023 was conducted. According to different nursing methods, the patients were divided into two groups of 30 each. The control group comprised 30 patients: 19 males and 11 females, aged 38-71 years, with an average age of (56.83±4.65) years; body mass index (BMI) ranging from 18.5 to 29.3 kg/m², with an average of (22.23±3.41) kg/m²; clinical stages: 21 patients in stage I and 9 patients in stage II; among them, 17 had rectal cancer and 13 had colon cancer. The observation group comprised 30 patients: 20 males and 10 females, aged 37-72 years, with an average age of (56.87±4.67) years; BMI ranging from 18.3 to 29.5 kg/m², with an average of (22.29±3.45) kg/m²; clinical stages: 17 patients in stage I and 13 patients in stage II; among them, 18 had rectal cancer and 12 had colon cancer. There were no statistically significant differences in the general data between the two groups ($P>0.05$).

1.2 Inclusion and exclusion criteria

Inclusion criteria:

1. All cases were colorectal cancer patients admitted to our hospital [6], with complete pathological results.
2. All patients underwent surgical treatment and required postoperative chemoradiotherapy.
3. Karnofsky Performance Status (KPS) score ≥ 60 , with an expected survival period > 6 months.

Exclusion criteria:

1. Patients who abandoned treatment, were discharged against medical advice, or refused to participate in this study.
2. Patients with mental disorders or other severe physical diseases.
3. Patients with autoimmune diseases, other malignant tumors, or those who have difficulty communicating normally.

1.3 Methods

Control Group: Routine nursing care.

1. Patients were informed about the methods of chemoradiotherapy and

the possible toxic side effects during the treatment, such as seizures, nausea, vomiting, and bone marrow suppression, through oral education. Strict adherence to doctor's orders for symptomatic supportive interventions was emphasized, and patients' vital signs were closely monitored, with any abnormalities reported to the doctor.

2. Dietary guidance was reinforced, strictly following the principle of small, frequent meals with easily digestible, bland foods, and mouth rinsing before and after meals.

3. Psychological counseling was strengthened, addressing patients' questions collectively, and reminding patients to regularly check their blood counts.

4. After discharge, patients were provided with health education booklets and follow-up was reinforced through telephone and outpatient visits for three months.

Observation Group: Combined health management strategies based on the Information-Motivation-Behavioral (IMB) model.

1. Information intervention: Given the characteristics of postoperative chemoradiotherapy for colorectal cancer, face-to-face communication was conducted to gather patients' information needs and summarize their data. This mainly included life guidance, psychological intervention, and symptom management. A "Self-Management Manual for Postoperative Chemoradiotherapy Patients with Colorectal Cancer" was developed, covering lifestyle, common toxic side effects of chemoradiotherapy, dietary structure, psychological counseling plans, and related discharge precautions. Patients were given medication reminder cards, self-management efficacy scales, and medication adherence scales, with information support provided 2-3 times a week for 20-30 minutes each session.

2. Motivation intervention: Through motivational interviews, patients' intrinsic willingness for postoperative chemoradiotherapy was stimulated,

helping them to promptly address unhealthy behaviors and alleviate psychological stress responses. For those with stable conditions and good mental states, theme-based interviews were conducted to explore patients' self-management levels, analyze reasons for poor chemoradiotherapy compliance, and enhance their proactive engagement to improve compliance and prevent toxic side effects. Successful cases were invited to share experiences, recognizing patients' efforts and achievements, and helping them build confidence in adhering to treatment, thereby enhancing self-management efficacy. Telephone follow-ups were strengthened weekly after discharge to increase the effectiveness of motivational interviews.

3. Behavioral model:

- Patients were correctly guided on mastering chemoradiotherapy techniques and preventing potential toxic side effects. They were instructed to mark completed tasks on the reminder card to avoid missed doses and better implement behavior interventions.
- Patients' self-management levels were improved by encouraging regular participation in health behavior management seminars and involving family members to leverage social support.
- Other interventions included establishing WeChat groups to regularly push new information on postoperative chemoradiotherapy for colorectal cancer, along with motivational content, facilitating nurse assessment and intervention, and better guiding and supervising patients.

Both groups completed three months of nursing care.

1.4 Indicators of observation

(1)Self-Management Level: Before and after the intervention, the self-management ability of adults was assessed using the Adult Health Self-Management Skills Rating Scale (AHSMSRS), which includes health self-management behavior (14 items), health self-management cognition (14 items),

and health self-management environment (10 items). The total score ranges from 38 to 190 points, with higher scores indicating better self-management [7].

(2)Postoperative Growth: Before and after the intervention, postoperative growth was assessed using the Post-Traumatic Growth Inventory (PTGI), which includes interpersonal relationships, new possibilities, appreciation of life, spiritual changes, and personal strength. The total score is 105 points, with higher scores indicating higher levels of postoperative growth [8].

(3)Compliance and Satisfaction: After the intervention, compliance (adherence to chemoradiotherapy, regular follow-ups, and dietary guidance) and satisfaction (treatment methods, service attitude, and communication skills) were assessed using questionnaires. Each item is scored out of 100 points, with ≥ 90 points indicating compliance/satisfaction [9].

1.5 Statistical Analysis

SPSS26.0 software was used to process the data. The enumeration data were analyzed by χ^2 test, expressed by n (%), and the measurement data were analyzed by t test, expressed by $(\bar{x} \pm s)$, $P < 0.05$ was statistically significant.

2 RESULTS

2.1 Comparison of AHSMSRS scores between the two groups

The AHSMSRS scores of the two groups were improved after intervention. The scores of AHSMSRS in each dimension of the observation group after intervention were higher than those of the control group ($P < 0.05$), as shown in Table 1.

Table 1 the comparison of two groups AHSMSRS score (score, $\bar{x} \pm s$)

Groups	Number of cases	Health self-management behaviors		Awareness of health self-management		Health self-management environments	
		Before	After the	Before	After the	Before	After the
		intervention	intervention	intervention	intervention	intervention	intervention
Observation group	30	34.59 ± 3.34	60.24 ± 5.73 [#]	35.11 ± 4.31	58.35 ± 6.63 [#]	27.45 ± 3.35	38.31 ± 5.52 [#]

Control group	30	34.61±3.36	48.32±4.51 [#]	35.13±4.33	41.23±5.59 [#]	27.47±3.37	33.22±4.14 [#]
t	/	0.023	8.954	0.018	10.813	0.023	4.040
P	/	0.982	0.000	0.986	0.000	0.982	0.000

Compared with before intervention, # P < 0.05.

2.2 Comparison of posttraumatic growth levels between the two groups after surgery

The level of postoperative traumatic growth of the two groups was improved after intervention. The postoperative traumatic growth level score of the observation group was higher than that of the control group (P<0.05), as shown in Table 2.

Table 2 Comparison of posttraumatic growth levels between the two groups after surgery (score, $\bar{x} \pm s$)

Groups	Point of time	Interpersonal relationships	New possibilities	An appreciation of life	Mental changes	Strength of the individual
Observation group (n=30)	Before intervention	12.41±2.32	11.96±2.26	12.03±2.28	12.23±2.35	11.68±2.21
	After the intervention	17.86±3.69 ^{#*}	17.94±3.32 ^{#*}	18.11±3.51 ^{#*}	18.62±3.62 ^{#*}	18.63±3.59 ^{#*}
Control group (n=30)	Before intervention	12.43±2.34	11.98±2.28	12.05±2.30	12.25±2.37	11.70±2.23
	After the intervention	15.31±3.41 [*]	15.29±3.01 [*]	15.36±2.79 [*]	16.11±3.14 [*]	14.42±3.32 [*]

Compared with the control group, #P<0.05; Compared with that before intervention, *P<0.05

2.3 The compliance and satisfaction of the two groups were compared

The compliance and satisfaction of the observation group after intervention were higher than those of the control group (P<0.05), as shown in Table 3.

Table 3 Comparison of compliance and satisfaction between the two groups [n (%)]

Groups	Number of cases	Compliance			Satisfaction		
		Treatment	Regular	Dietary	Methods of	Attitude	Communic

		followed radiotherapy and chemotherapy	review	guidance	treatment	of service	ation skills
Observation group	30	29 (96.67)	30(100.00)	29 (96.67)	28 (93.33)	30 (100.00)	29 (96.67)
Control group	30	24 (80.00)	25 (83.33)	23 (76.67)	22 (73.33)	26 (86.67)	23 (76.67)
χ^2	/	4.043	5.455	5.192	4.320	4.286	5.192
P	/	0.044	0.020	0.023	0.038	0.038	0.023

3 DISCUSSION

In recent years, the incidence and mortality rates of colorectal cancer have been on the rise. Strengthening early diagnosis and timely surgery helps improve patient prognosis and reduce clinical mortality rates [10]. Surgical treatment is a common method for colorectal cancer, and postoperative patients often need to receive radiochemotherapy to reduce recurrence and metastasis [11]. However, the side effects of radiochemotherapy can affect patients' quality of life and hinder their postoperative recovery and growth. In this study, both groups showed an improvement in AHSMSRS scores after the intervention. The scores of various dimensions of AHSMSRS in the observation group were higher than those in the control group ($P < 0.05$). This result indicates that health management strategies based on the Information-Motivation-Behavioral (IMB) model can improve self-management levels in colorectal cancer patients undergoing postoperative radiochemotherapy, benefiting their recovery. The reason for this is that the IMB model integrates multiple behavioral intervention theories. For example, it draws on the understanding of "motivation" from the Theory of Reasoned Action, fully considering the role of psychological factors in behavioral changes. The nursing process incorporates the concept of "self-efficacy" from Social Cognitive Theory, emphasizing the influence of patients' subjective initiative on their self-care abilities

【12】. This nursing model, serving as a multivariable model, has stronger applicability, enhances patients' compliance with radiochemotherapy, and encourages them to follow medical advice and learn about radiochemotherapy-related knowledge

【13】. Xueli Sun et al. stated that the health management strategy based on the IMB model is a sustainable and systematic management mode. It not only helps patients grasp radiochemotherapy-related knowledge but also improves self-management skills, increases patients' confidence and safety in radiochemotherapy, and enhances postoperative recovery and growth levels. This approach achieves high compliance and satisfaction rates【14】. In this study, the postoperative recovery and growth levels of both groups improved. The observation group's scores for postoperative recovery and growth levels, compliance, and satisfaction were higher than those of the control group ($P < 0.05$). This indicates that this nursing method can enhance postoperative recovery and growth levels in colorectal cancer patients undergoing radiochemotherapy, benefiting the majority of patients【15】.

In summary, the health management strategy based on the Information-Motivation-Behavioral (IMB) model is effective for colorectal cancer patients undergoing postoperative radiochemotherapy. It can improve patients' self-management and postoperative recovery and growth levels, achieving high compliance and satisfaction rates. This approach is worthy of broader application.

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