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# Mindfulness intervention, homogeneous medical concept, and concentrated solution nursing for colorectal cancer patients: a retrospective study

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## Abstract

**Objective** We aim to explore the differences of the psychological distress of postoperative chemotherapy patients with colorectal cancer between mindfulness intervention combined with homogeneous medical concepts and mindfulness intervention only.

**Methods** One hundred patients with colorectal cancer undergoing chemotherapy after surgery from Sep 2020 to Sep 2022 were enrolled and divided into active control group (Solution centered nursing interventions; homogenized medical and nursing professional teams; dedicated personnel responsible for “admission notices”; Regular follow-up after discharge) and mindfulness group (homogeneous medical concept + and concentrated solution + Mindfulness intervention) with 50 cases in each group according to different nursing methods.

**Results** After nursing, the physical function, emotional function, cognitive function, and social function of the patients in the mindfulness group were significantly higher than those in the active control group. However, the overall life and economic difficulties of the patients in the mindfulness group were significantly lower than those in the active control group ( $P < 0.05$ ). After nursing, the observation score, description score, action score, intrinsic experience score, non-judgment score and non-reaction score of the mindfulness group were significantly higher than those of the active control group ( $P < 0.05$ ).

**Conclusion** The implementation of mindfulness intervention in colorectal cancer patients undergoing chemotherapy can alleviate the patients' negative emotions, improve the level of mindfulness, and improve the quality of life of patients.

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**Keywords** Mindfulness intervention, Nursing, Homogeneous medical concept, Solution-focused model, Colorectal cancer, Chemotherapy

## Introduction

Colorectal cancer is one of the common tumor diseases caused by the digestive tract system, which mainly presents symptoms such as local abdominal pain, blood in the stool, anemia and weight loss [1]. According to relevant research reports, the morbidity and mortality of colorectal cancer patients in my country rank third and fourth among many cancer diseases, and the patients are obviously younger [2, 3]. At present, radiotherapy and chemotherapy are an important auxiliary means for the treatment of colorectal cancer. They can lead to increased physical and psychological stress, and cause patients The quality of sleep decreases, and the difficult emotions such as fear, depression, and anxiety are aggravated [4].

In recent years, the homogeneous medical concept nursing model has been widely advocated by hospitals. Homogeneous healthcare refers to a group of individuals who have identified similar patterns of medical resource utilization, treatment sequences, prognosis, and care trajectories [5]. The solution-focused mode is characterized by fully respecting individual resources and potential, and emphasizing that the focus of problem-solving is on the positive aspects of people [6]. Previous studies have found that the solution-focused model can help improve the psychological function and quality of life of patients [7]. The concentrated nursing model is a rehabilitation nursing measure covering the patient's psychology, sports and life, and its starting point is health education. However, the current clinical nursing mode of homogeneous medical concept combined with focused solution mode lacks the ability to perceive the patient's physiological state and enhance the patient's sense of self-control [8]. As research progresses, positive thinking interventions can be used to increase the level of positive thinking in patients. It is a meditation practice that evaluates the subconscious mind to find out the level of stress that the patient perceives, thus ensuring that the patient remains in a more normal state under stress. Positive thinking intervention therapy can significantly reduce patients' fear of disease and a series of difficult emotions after gastrointestinal surgery. Subsequently, it has been shown to reduce patients' psychological and physical health, thereby improving their quality of life and significantly increasing their sense of well-being. Positive thinking therapy can help patients to increase their level of positive thinking and thus continuously improve their physical and psychological health.

According to related studies, colorectal cancer patients have obvious anxiety and depression, and the severity of the disease is increasing [9]. The contradiction between

the disease and the psychological problems caused by colorectal cancer is becoming more and more tense, which in turn leads to the lower level of mindfulness and quality of life in patients with colorectal cancer, which gradually affects their living standards [10]. The mindfulness intervention is a stress reduction therapy that originated from meditation and is guided by Zen concepts to help patients relieve pain and anxiety. Studies have shown that in addition to conventional care and psychological care measures, mindfulness interventions can effectively reduce difficult emotions and improve quality of life in patients with colorectal pain [11].

## Materials and methods

### Research subject

The medical records of 100 patients with colorectal cancer undergoing chemotherapy after surgery from Sep 2020 to Sep 2022 were selected as the retrospective research objects, and divided into an active control group and an mindfulness group with 50 cases in each group according to different nursing methods. All patients underwent the intervention during hospitalization and discharge, over a period of 5 weeks. Patients were followed up weekly after discharge from hospital for the intervention. We have de-identified all patient details. All authors have signed informed consent forms. The reporting of this study conforms to CONSORT guidelines [12].

Inclusion criteria: (1) Patients were informed about this study and agreed to participate in this research; (2)  $70 \geq \text{Age} \geq 18$  years; (3) Patients were diagnosed with colorectal cancer by pathological examination; (4) There were no organ lesions in patients with stage I and Stage II partial colorectal resection; (5) Have a certain ability to read and write, and have a certain understanding of colorectal cancer. (6) Be able to understand the essence of this experiment and actively cooperate with it.

Exclusion criteria: (1) Those who refused to accept the questionnaire; (2) Those with other primary cancers, or those with other serious diseases who could not be treated by radical surgery; (3) Those with a history of mental illness or mental retardation: (4) The family requested that the patient not be informed of the actual condition.

### Homogeneous medical concept combined with focused solution nursing

Among them, the active control group implemented the concept of homogeneous medical care combined with solution-focused nursing, namely: (1) Solution-focused nursing intervention: Describe the problem:

The responsible nurse guides the patient to describe the main problems at present. Build feasible goals: Encourage patients to think about the goals they want to achieve in the treatment process. Discuss success stories: Discuss past success stories with patients, let patients realize that stoma is not so scary. Implement feedback: Encourage and praise the daily changes of the beneficiaries. Evaluate the effect: Evaluate the patient's results and actively improve in the next step. (2) Form a homogeneous medical and nursing professional team: members include medical staff in colorectal surgery and oncology surgery, and the selected personnel are senior nurses and physicians in the department. Before the nursing work is carried out, conduct unified training. After hospitalization, activate the homogeneous medical mode immediately, inform the patient of the precautions for dietary activities, and inform the patient that a series of encouragement measures after admission will be the responsibility of the attending physician. (3) In-hospital stage: After the patient is admitted to the hospital, the responsible nurse informs them of the "Admission Notice".

The responsible nurse and the attending doctor participate in the ward round, Consultation, treatment plan formulation, surgical arrangement, pathological discussion and other medical activities, comprehensively understand the actual condition of the patients in charge, give timely feedback on difficult problems in the treatment process, and improve the implementation. In addition, pay attention to ease the patient's psychological state, continuously encourage the patient, help enhance their confidence in treatment, and establish a correct attitude towards the disease. Take behavioral interventions for the bad mood of the thinker, such as arranging the thinker to do progressive muscle relaxation training in the recovery room with light music, and gradually relax the muscles of the whole body through deep breathing, once a day in the morning and evening, 20 min/time, the training time can be appropriately extended 3 days before the operation. During the operation, the vital indicators of the patients were strictly observed and anti-infection measures were taken. On the first day after the operation, the responsible nurse asked the stoma specialist nurse to conduct on-site teaching during the consultation, so that they could master the skills of cutting, pasting and replacing the ostomy bag, and observe the main points of the stoma. Learn to observe the color change of the stoma mucosa, manage and prevent stoma complications; during the nursing process, the medical staff should give enough respect and encouragement to the patients, so as to reduce the patient's postoperative stigma and enhance the confidence in treatment 3 to 14 days after operation, according to the patient's recovery, give corresponding dietary guidance, supplement nutrition, encourage patients to get out of bed early, and increase the time and

scope of activities. (4) After discharge: within 48 h after the patient is discharged from the hospital, the responsible nurse and the attending doctor will complete the telephone follow-up of the patient. Provide professional guidance. One month after discharge from the hospital to the stoma outpatient follow-up, targeted re-interventions were carried out. The nursing time of patients in both groups was 6 months after the confirmed enrollment.

### **Mindfulness intervention**

The mindfulness group implemented mindfulness intervention, namely: mindfulness intervention therapy is a group training therapy on the first coupling of cancer and psychology, which in turn continuously improves the physical and psychological condition of the patient, thus continuously rebuilding the patient's perception of the disease and its management. The 50 patients in the mindfulness group were divided into 7 groups, 6 of which had 7 patients in each group and the remaining group had 8 patients. The patients in each group were given mindfulness intervention care sequentially from Monday to Monday for 2.5 to 3 h each time, once a week for 5 weeks. In our study, the administration process was mainly influenced by the new crown epidemic, which was adjusted to a weekly group therapy session and a different theme each week, with a continuous intervention for patients for 5 weeks, with the weekly intervention taking place on Tuesdays at 4 p.m. The main intervention length was 2–2.5 h. It was conducted in two groups, and the next cycle of rehabilitation was generally not allowed until the end of the previous cycle, for a total intervention time of 2 months. In our study, instructional manuals and teaching videos were distributed to the administered patients before the start of the sessions, mainly to facilitate the patients to be able to perform white me training by learning, and the frequency and duration of weekly training were recorded on the memo sheet. To be able to keep the patients with colorectal cancer able to continue their rehabilitation training, we studied the use of online and offline instruction to educate the patients. In addition, the health care staff will distribute group training homework to patients with colorectal cancer online every week, and will follow up on the patients' training results and provide one-on-one professional answers to their feelings and questions.

Week 1: the background, current situation and attitude of mindfulness colorectal cancer rehabilitation were introduced, and instruction manuals and exercise record cards were issued. Introduce yourself, set up a WeChat group, and introduce mindfulness breathing to learn and cultivate mindfulness. Week 2: Discuss mindfulness breathing, the group exchanged experiences from last week's practice, and shared knowledge about cancer and stress, as well as the psychological problems caused

by changes in the personal image and orientation of colorectal cancer patients. Week 3: Discuss new findings in body scan assignments, the impact of colorectal cancer patients on physical fatigue and pain; stretching teaching of gentle yoga, taking into account the patient's physical disability, the practice follows the principle of moderation Week 4: Discuss the problems of yoga practice and Experience, tell the typical jade stress response and conscious stress response to cancer stress events. Tell stories in life, troubled stories in your mind and mental state, introduce mindfulness walking, and explore the relationship between walking movement and emotions. Week 5: Discuss the problem of mindfulness walking, share relevant experiences, explain the relationship between sleep, fatigue, physical pain, and emotions, and discuss experiences and findings in cancer coping. Review, discuss the mindfulness journey, how to deal with fear of cancer recurrence, emphasize mindfulness healing as a means of having health, and provide online resources.

Observation indicators

Quality of life score: EORTCQLQ-C30 V3.0 Chinese version developed by European Organization for Research and Treatment of Cancer, EORTC. The scale contains 30 items in 15 areas, including 5 functional areas: physical function (items 1–5), cognitive function (items 20, 25), emotional function (items 21–24) and social function (questions 26–27), three symptom areas, fatigue, nausea and vomiting, pain, 6 individual symptoms (including dyspnea, loss of appetite, quality of life, constipation, diarrhea, and financial difficulties), and 1 general health area. The overall health status is divided into 7 grades from 1 to 7. 1 means “very poor”, 7 means “very good”, and the rest of the items are divided into 4 grades, 1 means “never”, 2 means “somewhat”, 3 for “something” and 4 for “very much”. The scoring method of the scale: the scores of the items included in each field are added up and divided by the number of items included to obtain the rough score of the field. And the better the quality of life, the higher the symptom domain score, indicating that the more symptoms or problems, the worse the patient's quality of life. At present, the scale has been translated into 43 languages, including Chinese, and

is widely used in various countries and regions in the world. The Five-Factor Mindfulness Scale (FFMQ) [13]: measures the level of mindfulness of patients. The scale has 39 items, and each item is scored on a five-point scale (1=not at all, 2=less, 3=somewhat), 4=very agree, 5=complete agreement), the score interval is [39,195], the higher the score, the higher the level of mindfulness. The severity of difficult emotions mainly evaluates two kinds of difficult emotions, namely anxiety and depression, and the evaluation time is before and after nursing. The scale used to assess anxiety is the Hamilton Anxiety Scale (HAMA) [14], with a cut-off value of 7 points. A score below 7 indicates that the patient has no anxiety, while a score over 7 indicates that the patient has anxiety, and the higher the score. High indicates more severe anxiety. The Hamilton Depression Scale (HAMD) [15] was used to evaluate depression. A score below 7 indicates that the patient does not have depression, while a score over 7 indicates that the patient has depression, and the higher the score, the more severe the patient's depression.

Statistical analysis

The sample size calculation formula for multiple rate comparisons was used. The sample size was calculated according to the formula:  $N = Z^2 \times [P \times (1 - P)] / E^2$ . Where N is the sample size; Z is the statistic, and when the confidence is 95%,  $Z = 1.96$ ; When the confidence is 90%,  $Z = 1.64$ ; E is the error value; P is the probability value; Thirty samples is the minimum sample size for a quantitative study. All data were entered using Epidata, and SPSS 28.0 was used for statistical processing. Independent samples t test was used for measurement data expressed as mean ± standard deviation ( $\bar{X} \pm SD$ ), and  $\chi^2$  test was used for count data expressed as percentage (%). Statistical  $P < 0.05$  is significant.

Results

General data analysis

The gender, average age, body mass index and educational level of the two groups of patients were compared by t test and chi-square test, and there was no statistical significance ( $P > 0.05$ ). See Table 1.

Table 1 Comparison of general data of the two groups of patients [n, ( $\bar{x} \pm s$ )]

group	gender (Male/Female)	average age (age)	body mass index(kg/ m <sup>2</sup> )	educational level		
				Elementary school and below	middle school	Col- lege and above
active control group (50)	37/13	66.31 ± 3.51	26.94 ± 4.45	15	25	10
mindfulness group(50)	36/14	65.30 ± 3.52	26.53 ± 3.34	16	23	11
$\chi^2/t$	0.051	1.437	-0.750	0.163		
P	0.822	0.154	0.455	0.922		

### Quality of life score comparison

Before nursing, there was no significant difference in the quality of life scores between the two groups ( $P > 0.05$ ). After nursing, the physical function score, emotional function score, cognitive function score, and social function score of the mindfulness group were significantly higher than those of the active control group, but the economic difficulty score of the mindfulness group was significantly lower than that of the active control group, which was statistically significant. ( $P < 0.05$ ). See Fig. 1.

### Comparison of mindfulness levels

Before nursing, there was no significant difference in the level of mindfulness between the two groups ( $P > 0.05$ ). After nursing, the observation score, descriptive score, action score, intrinsic experience score, non-judgment score, and non-reaction score of the mindfulness group were significantly higher than those of the active control

group, and the difference was statistically significant ( $P < 0.05$ ). See Fig. 2.

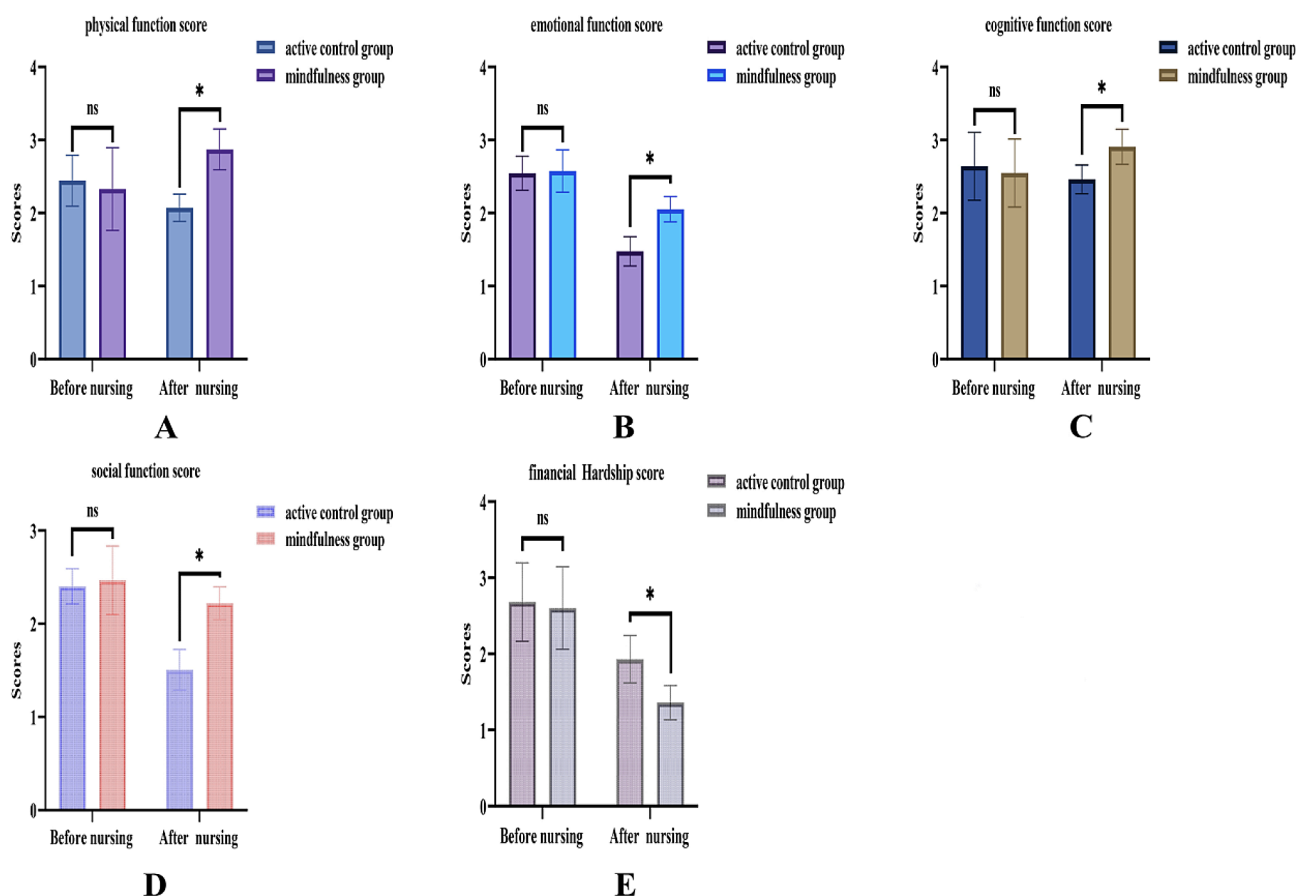
### Bad mood comparison

The independent sample t-test analysis of the two groups of patients showed that there was no significant difference in the difficult emotions between the two groups before nursing ( $P > 0.05$ ). After nursing, the HAMA score and HAMD score of the mindfulness group were significantly lower than those of the active control group, and statistics showed that the difference was statistically significant ( $P < 0.05$ ). See Fig. 3.

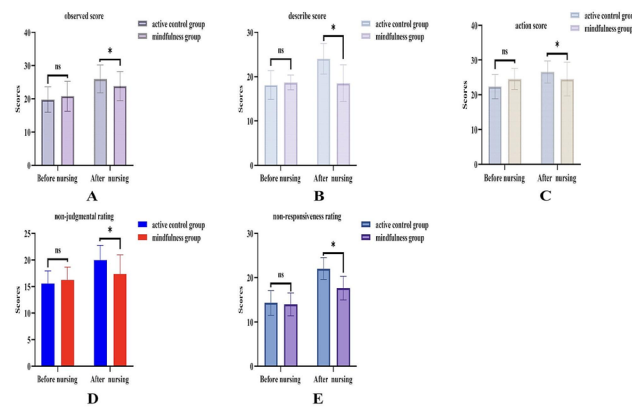
## Discussion

### Main interpretation

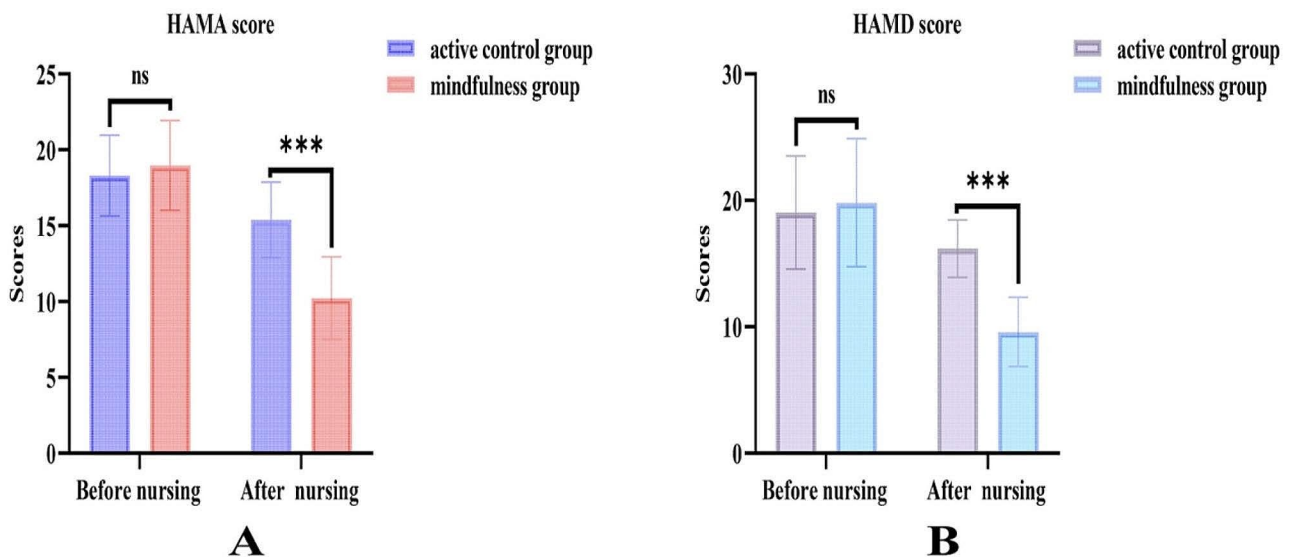
Mindfulness therapy is a meditation method founded by Zen Buddhism that pays attention to the moment, does not judge, and is aware [16]. Mindfulness therapy mainly allows patients to use various mindfulness trainings such



**Fig. 1** Comparison of quality of life scores. For the quality of life score data in our study, all data were entered using Epidata, and SPSS 28.0 was used for statistical processing of the data, and the measurement data expressed as mean  $\pm$  standard deviation ( $\pm$  SD) were tested by independent samples t test. The results showed that before nursing, there was no significant difference in the quality of life scores between the two groups ( $P > 0.05$ ). (A) The physical function score of the mindfulness group and the active control group after nursing. (B) The emotional function score of the mindfulness group and the active control group after nursing. (C) The cognitive function score of the mindfulness group and the active control group after nursing. (D) The social function scores of the mindfulness group and the active control group after nursing. (E) The Financial Hardship scores of the mindfulness group and the active control group after nursing. There were statistical significance (\* $P < 0.05$ )



**Fig. 2** Comparison of mindfulness levels. For the mindfulness level data in our study, Epidata was used to enter all data, SPSS 28.0 was used to perform statistical processing, and the measurement data expressed as mean  $\pm$  standard deviation ( $\pm$ SD) was tested by independent samples t test. Results It was found that before nursing, there was no significant difference in the level of mindfulness between the two groups ( $P > 0.05$ ). The sex score was significantly higher than that of the active control group, and the difference was statistically significant ( $P < 0.05$ ). (A) The observation score of the mindfulness group and the active control group after nursing. (B) The descriptive score of the mindfulness group and the active control group after nursing. (C) The action score of the mindfulness group and the active control group after nursing. (D) The non-judgmental scores of the mindfulness group and the active control group after nursing. (E) The non-responsiveness scores of the mindfulness group and the active control group after nursing. There were statistical significance (\*\* $P < 0.05$ )



**Fig. 3** Comparison of bad mood. For the bad mood data in our study, Epidata was used to input all the data, SPSS 28.0 was used to perform statistical processing on the data, and the measurement data expressed as mean  $\pm$  standard deviation used an independent sample t test. The results showed that the two groups of the independent sample t-test analysis showed that there was no significant difference in the difficult emotions of the two groups of patients before nursing ( $P > 0.05$ ). (A) The HAMA score of the mindfulness group and the active control group after nursing. (B) The HAMD score of the mindfulness group and the active control group after nursing. There were statistical significance (\*\* $P < 0.05$ )

as sitting, scanning, meditation, etc., so that the patient can achieve emotional regulation through making people more conscious about their emotions and reactivity when facing stress and be able to choose a more conscious response [17]. Mindfulness does never talk about control emotions. Mindfulness therapy is a kind of psychotherapy and a meditation method, which has become one of the main methods for the treatment of mental illness in China [18]. The subsequent development of this

technology has fallen into a bottleneck period due to insufficient theoretical basis for exposure and unclear therapeutic mechanism. But with the deepening of research [19]. By introducing the etiology theory, method and technical theoretical basis of mindfulness therapy, it is found that attachment and breaking of attachment can keep the body away from mental illness and achieve true health and happiness, which significantly improves the precision and science of mindfulness therapy [20].



At present, mindfulness therapy is widely used in many fields, such as psychological efficacy, physiological efficacy, clinical efficacy and so on. Therefore, our study aims to provide a theoretical basis for our research through the discussion of mindfulness therapy.

Neoplasms remain the main cause of death worldwide [21–24]. The quality of life of colorectal cancer patients undergoing chemotherapy has an important relationship with adverse factors such as anxiety and depression, and the adverse factors and quality of life also affect each other. The main reasons for the occurrence of difficult emotions in colorectal cancer chemotherapy patients include: colorectal cancer chemotherapy patients need to face the threat of individual life, and at the same time need to accept the reality of self-image damage, especially younger patients are particularly prone to anxiety, depression, difficult emotions such as anxiety [25]. Chemotherapy requires a lot of costs for patients, and the beneficiaries are worried that the excessive treatment costs will increase the financial burden of the family, and they will also worry that their own disease will affect the harmony of the family [26].

### Clinical implications

Our study found that after nursing, the physical function, emotional function, cognitive function, and social function of the patients in the mindfulness group were significantly higher than those in the active control group. However, the overall life and economic difficulties of the patients in the mindfulness group were significantly lower than those in the active control group. Statistical significance. After nursing, the HAMA score and HAMD score of the mindfulness group were significantly lower than those of the active control group, and statistics showed that the difference was statistically significant. We found that mindfulness intervention can reduce negative emotions, improve level of mindfulness, and quality of life of patients undergoing chemotherapy after colorectal cancer. It shows that mindfulness intervention can effectively reduce postoperative anxiety and depression in patients with colorectal cancer, which may be because mindfulness intervention improves patients' concentration and ability to resist stressful events through specific methods such as breathing awareness, sitting meditation and walking meditation, increase patient tolerance for adverse events and reduce patient sensitivity to difficult emotions. The reasons for the analysis are as follows: mindfulness intervention does not allow patients to avoid difficult emotions, but allows patients to truly perceive the existence of difficult emotions and accept their own difficult emotions, and then people become more able to tolerant of difficult emotions and the negative reactions when they appear [27]. This has positive implications for alleviating the automatic emotional responses generated

by negative beliefs, thereby improving patients' sleep quality and solving physiological problems [28]. Long-term mental awareness connections can even alter the parenchymal structure of the brain, improving the cortical areas of the right anterior lobe and right anterior limbic system, which are important for regulating mood and memory in patients, reducing the automated emotions generated by negative beliefs reaction [29]. This also shows that mindfulness intervention is of great significance for affecting the physiological susceptibility of individuals to difficult emotions, thereby improving the negative emotions in patients with colorectal cancer chemotherapy, and improving the quality of sleep and life of patients [30]. Mindfulness intervention is more in line with the trend of modern medical development, focusing on cultivating patients' awareness of correct cognition of diseases, and cultivating patients to use scientific methods to regulate their own emotions and behavior [31]. In order to improve the patient's psychological coping ability, cultivate the patient's health awareness and healthy behavior, improve the patient's coping ability and psychological status, and improve the patient's quality of life as a whole [32].

Our study found that the observation score, descriptive score, action score, intrinsic experience score, non-judgment score, and non-reactivity score of the mindfulness group after nursing were significantly higher than those of the active control group, and statistics showed that the difference was statistically significant. The main reason is that colorectal cancer patients have a certain fear of their disease, and feel very helpless about the gradual decline in their living standards and quality in the future. The high economic burden caused by the family, etc., eventually leads the patient to be in a state of mental stress with high tension and excessive anxiety, which gradually makes the mindfulness of colorectal cancer patients in a lower state [33]. The awareness-action score in the mindfulness level is the highest, while the non-judgmental score for inner experience is the lowest, mainly because colorectal cancer patients are more cooperative with medical staff in the treatment process [34]. Moreover, this cognitive behavior will have a higher positive effect on the patients in the next stage of treatment, thus making the colorectal cancer patients' awareness behavior at a higher level [35]. Andrew et al. [36] conducted a 4-week randomized controlled study on 68 patients and found that compared with the active control group, the increase in awkward symptoms in the mindfulness group was significantly reduced at week 8. Although the results suggested that mindfulness was not superior to the active control group in alleviating psychological distress, both treatments had partial improvement in depression. Mindfulness intervention is reliable and acceptable. Compared to our study, different populations included

in the study, varying levels of acceptance of mindfulness interventions by patients, and cultural differences will lead to varying degrees of bias in the results. The clinical sample size of this study is small, and the region and patient population are relatively limited. We will need to conduct large sample multicenter clinical studies for verification in the future. However, after the colorectal cancer patients came forward, they recurred, mainly because the patients lacked effective medical care during the actual healing process, and the patients failed to effectively implement the rehabilitation-related methods explained by the medical staff after being discharged from the hospital. In the actual operation process, there will be a certain degree of fear and resistance, which leads to a low level of the patient's non-judgmental dimension score [37].

### Study limitations

Our study is affected by objective conditions, and our study has certain shortcomings that need to be further improved and supplemented. In addition, our study only conducted a preliminary qualitative and quantitative study on the level of positive thinking, health beliefs and self-management efficacy of some patients before and after the intervention. The study explored the effect of positive self-management efficacy of colorectal cancer patients, with the aim of bridging the lack of systematic and rigorous theoretical support for positive thinking therapy, so as to provide healing tools for clinical treatment of colorectal cancer patients, and then better provide treatment services for colorectal cancer patients.

### Conclusion

In conclusion, mindfulness intervention in patients undergoing chemotherapy after colorectal cancer can reduce their negative emotions, improve the level of mindfulness, and improve the quality of life of patients.

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### Author contributions

Yanling Feng performed the statistical analyses and wrote the manuscript. Kuanlei Wang, Jianchun Fan completed all the data entry and provided assistance for the data analysis. Xueliang Wu designed and wrote the study protocol and reviewed the manuscript. Yanling Feng participated the revision of this manuscript. Xueliang Wu participated in manuscript revision. Tian Li offered many constructive opinions on this study and provided a critical revision of the manuscript for important intellectual content. All authors contributed to and approved the final manuscript.

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### Data availability

<https://www.jianguoyun.com/p/Dazb6xoQuaiFChjXs5YFIAA>.

### Ethics declarations

#### Ethics approval and consent to participate

The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The present study was approved by the Ethics Committee of the First Affiliated Hospital of Hebei North University (K2023002), and informed consent was obtained from all patients prior to enrollment. All procedures performed in this study involving human participants were in accordance with the Declaration of Helsinki (version 2013).

#### Consent for publication

N/A.

#### Competing interests

The authors declare no competing interests.

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