Effect of Mindfulness-Based Stress Reduction on Stigma, Quality of Life and Sleep Quality of Patients with Permanent Enterostomy

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Abstract

Objective: To explore the effect of mindfulness-based stress reduction on stigma, quality of life (QOL) and sleep quality of patients with permanent enterostomy.

Methods: We conducted a prospective study and collected 110 cases of permanent colostomy after rectal carcinoma surgery from May 2016 to May 2018. Among them, 60 cases were treated with routine gastrointestinal surgery care with mindfulness-based stress reduction (MBSR) as the research group (RG) and 50 cases were treated with routine gastrointestinal surgery as the control group (CG). Social Impact Scale (SIS) was applied to assess patients' stigma, QLQ-C30 was applied to assess patients' quality of life, Pittsburgh Sleep Quality Index (PSQI) was applied to assess patients' sleep, and Schedule for Affective Disorders for Schizophrenia (SADS) was applied to assess patients' anxiety and depression. The scores of SIS, QLQ-C30, PSQI, SAS and SDS were recorded and analyzed statistically.

Results: There was no evident difference between RG and CG in the scores of data and questionnaires before the intervention (P> 0.05). After the intervention, the stigma, QOL and sleep quality of the patients in the RG were evidently different from those in the CG (P< 0.001).

Conclusion: MBSR can improve stigma, quality of life and sleep quality of patients with permanent enterostomy, which is helpful for patients' mental health and is worthy of promotion in clinical practice.

Keywords: Mindfulness based stress reduction; enterostomy; stigma; quality of life; sleep quality.

Introduction

Enterostomy refers to through surgical operation, the pathological part is removed, a section of intestinal tube is artificially pulled out from the abdominal cavity, and the opening is reversed and sewed on the abdominal wall incision to replace the anal function and solve the defecation problem of the patient, so it is also called artificial anus (Lucas and Gosain,2018). Enter ostomy can be divided into permanent stoma and preventive stoma (Bethell et al., 2017). Rectal malignant tumor is the main cause of permanent enterostomy (Tanget al., 2020). According to the 2018 global carcinoma statistics, there were about 700,000 new rectal carcinoma patients and 310,000 deaths. The incidence rate was 8th and the mortality rate were 10th (Bray et al.,2018).

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Abdominoperineal radical operation of rectal carcinoma (Miles operation) is the standard operation method for low rectal carcinoma. The operation is characterized by large lesion resection range and thorough operation, but permanent enterostomy is required (Jin et al.,2019).

Patients with enterostomy have changed their defecation mode due to the intervention of operation mode, and at the same time they have lost the control function of sphincter muscle, excretory behavior, and the odor and noise generated therefrom. Patients with permanent enterostomy need to wear an ostomy bag for life to collect excretions, and their body shape changes. The formation of stoma has adverse effects on the daily life, sexual life and lifestyle of patients (Tang et al.,2020; Wolf et al.,2018). Some patients regard stoma as taboo, fear of discovery and disclosure, and have a sense of shame (Temprado et al.,2018). Many patients even have suicidal tendency because of stigma psychology, so the intervention of patients' psychological state becomes particularly important (Zhang et al.,2020).

At present, the more commonly applied psychological intervention method for carcinoma patients clinically is mindfulness-based stress reduction (MBSR), which was founded by Kabat. ZinnH in 1979. MBSR is a systematic therapy that awakens internal concentration through mindfulness meditation, body awareness and yoga, helps individuals decompress, strengthens emotional management, and further improves individual psychosomatic adjustment ability (Phillips et al.,2017). In order to help patients with permanent enterostomy maintain their physical and mental health, this study conducted a prospective study on the role of mindfulness-based stress reduction on relieving stigma, improving quality of life (QOL) and sleep quality of patients with permanent enterostomy.

1 Data and methods

1.1 General data

A prospective study was conducted. Altogether 110 medical records of permanent enterostomy after Miles operation from May 2016 to May 2018 were collected. Among them, 60 patients in the research group (RG) (A) applied routine gastrointestinal surgery care and MBSR intervention, while 50 patients in the control group (CG) (B) applied routine gastrointestinal surgery care. There were 33 men and 27 women in the RG, aged 53-70 years with an average of (60.7± 4.3) years, while there were 24 men and 26 women in the CG, aged 50-72 years with an average of (60.0± 5.0) years. There was no statistical difference in general data between RG and CG. This study was approved by the Medical Ethics Committee, and all patients have signed informed consent forms.

1.2 Inclusion and exclusion criteria

Inclusion criteria: (1) patients with rectal carcinoma was stable one month after Miles operation; (2) patients had informed consent, no cognitive communication barriers, and voluntarily participated in this study.

Exclusion criteria: (1) patients complicated with other tumor diseases; (2) patients had sleep disorders and mental diseases previously; (3) patients underwent other psychological interventions; (4) patients applied MBSR before.

1.3 Intervention methods

The CG applied routine nursing in gastrointestinal surgery, including diet guidance, replacement of stoma chassis and stoma bag, nursing, knowledge education on stoma and complications. The enterostomy was recorded. The RG applied nursing care with MBSR intervention in the CG. The MBSR treatment phase was 8 weeks, once a week, 2-3 hours each time, and was conducted in the demonstration room. The patients were trained at home for 15-30 minutes for 6 days daily. The training contents are shown in Table 1. The specific implementation process was as follows: a mindfulness decompression therapy RG was established, with a total of 8 members, including 3 stoma specialist nurses, 3 graduate students and 2 psychiatrists, all of whom have attended and passed the training of mindfulness decompression therapy courses in the hospital. Through literature review, experience summary and discussion within the group, the specific implementation steps were improved. Two groups of patients were treated in different wards to avoid contamination.

1.4 Rating Scale

Social Impact Scale (SIS): The Social Impact Scale included 24 items and 4 dimensions, namely social exclusion, economic insecurity, internal shame and social isolation. Each item was scored reversely, using Likert4 scoring method, with a total score of 24-96. The high score of the patient was closely related to the greater perceived social impact, i.e. the stronger stigma (FIFE and WRIGHT et al.,2020). QLQ-C30: The QOL of patients was investigated and analyzed by using the QLQ of European carcinoma Research and Treatment Organization, including emotional function, physical function, social function, role function and cognitive function. The high score was closely related to the better QOL (Aaronson et al.,1993). Pittsburgh Sleep Quality Index Scale (PSQI): PSQI scale was mainly applied to test patients' subjective sleep quality in the past month, and consisted of 19 self-assessment items, 5 other assessment items, and 7 factors. Each factor was scored 0-3 grades. The cumulative score was the total score of PSQI scale. The high score was closely related to the poor sleep. It was generally believed that more than 6 points indicated poor sleep of patients (Buysse et al.,1989).

Self-rating anxiety scale (SAS): SAS was mainly applied to evaluate and screen anxiety symptoms of patients. The scale contained 20 items; each item adopted Likert4 scoring method. The score of 1-4 points indicated "no" to "always" to obtain a total rough score. The total rough score multiplied by 1.25 was the standard score. The standard score below 50 points indicated no symptoms, 50-59 points indicated mild anxiety, 60-69 points indicated moderate anxiety, and 70 points or more indicated severe anxiety (He et al.,2018). Self-rating Depression Scale (SDS): SDS was mainly applied to evaluate and screen depressive symptoms of patients. The scale included 4 dimensions of emotional symptoms, psychomotor disorders, somatic disorders and depressive psychological disorders, with a total of 20 items. Each item was scored by Likert4. A score of 1-4 indicated "no" to "always". The scale item scores were added to get a total rough score, and then the total rough score was converted into a standard score. The high score was closely related to the severe depression degree. The standard score was 53-62 for mild depression, 63-72 for moderate depression, and more than 72 for severe depression (Glynne et al., 2017).

Table 1. **MBSR topics and technologies**

Time	Topic	Technology
Week 1	First meeting of mindfulness	Play videos, demonstrate on-site and explain training techniques
Week 2	Mindfulness attitude and mindfulness breathing	Explain 8 attitudes to patients and teach mindfulness breathing
Week 3	Walking meditation	Let patients observe the appearance and disappearance of emotions, learn to be an "outsider" and teach patients walking meditation.
Week 4	Emotion recognition and body scanning	Guide patients to focus on the feeling of "outsider" to feel their own body Inform patients of precautions to follow the body scan
Week 5	Breaking the negative thinking mode	Instruct patients to start with mindfulness breathing and gradually expand to body, feeling, voice, thinking and emotion, and finally realize the feeling of "outsider" without choice and judgment
Week 6	Mindfulness yoga	Teach mindfulness yoga stretching, including mindfulness lying yoga and mindfulness standing yoga, and practice mindfulness yoga
Week 7	Sitting meditation	Teach sitting meditation, guide participants into sitting meditation, including mindfulness breathing, mindfulness feeling, mindfulness listening, mindfulness thinking and emotion, observing without selectivity, without judgment, keeping acceptance, and practicing sitting meditation
Week 8	Choose your mindfulness exercises	Review and discuss the daily recording work in the first 7 weeks Review and discuss all mindfulness decompression techniques

Note: 0.5 hours before each mindfulness decompression therapy training, we will discuss to solve the problems arising from family exercises.

1.4 Follow-up

The data before the intervention were filled in at the time of admission, and the data after the intervention were obtained at the time of discharge. The patients were followed up three months after the intervention, and the two groups of patients were asked to fill in the questionnaire again by telephone and outpatient re-examination. No samples were lost during follow-up.

1.5 Statistical methods

SPSS20.0 was applied for analyzing the collected data, GraphPad 8 for visualizing the required pictures, K-S test for analyzing the distribution of measurement data, independent sample t test for

inter-group comparison. The counting data were represented as (%) and applied chi-square test, which was represented as X^2. The measurement data were represented as x± s, and independent sample t test was applied for inter-group comparison. The P value less than 0.050 was regarded as statistical significance.

Results

2.1 General data comparison

Comparing the clinical data of the two groups of patients showed that there was no statistical difference in the general baseline data between RG and CG of patients (P> 0.05), as shown in Table 2.

Table 2. **Comparison of general clinical data (%)**

Factor		Group A (n=60)	Group B (n=50)	X^2/t value	P value
Age		60.7±4.3	60.0±5.0	0.789	0.432
Gender	Male	33(55.00)	24（48.00）	0.535	0.464
	Female	27(45.00)	26（52.00）		
Education level	Primary school	40(66.67)	38（76.00）	1.395	0.498
	Middle school	15(25.00)	8（16.00）		
	University or above	5(8.33)	4（8.00）		
Economic level	≤ 3000 yuan	20(33.33)	22（44.00）	1.315	0.251
	> 3000 yuan	40(66.67)	28（56.00）		
Clinical staging	I	5(8.33)	5(10.00)	0.102	0.950
	II	25(41.67)	20(40.00)		
	III	30(50.00)	25(50.00)		

2.2 Comparison of various scales before and after intervention between RG and CG of patients

2.2.1 Score analysis of Social Impact Scale (SIS)

By analyzing the scores of the two groups of Social Impact Scale (SIS), we found that there was no

statistical difference in all scores between RG and CG before the intervention. There was statistical difference between RG and CG in all dimensions and overall scores after the intervention (P< 0.001). The improvement of the RG in all dimensions and total scores after the intervention was better than that of the CG, as shown in Figure 1.
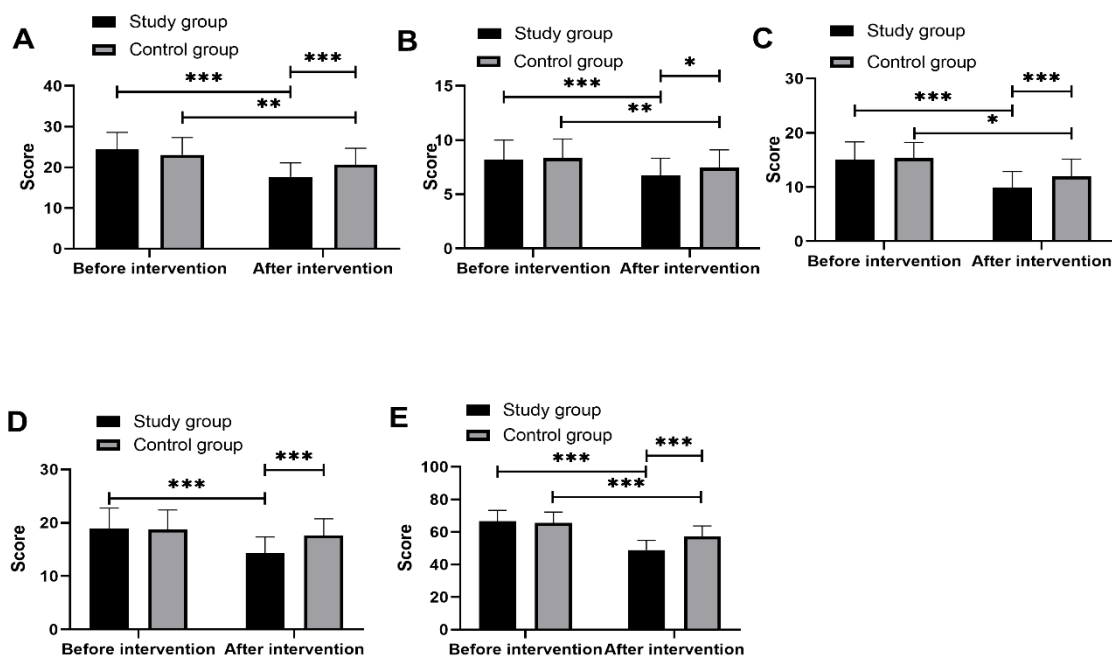
Figure 1. **Comparison of SIS scores between two groups of patients with permanent enterostomy before and after intervention.**

A. The scores of social exclusions before and after intervention in the two groups of patients. B. The scores of economic discriminations before and after intervention in the two groups of patients. C. The scores of internal shames before and after intervention in the two groups. D. The scores of social encouragements before and after the intervention in the two groups. E. The total score of the two groups before and after intervention. Note: * indicates that P<0.05, ** indicates that P<0.01, *** indicates that P<0.

2.2.2 QLQ-C30 Score analysis

By analyzing the QLQ-C30 scores of the two groups, it could be found that there was no statistical difference in the QLQ-C30 scores between RG and CG before the intervention. The score of the RG after intervention was evidently higher than that before intervention (P< 0.001). The score of the CG after intervention was higher than that before intervention (P = 0.041). After comprehensive analysis, the scores of the two groups were evidently different after intervention (P < 0.001). See Table 3.

Table 3. **Scores of QLQ-C30 questionnaire for two groups of life quality**

Group	Before intervention	After intervention	t value	P value
RG	52.56±19.77	77.55±13.22	8.021	<0.001
CG	53.22±18.99	60.22±15.56	2.051	0.041
t value	0.202	5.303		
P value	0.840	<0.001		

2.2.3 Pittsburgh Sleep Quality Index (PSQI) Score analysis

By analyzing the scores of PSQI in the two groups, we found that there was no statistical difference in the scores of the two groups before the

intervention, and the scores of the RG after the intervention were evidently lower than those before the intervention (P < 0.001). The score of the CG after intervention was slightly lower than that before intervention, and there was no statistical difference. The difference in scores between RG and CG after intervention was statistically evident (P< 0.001). See Table 4 for details.

Table 4. **Comparison of Pittsburgh Sleep Quality Index Scores**

Group	Before intervention	After intervention	t value	P value
RG	7.17±2.22	4.77±1.52	6.846	＜0.001
CG	7.22±2.09	6.98±1.78	0.625	0.532
t value	0.136	6.011		
P value	0.892	＜0.001		

2.2.4 Score analysis of Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS)

By analyzing the scores of SAS and SDS before and after intervention, we found that there was no evident difference in SAS and SDS between RG and CG before intervention (P > 0.05). After intervention, the SAS and SDS scores of the two groups were statistically evident (P< 0.001). The SAS and SDS scores before and after intervention in the RG were statistically evident (P< 0.001), while the SAS scores before and after intervention in the CG were statistically different (P< 0.05). But there was no evident difference in SDS scores in the CG before and after intervention (P > 0.05). See Figure 2.
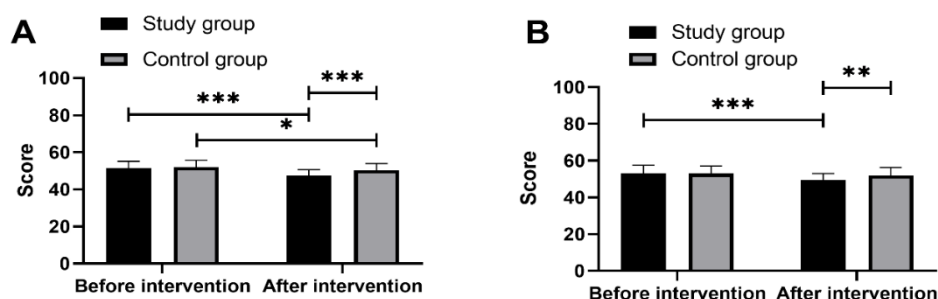

Figure 2. **Comparison of SAS and SDS in two groups of patients with permanent enterostomy.**

A. SAS scores before and after intervention in the two groups. B. SDS scores before and after intervention in the two groups.

Note: * indicates that P<0.05, ** indicates that P<0.01, *** indicates that P<0.001.

3. Discussion

Globally, rectal carcinoma is the third most common type of carcinoma among males and the second most common type among females, with the highest incidence in North America, Australia, New Zealand, Europe and Japan (González et al.,2019). Rectal carcinoma is mainly found in people over 60 years old (Sasaki et al.,2019).

According to the population trend, the number of new patients with colorectal carcinoma is expected to increase. Surgery is the most common treatment for colorectal carcinoma, accounting for 10% of permanent enterostomy cases (Pucciarelli et al.,2017). Although enterostomy did save the lives of thousands, it also brought a lot of inconvenience and mental torture to the patients. A good enterostomy depends not only on the operation itself, but also on the communication and

education between doctors and patients before operation and the long-term rehabilitation after operation (Alsubaie et al.,2017). Therefore, the treatment of enterostomy will be a long process including physiological improvement, psychological rehabilitation and social cognition along with life (De et al.,2017). MBSR is form of psychotherapy (Thurston et al.,2017). MBSR was explored by doctor Jon Kabat-zinn of the decompression clinic affiliated to University of Massachusetts Medical Center in the United States. It was originally called stress reduction and relaxation program (Christensen et al.,2017). MBSR is to assist rather than replace general medical behaviors, and it is aimed to teach patients to use their inner physical and mental strength to actively do something for their physical and mental health that others cannot replace, that is to cultivate mindfulness (Alsubaie et al.,2017). Patients participating in the course of treatment usually suffer from different physiological or psychological diseases, including headache, hypertension, back pain, heart disease, carcinoma, AIDS, asthma, chronic pain, myofibroma, skin diseases, pressure-related gastrointestinal diseases, sleep disorders, anxiety, and panic disorder. In order to help patients with permanent enterostomy maintain physical and mental health, this study conducted a prospective study on the role of MBSR intervention on relieving stigma, improving QOL and sleep quality of patients with permanent enterostomy.

This study aimed at the role of MBSR intervention on stigma, QOL and sleep quality of patients with permanent enterostomy. The results showed that the stigma, QOL, sleep quality, anxiety and depression of the two groups of patients have improved after the intervention. The degree of reduction of stigma in the RG was evidently higher than that in the CG. After the intervention, the sleep quality, QOL, anxiety and depression of the patients in the RG were basically the same as those of healthy people. According to literature review and research(Ştefan et al.,2018), it was speculated that the reasons for the improvement of the patient's state after the intervention may be that the patient was given the support and assistance so as to analyze and see through his own heart, understand the significance of his psychological motivation and behavior, and then find out the direction of solving difficulties and handling

problems. Through study and training, patients were helped to establish a more positive attitude towards life, adapt to what has happened, relieve confusion, and let their psychology grow so as to overcome difficulties. The results showed that MBSR is effective for psychological counseling of patients with permanent enterostomy, which can reduce the stigma of patients and improve the QOL, sleep quality, anxiety and depression, which is the same as the results of other related studies (Norouzi et al.,2020).

However, there are still some limitations in this study. First of all, the number of samples in this study is limited. We still need to expand the sample to further explore whether it has representative significance. Secondly, we only selected permanent enterostomy patients after Miles operation, and did not compare with enterostomy patients with other diseases. Finally, we only studied MBSR, did not compare with other psychotherapy, and did not find out the effective elements of MBSR. It is hoped that in the future research, more samples will be collected and different psychotherapy schemes will be selected for comparison. It is also necessary to conduct more research to determine the most effective elements of MBSR so as to supplement our research results.

MBSR has a good effect in improving stigma, QOL and sleep quality of patients with permanent stoma, which is helpful for patients' mental health and is worthy of clinical promotion.

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