



Comparing the Effects of Psychodynamic Group Psychotherapy and Mindfulness-Based Stress Reduction on Body Image and Emotional Processing in Patients with Colorectal Cancer

Leila Andalib ¹, Hasan Rezaei-Jamalouei ^{1,*}, Seyed Mohammad Hasan Emami ² and Mojtaba Ansari Shahidi ¹

¹Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran

²Poursina Hakim Digestive Diseases Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

*Corresponding author: Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran. Email: rezaeijamaloei@gmail.com

Received 2023 March 19; Revised 2023 May 06; Accepted 2023 May 07.

Abstract

Background: Emotional processing plays an important role in dealing with stress related to chronic diseases.

Objectives: The present study aimed to investigate the effects of psychodynamic group psychotherapy (PGP) and mindfulness-based stress reduction (MBSR) on body image and emotional processing in patients with colorectal cancer.

Methods: This quasi-experimental research adopted a pre-test/post-test control group design with follow-up. The statistical population included all patients with colorectal cancer visiting Poursina Hakim Health Centers of Isfahan in 2022. The convenience sampling method was employed to select 42 participants who were then assigned to a mindfulness-based stress reduction group (eight 150-minute sessions), a psychodynamic group psychotherapy group (fourteen 120-minute sessions), and a control group as simple random sampling. The control group did not receive psychotherapy intervention during the treatment sessions for the experimental groups and was placed on the waiting list. There were 14 participants in each group. The Multidimensional Body-Self-Relations Questionnaire and Emotional Processing Questionnaire were used for data collection in the pre-test, post-test, and follow-up stages. The repeated measures ANOVA were then used for data analysis in SPSS 26.

Results: According to the results, both MBSR and PGP improved body image and emotional processing equally and effectively in patients with colorectal cancer ($P < 0.001$). The effects of both interventions on body image remained constant among patients over time ($P < 0.001$). However, only the effect of MBSR on emotional processing remained constant and stable over time.

Conclusions: PGP and MBSR are therapeutic methods that may positively affect body image and emotional processing in patients with colorectal cancer. Improving body image and emotional processing may lead to improved mental health and adaptability.

Keywords: Psychodynamic, Mindfulness, Stress, Body Image, Emotions

1. Background

With ever-increasing incidence in developing countries, colorectal cancer is now ranked the third cause of death from cancer worldwide (1). The incidence rate of colorectal cancer is closely correlated with economic development. In fact, it tends to increase constantly as the human development index (HDI) increases in developing countries. This phenomenon can be justified by lifestyle changes, e.g., increased carnivore diets and reduced physical activities, ensuing from socioeconomic development and acting as risk factors in the prevalence of this type of cancer (2). Despite the high prevalence of

colorectal cancer in developed countries, early diagnosis and appropriate treatment can lead to a relatively better prognosis. Surviving a kind of cancer is accompanied by substantial levels of emotional distress (3). The awareness of the risk of death from cancer, the physical impacts of cancer and relevant treatments, and the consequent pressure on personal relationships are all among the stressful factors experienced by a patient that survives cancer. These factors can affect the quality of life (4).

Modern treatments for colorectal cancer allow patients to live longer. However, patients may experience different outcomes from these treatments, such as post-surgery pain, colorectal dysfunction, and body

image disorder (5). Body image is considered a major factor in diseases that affect the physical appearance of patients. By definition, body image is an abstract word referring to people's attitudes toward their bodies viewed as concrete concepts (6). Everyone has a mental image of his/her body, which is the main element of his personality. A body image represents a person's attitude toward himself/herself, along with the thoughts, beliefs, behaviors, and feelings that can positively or negatively change his/her behavior in various conditions (7, 8). In patients suffering from cancer, body dysmorphic disorder (BDD) is defined as the perceived change in appearance and the consequent dissatisfaction and mental distress. Different types of cancer and relevant treatments are quite devastating, for they can lead to the loss of a body part, lesions, hair loss, dysmorphic features, weight changes, and functional limitations. They can also affect a patient's self-perception and result in body dysmorphic disorder (BDD) (9). Patients with cancer who need surgery or radiation therapy are more worried about body image than others (10). In addition, worries about body image often lead to poor self-confidence, sexual dysfunction, depression, and social anxiety, problems that can affect the quality of life, personal identity, and personal emotions (11).

Analysis of emotional processing can greatly help perceive the detrimental experience of cancer in people (12). Based on the nature of emotional phenomena and necessary attempts at their expansion, emotional processing can be considered along a continuum ranging from an implicit (or unconscious) level to a specific (conscious) level. The implicit processing of emotions is an automated, procedural, and non-conceptual process that does not need conscious access for execution. Instead, conscious processing needs a declarative assessment and includes higher cognitive sources to define conscious, sensitive states (13). In emotional processing, emotions are experienced, perceived, and expressed actively, intrinsically, and extrinsically (14). Moreover, emotional processing is directly correlated with health improvement in cancer survivors. Two aspects of emotional processing are emotional awareness and acceptance of emotions. Emotional awareness increases when physical feelings or the physically experienced knowledge of unconsciousness can turn into clear thoughts (15). There is a great deal of evidence that emotional processing plays a key role in coping with stress in chronic conditions (13). According to Stanton et al. (16), processing and expressing emotions can improve the adaptability and health of patients with cancer.

Colorectal cancer affects the patient's mental life due to physical problems and psychological consequences,

and even economic problems. Also, throughout the course of the cancer disease, especially during the treatment period, due to the side effects of the drug, there is a possibility of physical changes (3). The changes created can affect the patient's self-awareness, self-respect, and the patient's sense of worth and acceptability. The various physical effects of cancer can affect the psychological and social aspects of patients' lives. In addition to medical and pharmaceutical intervention and support, patients with colorectal cancer also need psychological intervention (4). Psychological techniques can be effective in reducing the physical and medical problems of cancer patients and the complications of its difficult treatments and increasing coping skills with the problems caused by the disease.

Mindfulness-based stress reduction (MBSR) training is among the most widely used and evaluated treatments. In fact, MBSR was primarily designed to help patients with chronic medical conditions reduce stress and enhance their quality of life through concentration, meditation, cognitive rehabilitation, and adaptive learning techniques (17). The results of employing this method proved its effects on the reduction of mental tension and stress correlated with physical symptoms in patients with cancer and other physical diseases (18). In mindfulness training, patients are instructed in formal and informal exercises so that they can participate mentally in ordinary tasks without thinking (19). In this regard, some studies reported the effects of MBSR on the outcomes of cancer (20). According to Wu et al. (21), training an experimental group in MBSR led to a substantial reduction of feelings in response to negative emotional stimuli, reaction time for emotional memory, and duration of the tendency to consider negative emotional stimuli.

Psychodynamic group psychotherapy (PGP) is known as a common treatment for alleviating cognitive distress, enhancing physical performance, and mitigating physical pain in patients with chronic conditions. In this approach, treatment is administered through group discussions (22). The group process should be organized and planned to achieve predetermined objectives in a specific theoretical framework for treatment. The analytical group treatment is aimed at improving interactions between the group members and raising awareness about the group's dynamism and their intrinsic psychological conflicts (23). In this approach, the presence of other members can increase the chance of disclosure and provide an opportunity to observe intrinsic problems (24). According to Pugliese et al. (25), the integrated psychodynamic intervention was efficient in alleviating anxiety and depression in addition to improving interpersonal relationships and self-care of patients with colorectal cancer. Furthermore, Rayska (26) reported that PGP

reduced the negative body image of patients with cancer after chemotherapy sessions.

2. Objectives

According to the research literature, few systematic reviews have been conducted on the effects of PGP on body image and emotional processing in patients with colorectal cancer in comparison with MBSR. Considering this research gap and the need to address the psychological aspect of patients with colon cancer, this research seeks to find a scientific answer to the fundamental question, which treatment is more effective in patients with colorectal cancer? Based on the issues outlined in the background, the present study aimed to investigate the effects of PGP and MBSR on body image and emotional processing in patients with colorectal cancer.

3. Methods

This quasi-experimental research adopted a pre-test/post-test control group design with a 45-day follow-up period. The statistical population included all men and women with colorectal cancer visiting Poursina Hakim Health Centers of Isfahan in 2022. The convenience sampling method was adopted to select 42 patients, who were then randomly assigned to two experimental groups of PGP and MBSR and one control group (14 participants per group). G-Power software estimated sample size adequacy with $\alpha = 0.05$, effect size = 1.18, and power test = 0.90. To randomize the participants, based on the table of random numbers, 28 patients with colorectal cancer were randomly assigned to the experimental group and 14 patients to the control group. Then, the patients in the experimental groups were again randomly divided into PGP and MBSR groups. The inclusion criteria were as follows: having colorectal cancer diagnosed by a specialist, having a medical case at Poursina Hakim Health Center, being aged 18 and older, experiencing the second stage of colorectal cancer and higher, having the minimum literacy of junior high school, giving consent for participation in the research, and participating in the intervention. The exclusion criteria were as follows: having acute physical conditions due to cancer or treatment (e.g., chemotherapy and radiation therapy), having acute psychological disorders causing the inability to respond to questions, and being absent from treatment for more than two sessions. The MBSR group received eight 150-minute in-person sessions per week, whereas the PGP group received fourteen 120-minute in-person two sessions a week. However, the control group did not receive any

interventions. Treatment intervention sessions in PGP and MBSR groups were conducted by the first author at Poursina Hakim Health Centers in Isfahan. She had attended specialized courses and workshops on PGP and MBSR interventions. The participants filled out the questionnaires on body image and emotional processing in the pre-test, post-test, and follow-up stages.

3.1. Research Instruments

3.1.1. Multidimensional Body-Self-Relations Questionnaire

The 68-item Multidimensional Body-Self-Relations Questionnaire (MBSRQ) was designed by Cash to evaluate people's attitudes toward different dimensions of body image structure. This questionnaire includes 10 scales called appearance evaluation, appearance orientation, fitness orientation, health evaluation, health orientation, disease orientation, body areas satisfaction, mental weight, and overweight preoccupation. Each scale is scored from 1 for "completely disagree" to 5 for "completely agree". Higher scores indicate higher levels of satisfaction with body parts and conditions (27). The validity and reliability of the MBSRQ have been deemed optimal by Shemshadi et al. (28).

Emotional Processing Scale: The 25-item Emotional Processing Scale was introduced by Baker et al. (29). It includes five subscales called suppression, unpleasant emotion experience, emotion control, avoidance, and signs of unprocessed emotions. The questionnaire is scored on a five-point Likert scale ranging from 1 for "completely disagree" to 5 for "completely agree". The minimum and maximum scores are 25 and 125, respectively. Higher scores indicate lower levels of emotional information processing. The validity and reliability of this scale have been deemed optimal by Kharamin et al. (30).

3.2. Interventions

The PGP sessions were adapted from a study by Rutan et al. (24). The first session included introduction with objectives, rules, treatment period, arrangements, members, and their motivations. The second to fourteen sessions were held to work on the resilience of patients to emotional intimacy with the therapist and other members (e.g., fear of privacy violation) in addition to identifying and clarifying defense mechanisms of patients against avoidance of anxiety and feelings of identification by handling anxiety in patients, regulating anxiety, detecting emotions, and experiencing them in the group. The PGP sessions addressed evaluation of people's attitudes toward their intrinsic psychological problems, which were the PGP objectives. Finally, the post-test was conducted by

reviewing and concluding the results. Moreover, the MBSR intervention was adapted from a protocol presented by Kabat-Zinn (31). Table 1 indicates an overview of MBSR sessions.

3.3. Data Analysis

The repeated measures ANOVA were employed for data analysis in SPSS 26.

4. Results

The patients with colorectal cancer were aged 53.64 ± 8.49 , 57.07 ± 7.11 , and 57.14 ± 8.21 years old on average in control, MBSR, and PGP groups, respectively. Moreover, 33.3% and 66.7% of participants were male and female, respectively. Furthermore, 33.3%, 24.1%, and 42.6% had junior high school, high school, and academic educations. According to Table 2, in the post-test and follow-up stages, there was a significant difference between the experimental and control groups in terms of body image and emotional processing scores in patients with colorectal cancer. The results of descriptive statistics indicated that the mean post-test and follow-up scores of body image increased in both MBSR and PGP groups in comparison to their pre-test scores. However, their mean post-test and follow-up scores of emotional processing decreased (Figure 1).

Before the mixed ANOVA was conducted, Levene's test was employed to analyze the presumption of variance homogeneity. Regarding body image ($F = 1.63$, $P = 0.208$) and emotional processing ($F = 0.83$, $P = 0.442$), the results confirmed the presumption of variance homogeneity in the experimental and the control groups. Moreover, Mauchly's test of sphericity was conducted before the repeated measures ANOVA was applied to the within-group factor. According to the results, Mauchly's parameter was not significant in body image and emotional processing, and the sphericity presumption was complied with in those variables.

The ANCOVA was then adopted to analyze the between-group effects by controlling the effect of the pre-test on the post-test and those of follow-up on scores of body image and emotional processing. According to Table 3, there were significant differences in the mean between-group scores of participants in the post-test of body image ($F = 30.11$, $P = 0.001$) and emotional processing ($F = 7.78$, $P = 0.001$) between the experimental groups and the control group after the pre-test effects were excluded. There were also significant differences in the mean between-group scores of participants in the follow-up of body image ($F = 7.60$, $P = 0.002$) and emotional processing

($F = 3.35$, $P = 0.046$) between the experimental group and the control group after the pre-test effects were excluded.

The repeated measures ANOVA were employed to analyze the within-group effects. With the significant effect of time on body image ($F = 8.62$, $P = 0.001$) and emotional processing ($F = 16.09$, $P = 0.001$) in groups, the results confirmed that the three measurement attempts were significantly different. The results also confirmed the interactive effect of time on the group with the F-measure calculated for body image ($F = 6.17$, $P = 0.001$) and emotional processing ($F = 3.14$, $P = 0.024$).

The Bonferroni post hoc test was then adopted to analyze differences between the means of the experimental groups and the control group in a pairwise manner and to determine the effects of both interventions. Table 4 reports the results, according to which there were significant differences between the control group and the experimental group in terms of post-test and follow-up body image scores and the post-test emotional processing scores ($P < 0.01$). However, the mean scores of experimental groups showed no significant differences in terms of both dependent variables. The results also indicated that there were significant differences between the control group and the MBSR group in the follow-up of emotional processing, whereas there were no significant differences between the control group and the PGP group in terms of their mean scores. According to the results, MBSR and PGP had equal effects on body image improvement and emotional processing enhancement in patients with colorectal cancer.

5. Discussion

The present study aimed to investigate the effects of PGP and MBSR on body image and emotional processing in patients with colorectal cancer. The results indicated that both MBSR and PGP had equal effects on body image improvement in patients with colorectal cancer. The effects remained constant over time. Moreover, both interventions enhanced emotional processing in patients with colorectal cancer; however, only the effects of MBSR remained stable over time. This finding is consistent with the research results of previous studies (32-34). Rahmanian et al. (32) reported that mindfulness intervention reduced the emotional processing emotion processing of women with breast cancer. Chang et al. (33) reported that MBSR is a program that can improve mental health, body image, and self-efficacy in women with breast cancer. Straker (34) reported that PGP is effective as an approach to understanding the psychological conflicts and the psychiatric symptoms of patients with cancer.

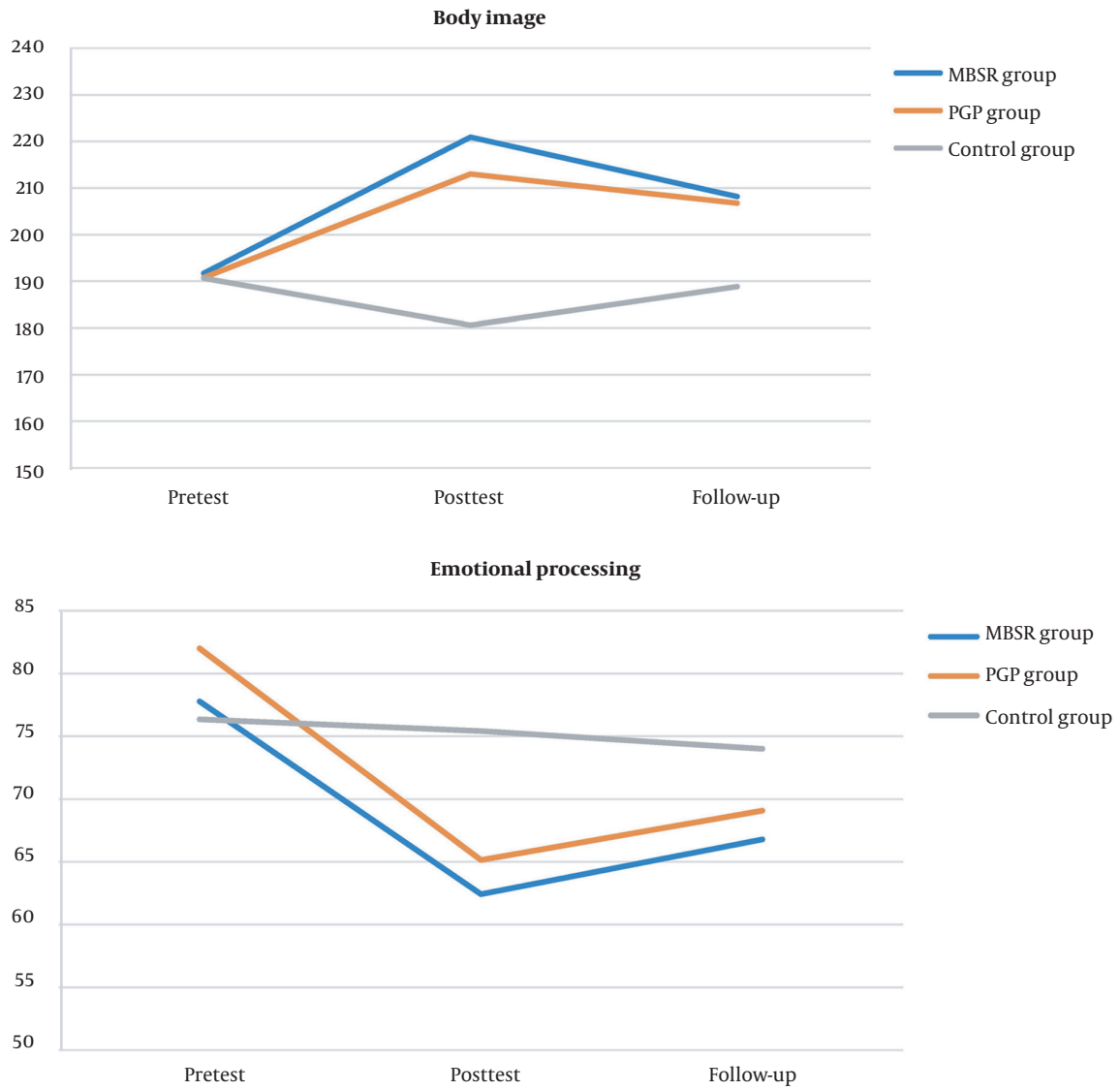


Figure 1. Comparing the means of body image and emotional processing scores between the groups

Table 1. An Overview of Mindfulness-Based Stress Reduction Sessions

Sessions	Contents
1	Defining mindfulness; presenting rules; introducing participants; practicing mindfulness eating; conducting a body scan; obtaining feedback; and discussing exercises
2	Body scan; challenge regarding people's experiences; standup yoga; mindful sitting (brief)
3	Mindful stretching; mindful sitting
4	Reporting the status quo of each participant; mindful sitting; standup yoga; bilateral conversations about unpleasant experiences and then group discussions; sitting and concentrating on respiration
5	Bilateral conversations, mindful walking, mindful sitting
6	Mindful sitting; discussing exercises; standup yoga; creating challenges through a few questions; sitting for a few minutes
7	Mindful stretching; mindful sitting; discussing daily exercises; reminding participants of the end of the intervention; creating challenges through a game
8	Asking whether this is the final session; sitting briefly; conducting a body scan; creating an environment for reviewing and discussing the intervention; creating challenges through a story; discussing how to employ mindfulness exercises in our lifestyles.

Table 2. Mean and Standard Deviation (SD) of the Research Variables in the Experimental and Control Groups

Variables and Phases	MBSR Group	PGP Group	Control Group
Body image			
Pre-test	191.71 ± 23.64	190.78 ± 15.53	190.64 ± 21.02
Post-test	220.92 ± 17.49	213.00 ± 12.53	180.60 ± 9.66
Follow-up	208.14 ± 16.51	206.78 ± 9.95	188.85 ± 13.92
Emotional processing			
Pre-test	77.78 ± 13.49	82.00 ± 12.01	76.35 ± 9.48
Post-test	62.42 ± 8.59	65.14 ± 10.66	75.42 ± 7.40
Follow-up	66.78 ± 9.33	69.07 ± 8.09	74.00 ± 9.85

To explain the findings about the effects of MBSR on improvement in body image and emotional processing, it can be stated that the participants of the MBSR group were asked to observe their streams of consciousness (i.e., feelings, thoughts, and physical senses that are considered potential sources of anxiety in patients with physical diseases) (17). The main mechanism of mindfulness is the self-control of attention. In other words, focusing attention repeatedly on a neutral stimulus like respiration can create an appropriate environment for attention and prevent preoccupation with threatening thoughts and worries about performance in stressful situations. If a patient gains an accurate perception of his/her subjective responses to intrinsic and extrinsic stimuli, he/she will develop insight in order to improve practical capability in the real world and enhance control over stressful situations (21). Therefore, mindfulness can moderate emotions without any judgments and improve awareness about mental and physical feelings in cancerous patients. It can also help patients clearly see and accept emotions, changes, and physical problems during a disease and a

treatment process as they occur.

To explain the findings about the effects of PGP on body image and emotional processing, it can be stated that PGP is a notable technique. Emotional expression includes verbalizing, refining, and confessing to stressful or conflicting events. It means talking about and discharging whatever causes emotional or psychological pain. The in-depth emotional experience and its expression can regulate cognitive processes and stimulation by reducing prohibition, thereby leading to a real self-perception and an understanding of personal capabilities (22). By focusing on a patient's defenses that prevent him/her from sensing real feelings and causing emotional closeness due to negative experiences in the past, the PGP encourages him/her to reach a real self-perception. If a patient's real feelings are easily expressed about the past, present, and future, as well as the therapist and the other group members, he/she will be able to identify unconscious factors and the causes of his/her behavior and feeling. This is the point where a patient can start sensing more genuine experiences and emotions in the real world (24). In fact, the PGP helps a patient face devastating extrinsic facts, physical changes, and unpleasant emotions by challenging destructive defenses without employing repressing defensive mechanisms to suppress or ignore real feelings. As a result, patients can accept physical changes, improve regulation, and process emotional information in colorectal cancer.

This study faced a few limitations. For instance, the results pertain to patients with colorectal cancer; hence, generalization of results to other patients should be done carefully. Other limitations of the present study are the parallelism of performing the study with some medicinal measures and the lack of control over the socioeconomic status of the patients.

Table 3. The Results of ANCOVA to Investigate Between-Group Effects on Body Image and Emotional Processing

Variables and Phases	SS	df	MS	F	P	η^2
Body image						
Post-test	10424.22	2	5212.11	30.11	0.001	0.63
Follow-up	2923.82	2	1461.91	7.60	0.002	0.30
Emotional processing						
Post-test	1308.44	2	654.22	7.87	0.001	0.61
Follow-up	637.09	2	318.54	3.35	0.046	0.16

Table 4. The Results of a Pairwise Comparison of Experimental and Control Groups in the Post-test and Follow-up Phases

Variables	Phases	Groups	Mean Difference	SE	P
Body image	Post-test	Control - MBSR	-39.97	5.29	0.001
		Control - PGP	-32.16	5.60	0.001
		MBSR - PGP	7.81	5.08	0.400
	Follow-up	Control - MBSR	-19.78	5.58	0.003
		Control - PGP	-19.72	5.90	0.006
		MBSR - PGP	0.05	5.36	0.999
Emotional processing	Post-test	Control - MBSR	13.92	3.66	0.002
		Control - PGP	12.02	3.88	0.011
		MBSR - PGP	-1.90	3.52	0.999
	Follow-up	Control - MBSR	-9.88	3.92	0.050
		Control - PGP	8.08	4.14	0.177
		MBSR - PGP	-1.74	3.76	0.999

5.1. Conclusions

According to the results, MBSR and PGP are considered therapies that may improve body image and emotional processing in patients with colorectal cancer. Hence, they can further enhance the well-being and adaptability of patients. It is recommended that MBSR and PGP courses be held at hospitals, clinics, and health centers to improve the adaptability, mental well-being, and emotional well-being of cancerous patients. For generalization of results, it is recommended to conduct similar studies on patients with special diseases and chronic conditions.

Acknowledgments

This article was extracted from a part of the Ph.D. dissertation of the first author in the Department of Psychology, Najafabad Branch, Islamic Azad University, Najafabad, Iran. We appreciate the contribution of all the colleagues and officials of the Poursina Hakim Health Centers, as well as all patients who participated in this study.

Footnotes

Authors' Contribution: Leila Andalib and Hasan Rezaei-Jamalouei: Study concept and design, acquisition of data, analysis and interpretation of data, and statistical analysis. Hasan Rezaei-Jamalouei and Seyed Mohammad Hasan Emami: Administrative, technical, and material support, study supervision. Hasan Rezaei-Jamalouei and Mojtaba Ansari Shahidi: Critical revision of the manuscript for important intellectual content.

Conflict of Interests: This study was self-financed. The authors declare no conflicts of interest.

Ethical Approval: The study was approved by the Ethical Committee of Islamic Azad University- Najafabad Branch (code: IR.IAU.NAJAFABAD.REC.1400.201).

Funding/Support: Self-funding.

References

1. Rawla P, Sunkara T, Barsouk A. Epidemiology of colorectal cancer: incidence, mortality, survival, and risk factors. *Prz Gastroenterol.*

- 2019;**14**(2):89-103. [PubMed ID: 31616522]. [PubMed Central ID: PMC6791134]. <https://doi.org/10.5114/pg.2018.81072>.
2. Jung KU, Kim HO, Kim H. Epidemiology, Risk Factors, and Prevention of Colorectal Cancer-An English Version. *J Anus Rectum Colon*. 2022;**6**(4):231-8. [PubMed ID: 36348953]. [PubMed Central ID: PMC9613412]. <https://doi.org/10.23922/jarc.2022-050>.
 3. Kashfi SM, Bazrafshan M, Kashfi SH, Khani Jaihooni A. The Relationship Between Blood Group and Colon Cancer in Shiraz Namazi Hospital During 2002 - 2011. *Jundishapur J Chronic Dis Care*. 2018;**7**(1). e59474. <https://doi.org/10.5812/jjcdc.59474>.
 4. Lloyd S, Baraghoshi D, Tao R, Garrido-Laguna I, Gilcrease G3, Whisenant J, et al. Mental Health Disorders are More Common in Colorectal Cancer Survivors and Associated With Decreased Overall Survival. *Am J Clin Oncol*. 2019;**42**(4):355-62. [PubMed ID: 30844850]. [PubMed Central ID: PMC6433523]. <https://doi.org/10.1097/coc.0000000000000529>.
 5. Hirpara DH, Azin A, Mulcahy V, Le Souder E, O'Brien C, Chadi SA, et al. The impact of surgical modality on self-reported body image, quality of life and survivorship after anterior resection for colorectal cancer - a mixed methods study. *Can J Surg*. 2019;**62**(4):235-42. [PubMed ID: 30900436]. [PubMed Central ID: PMC6660269]. <https://doi.org/10.1503/cjs.014717>.
 6. Hassani F, Koraei A, Yaghoobi R, Zarea K. An evaluating of the relationship between body image, body satisfaction, depression, marital quality, and self-esteem in patients with psoriasis. *Psychol Health Med*. 2021;**26**(4):467-77. [PubMed ID: 32426997]. <https://doi.org/10.1080/13548506.2020.1766093>.
 7. Farnam A, Marashi F, Sana'nama M. The Relationship of Body Image with Emotion Regulation, Stress, and Aggression and their Comparison Between Males and Females With Multiple Sclerosis. *Jundishapur J Chronic Dis Care*. 2017;**6**(3). e13818. <https://doi.org/10.5812/jjcdc.13818>.
 8. Forney KJ, Keel PK, O'Connor S, Sisk C, Burt SA, Klump KL. Interaction of hormonal and social environments in understanding body image concerns in adolescent girls. *J Psychiatr Res*. 2019;**109**:178-84. [PubMed ID: 30553150]. [PubMed Central ID: PMC6317862]. <https://doi.org/10.1016/j.jpsychires.2018.12.008>.
 9. Vani MF, Lucibello KM, Trinh L, Santa Mina D, Sabiston CM. Body image among adolescents and young adults diagnosed with cancer: A scoping review. *Psychooncology*. 2021;**30**(8):1278-93. [PubMed ID: 33882162]. <https://doi.org/10.1002/pon.5698>.
 10. Yiu A, Murray SM, Arlt JM, Eneva KT, Chen EY. The importance of body image concerns in overweight and normal weight individuals with binge eating disorder. *Body Image*. 2017;**22**:6-12. [PubMed ID: 28535446]. <https://doi.org/10.1016/j.bodyim.2017.04.005>.
 11. Henry M, Albert JG, Frenkiel S, Hier M, Zeitouni A, Kost K, et al. Body Image Concerns in Patients With Head and Neck Cancer: A Longitudinal Study. *Front Psychol*. 2022;**13**:816587. [PubMed ID: 35401366]. [PubMed Central ID: PMC8988682]. <https://doi.org/10.3389/fpsyg.2022.816587>.
 12. Martino ML, Gargiulo A, Lemmo D, Dolce P, Barberio D, Abate V, et al. Longitudinal effect of emotional processing on psychological symptoms in women under 50 with breast cancer. *Health Psychol Open*. 2019;**6**(1):2055102919844500. [PubMed ID: 31037219]. [PubMed Central ID: PMC6475855]. <https://doi.org/10.1177/2055102919844501>.
 13. Siciliano L, Clausi S. Implicit vs. Explicit Emotion Processing in Autism Spectrum Disorders: An Opinion on the Role of the Cerebellum. *Front Psychol*. 2020;**11**:96. [PubMed ID: 32082228]. [PubMed Central ID: PMC7005590]. <https://doi.org/10.3389/fpsyg.2020.00096>.
 14. Pourmohammad Fahreh F, Shirazi M. Comparison Quality of Life and Emotional Processing among Patients with Major Thalassemia, Type 2 Diabetes Mellitus, and Healthy People. *Jundishapur J Chronic Dis Care*. 2020;**9**(3). e94799. <https://doi.org/10.5812/jjcdc.94799>.
 15. Czamanski-Cohen J, Wiley JF, Sela N, Caspi O, Weihs K. The role of emotional processing in art therapy (REPAT) for breast cancer patients. *J Psychosoc Oncol*. 2019;**37**(5):586-98. [PubMed ID: 30929590]. <https://doi.org/10.1080/07347332.2019.1590491>.
 16. Stanton AL, Kirk SB, Cameron CL, Danoff-Burg S. Coping through emotional approach: scale construction and validation. *J Pers Soc Psychol*. 2000;**78**(6):1150-69. [PubMed ID: 10870915]. <https://doi.org/10.1037/0022-3514.78.6.1150>.
 17. Nobakht H. The Effectiveness of Mindfulness-Based Stress Reduction Group Therapy in Rumination Among Multiple Sclerosis Patients. *Jundishapur J Chronic Dis Care*. 2019;**8**(In Press). e84819. <https://doi.org/10.5812/jjcdc.84819>.
 18. Ladenbauer S, Singer J. Can Mindfulness-Based Stress Reduction Influence the Quality of Life, Anxiety, and Depression of Women Diagnosed with Breast Cancer? - A Review. *Curr Oncol*. 2022;**29**(10):7779-93. [PubMed ID: 36290892]. [PubMed Central ID: PMC9600006]. <https://doi.org/10.3390/currenconcol29100615>.
 19. Kriakous SA, Elliott KA, Lamers C, Owen R. The Effectiveness of Mindfulness-Based Stress Reduction on the Psychological Functioning of Healthcare Professionals: a Systematic Review. *Mindfulness (N Y)*. 2021;**12**(1):1-28. [PubMed ID: 32989406]. [PubMed Central ID: PMC7511255]. <https://doi.org/10.1007/s12671-020-01500-9>.
 20. Xie C, Dong B, Wang L, Jing X, Wu Y, Lin L, et al. Mindfulness-based stress reduction can alleviate cancer-related fatigue: A meta-analysis. *J Psychosom Res*. 2020;**130**:109916. [PubMed ID: 31927347]. <https://doi.org/10.1016/j.jpsychores.2019.109916>.
 21. Wu R, Liu LL, Zhu H, Su WJ, Cao ZY, Zhong SY, et al. Brief Mindfulness Meditation Improves Emotion Processing. *Front Neurosci*. 2019;**13**:1074. [PubMed ID: 31649501]. [PubMed Central ID: PMC6795685]. <https://doi.org/10.3389/fnins.2019.01074>.
 22. Wajda Z, Kapinos-Gorczyca A, Lizińczyk S, Sitnik-Warchulska K, Lzydorczyk B. Online group psychodynamic psychotherapy-The effectiveness and role of attachment-The results of a short study. *Front Psychiatry*. 2022;**13**:798991. [PubMed ID: 35966467]. [PubMed Central ID: PMC9366464]. <https://doi.org/10.3389/fpsyg.2022.798991>.
 23. Lorentzen S, Ruud T, Fjeldstad A, Høglend PA. Personality disorder moderates outcome in short- and long-term group analytic psychotherapy: A randomized clinical trial. *Br J Clin Psychol*. 2015;**54**(2):129-46. [PubMed ID: 25178520]. <https://doi.org/10.1111/bjc.12065>.
 24. Rutan JS, Stone WN, Shay JJ. *Psychodynamic group psychotherapy*. New York City, USA: Guilford Press; 2014.
 25. Pugliese P, Perrone M, Nisi E, Garufi C, Giannarelli D, Bottomley A, et al. An integrated psychological strategy for advanced colorectal cancer patients. *Health Qual Life Outcomes*. 2006;**4**:9. [PubMed ID: 16460566]. [PubMed Central ID: PMC1409769]. <https://doi.org/10.1186/1477-7525-4-9>.
 26. Rayska A. *A Conceptualization of the Body in Psychodynamic and Body-Based Psychotherapies: Areas of Overlap and Possibilities for Integration [dissertation]*. New York, USA: City University of New York; 2017.
 27. Cash TF. *The multidimensional body-self relations questionnaire. Mbsrq users' manual*. Norfolk, USA: Old Dominion University; 2000.
 28. Shemshadi H, Shams A, Sahaf R, Shamsipour Dehkordi P, Zareian H, Moslem AR. Psychometric Properties of Persian Version of the Multidimensional Body-Self Relations Questionnaire (MBSRQ) Among Iranian Elderly. *Salmand*. 2020;**15**(3):298-311. <https://doi.org/10.32598/sija.15.3.61.13>.
 29. Baker R, Thomas S, Thomas PW, Owens M. Development of an emotional processing scale. *J Psychosom Res*. 2007;**62**(2):167-78. [PubMed ID: 17270575]. <https://doi.org/10.1016/j.jpsychores.2006.09.005>.
 30. Kharamin S, Shokraeezadeh AA, Shirazi YG, Malekzadeh M. Psychometric Properties of Iranian Version of Emotional Processing Scale. *Open Access Maced J Med Sci*. 2021;**9**(B):217-24. <https://doi.org/10.3889/oamjms.2021.5902>.
 31. Kabat-Zinn J. Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*.

- 2003;**10**(2):144–56. <https://doi.org/10.1093/clipsy.bpg016>.
32. Rahmanian M, Oraki M, Pourfarid Z, Borhani M. The effect of cognitive therapy based on mindfulness on perceived stress, psychological capitals and emotional processing in women with breast cancer. *Q J Fundam Ment Health*. 2021;**23**(3).
33. Chang YC, Chiu CF, Wang CK, Wu CT, Liu LC, Wu YC. Short-term effect of internet-delivered mindfulness-based stress reduction on mental health, self-efficacy, and body image among women with breast cancer during the COVID-19 pandemic. *Front Psychol*. 2022;**13**:949446. [PubMed ID: 36389600]. [PubMed Central ID: PMC9640939]. <https://doi.org/10.3389/fpsyg.2022.949446>.
34. Straker N. Psychodynamic psychotherapy for cancer patients. *J Psychother Pract Res*. 1997;**7**(1):1-9. [PubMed ID: 9407471]. [PubMed Central ID: PMC3330485]. <https://doi.org/10.1080/10503309712331331843>.