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Effectiveness of group Mindfulness Based Stress Reduction consultation of severity of physical symptoms in women with irritable bowel syndrome

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ABSTRACT

Background: Irritable bowel syndrome is one of the most common functional gastrointestinal disorders that affect both genders in different ages, but its prevalence is higher in women. Because of perceived stress are very important factors in development of symptoms, the current study aimed to determine the effectiveness of group mindfulness based stress reduction consultation on severity of physical symptoms in women with irritable bowel syndrome.

Methods: This semi-experimental study was conducted on 30 women with irritable bowel syndrome referred to one of the educational hospitals in Zahedan in 2015. 30 patients were selected conveniently and then were randomly allocated into two intervention and control groups. The intervention group was received the 8 sessions (each session 90-minutes) educational program. Data were collected through the IBS Symptom Severity Scale before and one week after the intervention. Data analysis was done through using SPSS 20, chi-square, independent T-test, paired T-test and ANCOVA.

Results: The mean of physical symptoms severity before the intervention in intervention and control groups was 309.46 ± 32.19 and 304.01 ± 34.01 respectively that after the intervention were changed to 228.60 ± 13.56 in intervention (p = 0.001) and 299.80 ± 15.72 in control group (p = 0.8) The result of ANCOVA test showed that there was significant differences between the two groups after the intervention (p = 0.001).

Conclusion: Group mindfulness based stress reduction method can be used to reduce severity of physical symptoms in women with irritable bowel syndrome. The application of this method in order to improve the symptoms of stress in other diseases is recommended.

1. Introduction

Irritable bowel syndrome (IBS) is one of the most prevalent, debilitating functional disorders of the digestive system, which is associated with high treatment costs. IBS is diagnosed with abdominal pain and changes in bowel conditions in the absence of structural or biological abnormalities.[1, 2]

Prevalence rate of IBS has been reported to be 11% across the world and approximately 21.5% in Iran.[3, 4] Although this disorder afflicts both men and women of different ages, it has been shown to be more prevalent among women, possibly due to the role of sex hormones.[5] The exact etiology of IBS remains unknown; however, psychological and psychosocial factors have been shown to be involved in the development of this disease.[6-8] In a study, Zomorodi et al. (2013) stated that factors such as stress, anxiety, and depression are significantly associated with the onset and severity of IBS symptoms.[9] Similarly, other studies in this regard have denoted the key role of psychological stress in the incidence of IBS, which acts through raising the severity of symptoms. As such, more than half of IBS patients confirm that stressful occurrences remarkably deteriorate their gastrointestinal symptoms.[9, 10] Although psychological factors are not independently considered as the symptoms of IBS, they are essentially involved in the control, prognosis, and clinical outcomes of this disorder. Moreover, accompanied with severe stress, these factors may lead to disability and poor quality of life of IBS patients.[11] Various studies have highlighted the reduced quality of life of IBS patients, especially in terms of physical symptoms.[12, 13]

Since the severity of IBS symptoms is associated with catastrophizing and psychological somatization,[7] comprehending the pathology and treatments of this syndrome has become a complex bio-psychological and social issue.[9]

Different pharmaceutical and non-pharmaceutical methods are available for the treatment of IBS. Pharmacological therapies in this regard involve the use of probiotics, selective serotonin re-uptake inhibitors (antidepressants), antispasmodics, and alpha-2 adrenergic receptor agonists.[14, 15] However, there is disagreement regarding the effectiveness of these drugs when consumed separately. According to the literature, side effects of these pharmacological agents might appear as stressors to IBS patients, and consequently, they might need other medicines to control these side effects.[16, 17] Therefore, researchers have been concerned with applying non-pharmacological treatment methods in this regard.

Considering the complex bio-psychological and social nature of IBS, psychological therapies have proven more effective in diminishing its symptoms;[18] for instance, cognitive-behavioral therapies could markedly reduce the symptoms of IBS.[6] These treatments are based on the recognition, convictions, and behaviors of individuals and could change their mindset and belief system, thereby replacing misconceptions toward physical symptoms with medical facts, which ultimately reforms mental and physical performance.[8] In IBS, negative perceptions and stressors are likely to deteriorate the symptoms. Therefore, cognitive-behavioral therapy for IBS patients helps them cope with stressors through changing their thought patterns.[19]

Mindfulness-based cognitive therapy is one of the leading approaches in cognitive-behavioral treatments. This method is a combination of Kabat-Zinn's mindfulness-based stress reduction (MBSR) and Beck's cognitive therapy, which have been developed in the form of group therapy for patients with a history of depression and vulnerability.[20]

This approach facilitates the decentralization of thoughts, thereby training individuals to observe their feelings without judgment and view them as simple, interchangeable mental events, instead of considering them as part of themselves or a reflection of reality. Furthermore, such attitude toward stress and depression prevents the negativity associated with the "rumination syndrome" in some patients,[21] ultimately resulting in overall comfort and relief.

According to the literature, treatments based on stress management using cognitive-behavioral approaches are effective in reducing symptoms and improving the psychological status of patients with IBS.[22-24] In this regard, Crane et al. (2009) stated that therapy through the management of thoughts could gradually change general views, helping individuals to foster a different perspective toward their own thoughts and emotions, which dismisses rumination and stress.[25] Moreover, findings of Barnhofer et al. (2009) and Baer (2003) suggested that patient education through mindfulness-based cognitive therapy is a successful treatment method to reduce stress in different patients.[26, 27] By contrast, in a study by Ljótsson et al. (2010), it was claimed that psychological treatments have no significant effect on the reduction of stress. Accordingly, use of cognitive-behavioral methods might not be effective in all cases.[28]

With this background in mind, and considering the key role of stress in the development of somatic symptoms in IBS patients and urgent need for non-pharmaceutical methods to diminish the symptoms of this disorder, this study aimed to evaluate the effect of group training through MBSR on the severity of somatic symptoms in women with IBS.

2. Methods

2.1. Desig

This quasi-experimental study was conducted using a pretest-posttest design with a control group. Study population consisted of women diagnosed with IBS referring to one of the teaching hospitals of Zahedan, Iran in 2015.

2.2. Participants and setting

In this study, Sample size was calculated at 30 based on a study by Zomorodi et al. (2013)[9].

Patients were selected via convenience sampling and randomly assigned to two groups of intervention and control (15 patients per each group). Random allocation of the patients was performed via coin flipping.

Inclusion criteria were as follows: 1) diagnosis of IBS by a gastroenterologist and confirmed by the ROME III diagnostic criteria; 2) receiving no psychological treatments within the past six months; 3) unchanging status of medication use (i.e., type and dosage) during the study; 4) basic literacy and 5) absence of other gastrointestinal infections or disorders. Exclusion criteria of the study were detection of organic diseases positively associated with the symptoms of IBS, indications for severe physical or mental disorders preventing regular participation in therapy sessions, and absence or irregular attendance in training sessions.

2.3. Instruments

Data collection tools included demographic questionnaires (e.g., age, education level, marital

status) and the IBS Severity Scoring System. The standard IBS Severity Scoring System was designed by Francis et al. in 1997, and validity and reliability of this scale have been confirmed.[29] This questionnaire measures IBS symptoms in five domains of pain, irregular bowel movements, bloating, effects of disease on daily activities, and extraintestinal manifestations of IBS. Maximum mean and total scores in this scale are 100 and 500, respectively. Scores of 75-150 are interpreted as mild IBS symptoms, scores of 176-300 indicate moderate symptoms, and scores above 300 indicate the presence of severe IBS symptoms.[29, 30] Currently, the IBS Severity Scoring System is considered the most reliable measurement tool for the assessment of symptom severity in IBS patients,[13, 30] and the reliability of this instrument was confirmed at the Cronbach's alpha coefficient of 0.83 in this study.

2.4. Data Collection

Initially, diagnosis of IBS in the selected patients was confirmed by a specialist based on the ROME III diagnostic criteria. Correspondingly, IBS is diagnosed if the patient presents with at least two of the following symptoms: improvement of abdominal pain with bowel movements, abdominal pain due to the changes in the frequency of bowel movements, and abdominal pain along with the changes of stool consistency for at least three days per month during the past three months. It is also noteworthy that the mentioned symptoms should be present during a minimum of six months and progressed within the past three months.[31, 32] Afterwards, patients in both groups completed the IBS Severity Scoring System before the intervention (self-report).

Patients in the intervention group received MBSR training for eight sessions (90 minutes each), which were held twice per week during one month. Educational content was presented by the first researcher (clinical psychology expert) in the educational classes of the selected hospital. Contents of MBSR training in this study are shown in Table 1.[33, 34]

To monitor and evaluate the patients, assignments were provided in the form of booklets and CDs. In this study, subjects of the control group only received medication therapy without psychological intervention. One week after the intervention, with prior arrangements and after follow-up of patients via phone contact, severity of IBS symptoms was compared between the groups, and educational booklets and CDs were distributed among all the participants after the intervention.

2.5. Ethical considerations

After explaining the objectives of the study to the patients, they were assured of confidentiality terms regarding their personal and medical information. Moreover, informed consent was obtained from all the participants prior to the study.

2.6. Statistical analysis

Data analysis was performed in SPSS version 20 using descriptive statistics and independent T-test to compare the severity of IBS symptoms and age differences between the groups. In addition, Chi-square was used to compare the differences of the study groups in terms of marital status and education level, and comparison of the severity of IBS symptoms between the groups before and after the intervention was performed using paired T-test. Analysis of covariance (ANCOVA) was applied to determine the effectiveness of group training with MBSR by controlling the pretest effects.

Table 1. Educational content of training sessions

Session	Content	Subjects
One	Intuitive guidance	Describing the nature of training sessions/explaining the objectives of treatment/explaining the necessity of using the mindfulness training and guidance system
Two	Facing obstacles	Reviewing the assignments of previous session/practicing body check and providing feedback for participants/elaborating on mindfulness meditation through proper breathing
Three	Mindful breathing	Reviewing previous assignments/practicing sitting meditation and providing feedback for participants/presenting the topic of three-minute breathing space practice
Four	Staying in the present	Reviewing previous assignments/presenting the topic of five-minute "seeing and hearing"/repeating mindfulness toward conscious breathing and body check
Five	Authorization for mindful presence	Reviewing previous assignments/breathing exercises/presenting the topic of sitting meditation and consciousness toward breathing, body sounds and thoughts/elaborating on stress and its relationship with pain/mindfulness toward the effects of positive and negative events on feelings, thoughts and body sensations
Six	Thoughts are not facts	Reviewing previous assignments/practicing conscious yoga/presenting the topic of witnessing thoughts differently and thought replacement/practicing sitting meditation
Seven	Effective self-care	Reviewing previous assignments/presenting the topic of sleep hygiene/making a list of pleasurable activities and reviewing the practices of previous sessions
Eight	Acceptance and change	Reviewing previous assignments/practicing body check/discussing the educational program and continuing of training

3. Results

Demographic characteristics of the participants are presented in Table 2. According to the information in this table, no significant differences were observed between the demographic variables of the two groups.

According to the information in Table 3, mean scores of the symptom severity of IBS in domains of pain, bloating, extraintestinal manifestations, and effects of IBS symptoms on daily activities significantly decreased in the intervention group after the training sessions (P<0.0001). On the other hand, severity of IBS symptoms was found to increase in patients of the control group after the intervention. In this regard, results of independent T-test were indicative of a significant difference between the study groups after the intervention (P<0.0001).

According to the results of Shapiro-Wilk test (sig=0.27, statistic=0.96) and Levene's test (P=0.13, F=2.23) with the assumption of the normality and homogeneity of variances, required conditions were present for running ANCOVA. Results of ANCOVA by controlling the effect of pretest indicated that the mean score of IBS symptoms had a significant difference between the women of the intervention and control groups (P<0.0001). In other words, consultation and training in the intervention group significantly reduced the severity of IBS symptoms (Table 4).

Table 2. Demographic characteristics of patients

Variable	Group	Intervention N (%)	Control N (%)	P-value
Marital status	Single	12 (80)	11 (73.3)	*0.5
	Married	3 (20)	4 (26.7)	
Education level	Secondary	2 (13.3)	3 (20)	*0.3
	High school diploma	5 (33.3)	6 (40)	
	Associate degree	8 (53.4)	6 (40)	
Age (year)	M±SD	32.19±4.6	33.56±5.22	**0.4

*Chi-square; ** Independent T-test

Table 3. Mean score of symptom severity of irritable bowel syndrome before and after intervention

Variable	Group	Intervention M±SD	Control M±SD	*P-value
Pain	Before intervention	66.66±6.86	64.93±5.56	0.3
	After intervention	47.73±8.82	65.80±4.55	0.0001
	**P-value	0.0001	0.8	
Bloating	Before intervention	56.80±14.51	54.33±19.78	0.7
	After intervention	40.33±2.76	57.06±6.47	0.0001
	**P-value	0.0001	0.6	
Bowel movements	Before intervention	55.46±17.91	53.80±17.66	0.2
	After intervention	52.80±8.53	52.66±7.66	0.9
	**P-value	0.2	0.8	
Extraintestinal manifestations	Before intervention	64.20±5.66	63.40±7.22	0.7
	After intervention	47.53±8.17	60.06±9.59	0.0001
	**P-value	0.0001	0.7	
Effects on daily activities	Before intervention	66.33±10.12	67.53±6.14	0.8
	After intervention	40.20±3.09	64.20±5.51	0.0001
	**P-value	0.0001	0.5	
Total score	Before intervention	309.46±32.19	304.01±34.01	0.1
	After intervention	228.60±13.56	299.80±15.72	0.0001
	**P-value	0.0001	0.8	

*Chi-square; **independent T-test

Table 4. Results of ANOCVA regarding the effects of training intervention on severity of somatic symptoms in women with irritable bowel syndrome

Variable	Statistical indicator	Degree of freedom	Mean square	F	P-value	Effect size	power
Pretest	0.002	1	0.002	0.01	0.87	0.001	0.05
Within-group variance	37744.03	1	37744.03	168.77	0.0001	0.86	1
Error	6037.99	27	223.60				
Total	2138108	30					

4. Discussion

According to the results of the present study, MBSR group training reduced the mean score of IBS symptom severity, as well as variables of bloating, bowel movements, extraintestinal manifestations, and effects of IBS symptoms on daily activities.

In a study, Kamkar et al. (2011) evaluated the effects of cognitive-behavioral therapy and stress management on the severity of symptoms in patients with IBS and asserted that stress management training led to the alleviation of the symptoms of this disorder.[18] Despite the differences in the applied stress management method in the mentioned study, the findings are in line with the results of the present study. This consistency could be due to the type of intervention since both studies aimed to reduce stress as the main contributing factor in the development of IBS.

In another research, Solati Dehkordi et al. (2011) reported that use of cognitive-behavioral treatments along with medication therapy could improve the quality of life and decrease the symptoms of IBS patients. Noting the difference in the type of intervention, these findings are in congruence with the results of the current study.[12] Consistent with our findings, Shahbazi et al (2012) claimed that use of psychological techniques (e.g., hypnotherapy) could diminish the frequency and severity of IBS symptoms. In the mentioned study, mental strengthening was emphasized as the main influential factor in the reduction of stress and anxiety in IBS patients, which is similar to the current research.[35] In mindfulness-based approaches, individuals learn to cope with negative thoughts and emotions and face mental events as positive experiences, which leads to the cognitive representations of events in life.[36]

In this regard, Kafi et al. (2013) investigated the effects of mindfulness-based cognitive therapy on the symptoms of women with IBS, concluding that this method could be adopted for the alleviation of psychological symptoms, as well as the enhancement of somatic symptoms, in these patients.[37] In their research, Moss-Morris et al. (2010) emphasized the efficacy of cogitative-behavioral treatment methods in the reduction of mental distress in IBS patients, ultimately improving the physical and mental health of these patients.[38] Furthermore, findings of Gaylord et al. (2011) suggested that training on concentration skills could decrease the stress and symptoms of women diagnosed with IBS.[39] Findings of the mentioned study are consistent with the results of the present study. This could be due to the cognitive-behavioral nature of MBSR since such approaches are able to affect the digestive system of IBS patients through decreasing the activity of the central nervous system.[24]

Mindfulness techniques train patients on the behavioral and cognitive skills required for stress management, lowering anxiety, and enhancing IBS symptoms. Moreover, these skills could alleviate the fear and panic accompanied by stress, anxiety and IBS symptoms, thereby helping patients to have a healthy lifestyle and manage their emotions despite their disease.[40]

On the other hand, some studies have denoted that behavioral-cognitive therapies and relaxation techniques might not be effective in diminishing IBS symptoms in comparison with standard care procedures.[41] For instance, in a meta-analysis, Ford et al. (2014) stated that antidepressants are more effective in this regard compared to psychotherapy approaches.[42] Despite the discrepancy of this finding with our results, the researchers emphasized the fact that reliable studies regarding the effects of psychotherapy on IBS symptoms are inadequate. Furthermore, they asserted that a range of current psychotherapies, especially cognitive-behavioral methods, might be effective in relieving the physical symptoms of patients with IBS.

One of the limitations of the current research was the small sample size, which restricts the generalizability of the results.

5. Conclusion

According to the results of this study, group training through MBSR could alleviate the somatic symptoms of women diagnosed with IBS. Therefore, it is recommended that this method be applied along with medication therapy and routine medical care in the treatment of different patients with stress-related diseases, such as IBS.

Conflicts of interest

The authors declare no conflicts of interest.

Authors' contributions

Fatemeh Hashemi: study design, data collection, preparation of the initial draft of manuscript. Yousef Gorji: participation in study design, implementation of research, data analysis, participation in editing of the manuscript.

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