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The Effectiveness of Emotion-Focused Therapy on Rumination, Alexithymia, and Sleep Quality in Patients with Irritable Bowel Syndrome

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A B S T R A C T

Objective: Irritable Bowel Syndrome (IBS) is associated with numerous psychological factors. Therefore, the aim of the present study was to examine the effectiveness of emotion-focused therapy on rumination, alexithymia, and sleep quality in patients with IBS.

Materials and Methods: The research method was a quasi-experimental design using a pre-test, post-test with a control group and a three-month follow-up stage. The statistical population included all women diagnosed with IBS who attended public treatment centers in Kerman city in 2021. Accordingly, 30 participants were selected using a convenience sampling method and randomly assigned to experimental and control groups. Both groups were pre-tested initially. Subsequently, emotion-focused therapy training was conducted for the experimental group, while no intervention was performed for the control group. Data collection was done using the Nolen-Hoeksema and Morrow (1991) rumination scale, the sleep quality questionnaire, and the Toronto Alexithymia Scale. The research data were analyzed using mixed ANOVA.

Findings: Results showed that the mean rumination and alexithymia in the experimental group significantly decreased in the post-test and follow-up stages compared to the pre-test phase. Additionally, the difference between the post-test and follow-up stages was not significant. Furthermore, the mean sleep disorder in the experimental group showed a significant decrease in the post-test and follow-up stages compared to the pre-test. The difference between the post-test and follow-up stages was significant, indicating a significant increase in sleep disorder in the follow-up stage compared to the post-test.

Conclusion: Considering the findings of the research, it can be said that emotion-focused therapy can have a significant impact on the research variables, and the treatment effect was significant during the follow-up period, especially for sleep disorder. However, the treatment effect for the other two variables was maintained during the follow-up period.

Keywords: *Emotion-Focused Therapy, Rumination, Sleep Quality, Alexithymia, Irritable Bowel Syndrome.*

1 Introduction

Irritable Bowel Syndrome (IBS) is a common and debilitating disorder characterized by abdominal pain and disturbed bowel habits. Current pharmacological treatments often do not alleviate symptoms and may lead to high tolerance. Additionally, reduction in gastrointestinal symptoms does not always result in improved Quality of Life (QOL) for IBS patients (Brenner et al., 2023). The current prevalence of IBS worldwide is estimated at 4.1%, with figures in the United States, the United Kingdom, and Canada estimated at 4.4%-8.4% of the population (Palsson et al., 2020; Sperber et al., 2021). The disorder is more prevalent among women, with a higher prevalence ratio of women to men (Sperber et al., 2021). The condition declines after middle age and significantly decreases after the age of 65.3 (Palsson et al., 2020).

IBS is best understood from a biopsychosocial perspective as opposed to traditional etiopathogenetic causality. The biopsychosocial model acknowledges that multifactorial inputs, including environment, neurophysiology, and individual psychological traits, interact complexly to produce IBS symptoms. A key component of this interaction is the gut-brain axis, a bidirectional communication system that connects gut functions to cognitive and emotional centers in the brain (Ancona et al., 2021; Khlevner et al., 2018). This connection occurs between the enteric nervous system and the central nervous system. Additional interaction in this matrix occurs through the hypothalamic-pituitary-adrenal axis, part of the limbic system, which transmits emotional changes via the autonomic nervous system to the gut. Research evidence suggests that the gut microbiome interacts with this network through neural signaling, endocrine, and immune pathways (Lackner et al., 2014; Lackner et al., 2013; Van Oudenhove et al., 2016).

In the emergence and prevalence of this disease, numerous factors such as lifestyle (Nilsson & Ohlsson, 2021) and physical activities (Alqahtani & Mahfouz, 2022) are influential; moreover, IBS is associated with psychological factors such as stress and anxiety (Jadallah et al., 2022). Therefore, it can be inferred that various factors can play a role in the severity of symptoms of IBS; some related to the disease itself, others to factors such as psychological factors, worry about the disease, inability to express emotions, the extent of psychological stress, depression, anxiety, and panic attacks, as well as individual social conditions such as poor social status and attitudes of friends and relatives (Fairbrass et al., 2020; Nikolova et al., 2022).

One of the variables that has received attention in patients with IBS is the quality of sleep, which can be associated with their physical and mental health (Liu et al., 2022). The relationship between this disease and sleep disorders is bidirectional; that is, exacerbation of the disease leads to sleep disturbances, and sleep disturbances, in turn, exacerbate the activities of this disease (Sochal et al., 2020). Studies have also examined and confirmed the relationship between sleep quality and IBS (Ballesio et al., 2021; Habibi et al., 2019; Marinelli et al., 2020). Sleep problems, especially at the time of waking up in these patients, have been frequently observed and are more due to mood and emotional problems accompanying these patients than the symptoms of the disease itself (Barnes et al., 2022). One of these mood problems is the issue of rumination.

The recurrence of negative thoughts is another major characteristic in patients struggling with IBS, and rumination plays a significant role in the persistence of symptoms of this disease (Pugach et al., 2020). Rumination has been defined as conscious thoughts that are repeatedly focused on a specific subject, even in the absence of the initiating stimuli (Watkins & Nolen-Hoeksema, 2014). It could be argued that rumination plays an important role in the difficulty of emotional processing of traumatic events (Ogińska-Bulik & Michalska, 2020) and seems that inability in emotional regulation during difficult and anxiety-inducing situations, in reality, alexithymia can be a significant factor in the persistence of diseases such as IBS. Research evidence shows that alexithymia plays a role in the occurrence of physical problems such as cardiovascular and gastro-intestinal diseases (Melehin, 2021).

Alexithymia is a clinical feature characterized by: a) identifying, describing, and conveying one's feelings; b) distinguishing them from non-affective bodily sensations; c) emotional awareness related to psychosomatic symptoms; and d) imagination, daydreaming, and introspection (Panasiti et al., 2020). It has been reported that individuals with severe alexithymia have more difficulty coping with daily stressors (Panasiti et al., 2020) and this makes them more vulnerable to chronic medical disorders such as skin diseases, cardiovascular disorders, eating disorders, and digestive problems like IBS (Di Monte et al., 2020).

Current clinical guidelines identify several psychological treatments for IBS (IBS). However, IBS patients also experience trauma, life stress, relationship conflicts, and

PWJ
Psychology of Woman Journal
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emotional avoidance, few of which are directly targeted by these treatments (Thakur et al., 2017).

Explaining the psychological causes of this disease emphasizes that psychological treatments are effective in reducing the symptoms of the disease (Jandaghi et al., 2021). Finding solutions and appropriate treatments for these mental health-related problems can help these patients towards recovery and improved living conditions. One of the short-term therapeutic strategies for helping patients with IBS in dealing with emotional turmoil is emotion-focused therapy. Emotion-focused therapy, by emphasizing the importance of awareness, acceptance, and recognition of emotions and their physical reflection, helps seekers to become aware of their emotions; to experience, accept, and explore, modify, and manage different dimensions of emotion. Emotion-focused therapy is based on the principle that an individual can only change when they accept themselves as they are (Glisenti et al., 2021). Emotion is a fundamental and determinant factor in regulating behavioral patterns and information processing that facilitates an individual's adaptation with others and circumstances (Shahar, 2020). Therefore, emotions must be processed and accepted to clarify their meaning and with the increase of positive emotions, lay the groundwork for improving the Quality of Life in patients with IBS.

Most psychological approaches used for IBS are various forms of cognitive-behavioral therapy (Ford et al., 2014). These therapies primarily target thoughts, behaviors, and psychophysiological processes that exacerbate IBS (Drossman, 2011). Although cognitive-behavioral approaches are generally effective, patients often continue to experience residual physical symptoms, limited quality of life, and psychological symptoms. This may be because cognitive-behavioral therapies do not directly target specific risk factors that exacerbate IBS symptoms and disrupt function. Compared to a healthy control group, patients with IBS report a higher rate of early life adversities, including general trauma as well as physical, emotional, and sexual abuse (Drossman, 2011; Lackner & Gurtman, 2005); interpersonal problems are also seen (Lackner & Gurtman, 2005) and emotional unawareness and avoidance are also increased among IBS patients, although precise data on the prevalence is somewhat limited due to variability in the definitions of these issues (Thakur et al., 2017).

However, few studies have examined the mentioned therapeutic methods for the treatment and improvement of sleep quality, rumination, and alexithymia in patients with IBS. Therefore, what distinguishes the present study from similar studies in this field and is a strength for it, is the examination of various factors affecting this disease alongside each other. Therefore, considering the said matters and taking into account the research gap in the field of the effectiveness of emotion-focused therapy on patients with IBS and considering the practicality of the results of this research for prevention in these patients, the present study seeks to answer the question of whether emotion-focused therapy affects the sleep quality, rumination, and alexithymia of patients with IBS.

2 Methods and Materials

2.1 Study design and Participant

This research is applied in terms of its objective and employs a quasi-experimental methodology with a pre-test, post-test design, including a control group and a follow-up stage after three months. For this purpose, one group was designated for emotion-based therapy, and the second group served as a control. Additionally, a follow-up phase was conducted three months post-research to ensure the sustainability of the results. The study population comprised all female patients aged 20 to 30 years diagnosed with IBS, attending non-governmental treatment centers in Kerman city in the year 2021. For sampling, considering that the minimum sample size required in experimental and quasi-experimental research is at least 15 individuals per group, 15 participants were selected for each group through purposive sampling and were then matched based on variables such as age, marital status, and educational level. The participants were then randomly assigned to experimental groups one, two, and a control group, without being informed of the type of psychological intervention. It is important to note that, in adherence to ethical principles, the control group was placed on a waiting list so they could avail of the services provided to the other two groups post-completion of the current research.

The inclusion criteria for the study were: a) at least one year had passed since the diagnosis of IBS by a specialist; b) the participant should not have a history of severe psychological disorders (psychosis or personality disorder) as diagnosed by a psychiatrist and verified through the Structured Clinical Interview for DSM (SCID); c) no hospitalization in a psychiatric facility in the past year.

The exclusion criteria included: a) resorting to alcohol or drug use; b) engagement with other serious physical illnesses; c) non-participation or absence in two or more sessions.

PWJ
Psychology of Woman Journal
E-ISSN: 2783-333X

To collect information related to literature and research background, a library research method was employed, involving the review of books, articles, and relevant sources. Subsequently, for gathering data related to the sample, the researcher, in coordination with the related treatment centers and explaining the research objectives and ethical considerations, collected information using valid questionnaires. This involved both experimental groups completing questionnaires before and after treatment, as well as at the follow-up stage three months later, while the control group completed the questionnaires without receiving either of the two treatments. The control group was placed on a waiting list in adherence to professional ethical principles.

2.2 Measures

2.2.1 Rumination

Nolen-Hoeksema and Morrow (1991) developed a self-report questionnaire that assesses four different types of responses to negative mood. The Response Styles Questionnaire consists of two scales: rumination responses and distracting responses. The rumination response scale contains 22 items, which respondents are asked to rate on a scale from 1 (never) to 4 (often times) (Watkins & Nolen-Hoeksema, 2014). Based on empirical evidence, the rumination response scale has high internal reliability, with Cronbach's alpha coefficients ranging from 0.88 to 0.92. This scale was first translated from English to Persian (Bagherinezhad et al., 2010). The predictive validity of the rumination response scale has been tested in numerous studies. As previously explained, numerous research studies show that the rumination response scale can predict the severity of depression in follow-up periods in clinical and non-clinical samples, controlling for variables such as initial levels of depression and stressors. Also, based on research findings, this scale can determine individuals' vulnerability to depression. It has also been shown that this scale can predict a clinical episode of depression. In addition, in a study by Azizi et al. (2023), the Cronbach's alpha coefficient was found to be 0.79 (Azizi et al., 2023).

2.2.2 Sleep Quality Index

This questionnaire was developed in 1989 by Dr. Buysse and colleagues at the University of Pittsburgh's Psychiatric Institute. It is designed to assess sleep quality over the past month and includes 18 items. Numerous studies have shown the high validity and reliability of this questionnaire. It has been stated that the questionnaire differentiates poor from good sleep quality. Each of the seven components has internal consistency measured by Cronbach's alpha coefficient, ranging between 0.83 and 0.36. It has suitable sensitivity to distinguish participants with poor sleep quality from those with strong. Each of the 7 subscales of this questionnaire scores from 0-3: none (0), mild (1), moderate (2), severe (3). The total score of the questionnaire ranges from 0 to 21, with higher scores indicating poorer sleep quality. A total score greater than 5 indicates that the participant is a poor sleeper and has severe problems in at least two areas or moderate problems in more than three areas. The seven components of the questionnaire are: 1) subjective sleep quality, 2) sleep latency, 3) sleep duration, 4) sleep efficiency, 5) sleep disturbances, 6) use of sleep medications, 7) daytime dysfunction (Buysse et al., 1989). The internal validity and reliability of this questionnaire were confirmed in a study by Rahmati and Rahmani (Rahmati & Rahmani, 2010).

2.2.3 Alexithymia

The original version of the Toronto Alexithymia Scale was developed by Bagby and colleagues in 1994 (Bagby et al., 1994); it's a 20-item test measuring three subscales: difficulty in identifying feelings, difficulty in describing feelings, and externally oriented thinking, on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). A total score is calculated from the sum of the scores of the three subscales for overall alexithymia. This scale is suitable for use in both general and clinical populations and can be administered individually or in groups, depending on the situation. The psychometric properties of the Toronto Alexithymia Scale 20 have been validated in numerous international studies (Bagby et al., 2020; Bagby et al., 1994; Westwood et al., 2017) and the Persian version of the Toronto Alexithymia Scale 20 (Besharat, 2013; Hosseini & Davari, 2021). Initially, reverse the scores of items 4, 5, 10, 18, and 19 (5=1, 4=2, 2=4, 1=5; in this case, 3=3 remains). Then, score each option as follows: strongly disagree=1, disagree=2, neither disagree nor agree=3, agree=4, strongly agree=5. Then calculate the score for each of the three subscales, including difficulty in identifying feelings, difficulty in describing feelings, and externally oriented thinking, by summing the scores of the items in each subscale.

PWJ
Psychology of Woman Journal
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2.3 Intervention

2.3.1 Emotion-Focused Therapy

The therapy in this research was conducted face-to-face and individually for the sample participants. According to the protocol, 18 sessions were required for emotion-focused therapy. A brief description of the sessions is provided here, and the rest of the sessions are not mentioned to avoid repetition. Additionally, a follow-up phase consisting of 6 sessions was conducted after three months to assess the enduring effectiveness of the treatment.

A summary of the emotion-focused therapy sessions is provided based on Grynberg's therapeutic protocol (Grynberg et al., 2012) in 12 one-hour sessions. The sessions are described as follows: It is important to note that in the process of intervention in experimental group 1, two individuals, and in experimental group 2, one individual withdrew from continuing the treatment. They were replaced with three individuals who were randomly selected from the population.

Session 1: Introduction and definition of therapy. Introduction and familiarization, conducting a pre-test, and explaining the objectives of the sessions and emotion-focused conceptualization. Session 2: Evaluation of individuals. Review of the previous session and assessment of individuals based on their ability to focus on internal experiences. Session 3: Examination of emotional turmoil. Expressing the impact of negative thinking on emotional turmoil and extracting information related to alexithymia and rumination in individuals. Assigning a task to record emotions at home. Session 4: Identification of emotional issues. Reviewing previous sessions and tasks, identifying cognitive-affective-emotional processes, and identifying conditions that create problems. Session 5: Identification of emotional schema. Muscular relaxation at the beginning of the session, identifying emotional schema, emphasizing acceptance of experiences. Session 6: Examination of negative emotions. Implementing the 'hot chair' technique to address problems related to negative emotions. Session 7: Examination of various emotions and reduction of activation. Discussing emotional states of voice, expressing distress in individuals during anger, stress, etc., examining the experience of feeling stuck, stage of accepting emotions and positive criticism, reducing the activation of negative emotions. Session 8: Strengthening emotional processing. Tracking unresolved feelings, emotional reconstruction, re-evoking negative emotions, support, and resolving them again. Session 9: Solution development. Creating new solutions for previous problems using the recall technique. Session 10: Continuing solution development. Teaching the process of transferring feelings, reviewing resolved emotions, negative thoughts and emotions, and individual strategies. Session 11: Review of techniques and appropriate use in situations. Reviewing emotional turmoil recorded during the week and using the recall technique, transferring feelings, and reducing the activation of negative emotions. Session 12: Summary. Summarizing the sessions and obtaining feedback from participants, conducting post-tests.

2.4 Data Analysis

For data analysis at both descriptive and inferential levels, SPSS software version 23 was used as follows: At the descriptive level, initially, mean and descriptive statistics, including central tendency measures (mean) and dispersion indices (standard deviation, skewness, and kurtosis), as well as age, education, marital status, and duration of illness were presented. Then, in the inferential section, hypothesis tests such as Shapiro-Wilk were used to assess normality and homogeneity of variances with the Box's M test. Subsequently, for testing research hypotheses, mixed ANOVA with Bonferroni post-hoc test was employed.

3 Findings and Results

The mean age of the emotion-focused therapy group was 33.20 years (SD = 10.93) and the mean age of the control group was 35.67 years (SD = 8.63). The education level in the emotion-focused therapy group included 3 diploma holders, 5 bachelor's degree holders, 6 master's degree holders, and 1 Ph.D. holder. In the control group, there were 2 diploma holders, 6 bachelor's degree holders, 4 master's degree holders, and 3 Ph.D. holders.

The mean and standard deviation of the dependent variables at three stages of the experiment for both the control and experimental groups are presented in Table 1. Rumination in the control group showed minor changes in the post-test and follow-up stages. However, rumination in the emotion-focused therapy group decreased in the post-test stage and slightly increased in the follow-up stage, remaining lower than the pre-test stage. Sleep disorder in the control group also showed minor changes in the post-test and follow-up stages. In the emotion-focused therapy group, the sleep disorder decreased in the post-test stage and slightly increased in the follow-up stage, still remaining significantly lower than the pre-test mean. Alexithymia in the control group showed an increasing trend in the post-test and follow-

PWJ
Psychology of Woman Journal
E-ISSN: 2783-333X

up stages. In the emotion-focused therapy group, the mean alexithymia decreased in the post-test stage and increased in the follow-up stage, but was still less than the pre-test mean.

For testing the research hypotheses, mixed repeated measures ANOVA was used. Partial eta squared was used as the effect size measure. The assumption of normal distribution of variables was tested with the Shapiro-Wilk test, which confirmed this assumption for all variables ($P < 0.001$). Due to the significance of Mauchly's sphericity test, Greenhouse-Geisser epsilon was used.

Table 1

The Results of Descriptive Statistics (Mean and Standard Deviation)

		Pre-test	Pre-test	Post-test	Post-test	Follow-up	Follow-up
Group	Variable	Mean	SD	Mean	SD	Mean	SD
Control	Rumination	41.73	2.94	41.82	3.17	42.62	3.19
	Sleep Disorder	23.21	3.33	22.86	3.39	23.70	3.64
	Alexithymia	59.08	2.88	59.67	3.58	60.40	5.81
Experimental	Rumination	44.46	1.90	37.43	2.67	37.73	2.84
	Sleep Disorder	30.20	5.38	15.77	4.56	17.06	4.94
	Alexithymia	66.20	9.94	44.82	6.52	46.02	6.56

Table 2 shows the result of the mixed ANOVA for rumination. The interaction effect of group and time for rumination was significant ($F(1.44, 40.31) = 71.61$, $P < 0.05$, $\eta 2 = 0.72$). Therefore, the main effect of group and the main effect of time are not examined, but the simple main effect of time is examined. This effect compares the differences between the three stages of the experiment for both the control and emotion-focused therapy groups. Table 3 shows the simple main effects of time. Pillai's trace, which is robust against the violation of the homogeneity of variance-covariance matrices assumption, was used. The simple main effect of time in the control group is not significant ($F(2, 27) = 2.48$, $P > 0.05$, $\eta 2 = 0.15$), meaning the mean rumination across the three measurement stages in the control group does not significantly differ. However, the simple main effect of time in the emotion-focused therapy group is significant ($F(2, 27) = 101.54$, $P < 0.05$, $\eta 2 = 0.883$). The Bonferroni post hoc test in the emotion-focused group (Table 4) showed that the mean rumination in the emotion-focused group significantly decreased in the post-test and follow-up stages compared to the pre-test stage. Additionally, the difference between the post-test and follow-up stages is not significant. Therefore, it can be concluded that emotion-focused therapy was effective in reducing rumination, and the treatment effect was maintained in the follow-up stage.

Table 2

Results of Mixed ANOVA for Rumination

Effect	Source	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Effect Size
Within Subject	Time	208.455	1.440	144.796	54.868	0.000	0.662
	Time*Group	272.054	1.440	188.973	71.608	0.000	0.719
	Error	106.378	40.310	2.639			
Between Subject	Intercept	151047.611	1	151047.611	7532.637	0.000	0.996
	Group	107.345	1	107.345	5.353	0.028	0.161
	Error	561.468	28	20.052			

Table 3

Results of Multivariate Analysis of Variance for the Simple Main Effect of Time on the Rumination

Group	Pillai's Trace	F	Degrees of Freedom	Degrees of Freedom	Significance Level	Effect Size
Emotion-focused	0.883	101.544	2	27	0.000	0.883
Control	0.155	2.479	2	27	0.103	0.155

Table 4

Bonferroni Post Hoc Test for Comparing Rumination in the Emotion-focused Group

PWJ Psychology of Woman Journal
E-ISSN: 2783-333X

Stage Difference	Mean Difference	Standard Error	Significance Level
Pre-test - Post-test	7.03	0.49	0.001
Pre-test - Follow-up	6.72	0.63	0.001
Post-test - Follow-up	-0.30	0.35	1.000

Table 5 shows the result of the mixed ANOVA for sleep disorder. The interaction effect of group and time for sleep disorder was significant ($F(1.14, 31.80) = 45.95$, $P < 0.05$, $\eta 2 = 0.621$). Table 6 shows the simple main effects of time. The simple main effect of time in the control group is not significant ($F(2, 27) = 0.87$, $P > 0.05$, $\eta 2 = 0.122$), meaning the mean sleep disorder across the three measurement stages in the control group does not significantly differ. However, the simple main effect of time in the emotion-focused therapy group is significant ($F(2, 27) = 54.62$, $P < 0.05$, $\eta 2 = 0.802$). The Bonferroni post hoc test in the emotion-focused group (Table 7) showed that the mean sleep disorder in the emotion-focused group significantly decreased in the post-test and follow-up stages compared to the pre-test stage. The difference between the post-test and follow-up stages was significant, indicating a significant increase in sleep disorder in the follow-up stage compared to the post-test stage. Although the mean sleep disorder increased in the follow-up stage, it was still significantly lower than the pre-test mean. Therefore, it can be concluded that emotion-focused therapy was effective in reducing sleep disorder, and the treatment effect was maintained in the follow-up stage.

Table 5

Results of Mixed ANOVA for Sleep Disorder

Effect	Source	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Effect Size
Within Subjects	Time	957.672	1.136	843.352	45.815	0.000	0.621
	Time*Group	960.570	1.136	845.903	45.953	0.000	0.621
	Error	585.290	31.796	18.408			
Between Subjects	Intercept	44090.285	1	44090.285	1291.856	0.000	0.979
	Group	113.657	1	113.657	3.330	0.079	0.106
	Error	955.624	28	34.129			

Table 6

Results of Multivariate Analysis of Variance for the Simple Main Effect of Time on Sleep Disorder Variable

Group	Pillai's Trace	F	Degrees of Freedom	Degrees of Freedom	Significance Level	Effect Size
Emotion-focused	0.802	54.62	2	27	0.000	0.802
Control	0.122	1.869	2	27	0.174	0.122

Table 7

Bonferroni Post Hoc Test for Comparing Sleep Disorder in the Emotion-focused Group

Stage Difference	Mean Difference	Standard Error	Significance Level
Pre-test - Post-test	14.43	1.39	0.001
Pre-test - Follow-up	13.14	1.43	0.001
Post-test - Follow-up	-1.30	0.42	0.014

Table 8 shows the result of the mixed ANOVA for alexithymia. The interaction effect of group and time for alexithymia was significant ($F(1.29, 36.24) = 33.90$, $P < 0.05$, $\eta 2 = 0.548$). Table 9 shows the simple main effects of time. The simple main effect of time in the control group is not significant ($F(2, 27) = 0.26$, $P > 0.05$, $\eta 2 = 0.019$), meaning the mean alexithymia across the three measurement stages in the control group does not significantly differ. However, the simple main effect of time in the emotion-focused therapy group is significant ($F(2, 27) = 36.29$, $P < 0.05$, $\eta 2 = 0.729$). The Bonferroni post hoc test in the emotion-focused group (Table 10) showed that the mean alexithymia in the emotion-focused group significantly decreased in the post-test and follow-up stages compared to the pre-test stage. The difference between the post-test and follow-up stages is not significant. Therefore, it can be concluded that emotion-focused therapy was effective in

PWJ
Psychology of Woman Journal
E-ISSN: 2783-333X

reducing alexithymia, and the treatment effect was maintained in the follow-up stage.

Table 8

Results of Mixed ANOVA for Alexithymia

Effect	Source	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Effect Size
Within Subjects	Time	1977.972	1.294	1528.236	28.368	0.000	0.503
	Time*Group	2363.852	1.294	1826.378	33.902	0.000	0.548
	Error	1952.339	36.240	53.873			
Between Subjects	Intercept	282565.940	1	282565.940	5657.832	0.000	0.995
	Group	1221.261	1	1221.261	24.453	0.000	0.466
	Error	1398.388	28	49.942			

Table 9

Results of Multivariate Analysis of Variance for the Simple Main Effect of Time on the Alexithymia Variable

Group	Pillai's Trace	F	Degrees of Freedom	Degrees of Freedom	Significance Level	Effect Size
Emotion-focused	0.729	36.294	2	27	0.000	0.729
Control	0.019	1.261	2	27	0.772	0.019

Table 10

Bonferroni Post Hoc Test for Comparing Alexithymia in the Emotion-focused Group

Stage Difference	Mean Difference	Standard Error	Significance Level
Pre-test - Post-test	21.38	2.46	0.001
Pre-test - Follow-up	20.18	2.58	0.001
Post-test - Follow-up	-1.20	1.11	0.866

4 Discussion and Conclusion

The results indicate that in the experimental group, the mean rumination significantly decreased in the post-test and follow-up stages compared to the pre-test. Similar studies that examined one of the current therapeutic methods confirmed their effectiveness. In this regard, the effectiveness of mindfulness-based cognitive therapy has been confirmed in previous studies (Aryannejad et al., 2021; Khayeri et al., 2019; Mohammadi et al., 2019; Teymouri et al., 2020).

The use of techniques such as identifying contradictory feelings, placing patients in the empty chair dialogue situation, relaxation, breaking the feeling of incompleteness, describing the voice state and the extent of discomfort, and teaching the process of transfer in emotion-focused therapy have led to a greater reduction in the severity of obsessive symptoms and rumination in patients (Greenberg, 2007; Greenberg & Safran, 1989; Leslie S. Greenberg, 2010). During emotion-focused therapy, patients are taught to eliminate inconsistent self-talk that arises in stressful situations and to replace it with relatively optimistic interpretations, especially when faced with various harmful situations (Salgado et al., 2019). In the course of treatment, patients are encouraged to question their distressing thoughts and eliminate alternative self-talk to cope with the thought rumination that causes psychological turmoil.

According to research, high levels of rumination are associated with the highest rates of depression and anxiety (Bagherinezhad et al., 2010; Lackner & Jaccard, 2021; Ruscio et al., 2015), and in patients with IBS, the presence of anxiety and depressive disorders is very high (Tosic-Golubovic et al., 2010), and emotion-focused treatments can be effective in treating rumination (Khayeri et al., 2019; Teymouri et al., 2020).

Based on the results obtained, in the experimental group, the mean score of sleep disorder significantly decreased in the post-test and follow-up stages compared to the pre-test. The effectiveness of these therapeutic methods has been confirmed in studies. In this regard, the results of the previous studies (Davoudi et al., 2020; Haghayegh et al., 2015; Hashem et al., 2023).

In explaining the results obtained from this study, it can be said that sleep is one of the basic needs of humans, and any disorder or problem in an individual's sleep condition

PWJ
Psychology of Woman Journal
E-ISSN: 2783-333X

can create numerous problems, including disturbances in social and occupational activities (Pavlova & Latreille, 2019). Studies related to IBS have repeatedly mentioned that sleep disorder is a problem suffered by patients with this disease (Zargar et al., 2019). Given that sleep disturbances can lead to fatigue in these patients, this fatigue significantly and negatively impacts their health-related quality of life (Weaver et al., 2017). Factors such as stress and anxiety also exacerbate this problem (Muscatello et al., 2016). Therefore, treating sleep-related problems and improving the sleep conditions of these patients is of great importance. In various studies, it has been shown that problems related to insomnia or sleep disorders have improved and become better when faced with psychotherapeutic methods like emotion-focused therapy (Haghayegh et al., 2015). In patients with IBS, negative emotions seem to play a key role in the occurrence of this disorder. Anger, anxiety, depression are consistently associated with visceral sensitivities and pain, and in the presence of negative emotions, they are recognized as pain-inducing factors. Emotional arousal can also lead to the stimulation of the large intestine (Muscatello et al., 2016). Therefore, emotion-focused treatments, by identifying and examining such risk factors, offer solutions for them and ultimately, by reducing the activation of negative emotions, lead to the improvement of disorders in patients, including sleep disorders, and improve their sleep quality.

The results indicated that with the use of emotion-focused therapy, changes in alexithymia were significant in the three measurement stages of pre-test, post-test, and follow-up, and the performance of the treatment group in the post-test and follow-up was better than the control group, which was statistically significant.

Similar studies conducted on other groups of individuals and patients have confirmed the effectiveness of emotion-focused therapeutic methods. In this regard, the results from the previous research (Brooks et al., 2019; Hajiadineh & Mozafaripoor, 2018; Khadem Dezfuli et al., 2023; Martino et al., 2020) demonstrated that emotion-focused therapy can have positive and constructive effects on the alexithymia condition of individuals and patients.

In explaining the results obtained from the current study, it can be said that alexithymia results from problems that individuals have in identifying and distinguishing between feelings, thoughts, and physiological responses to stimuli such as recognizing emotions, expressing emotions, and external thinking (Martino et al., 2020). This construct is also considered as a personality trait that may appear in conjunction with various physical and mental disorders (Brooks et al., 2019). This factor, like many factors affecting IBS, is associated with depression, anxiety, and stress and can lead to severe clinical symptoms and a prolonged course of IBS (Quattropani et al., 2019; Sajadinejad et al., 2012). Alexithymia is a mental condition that can play a significant role in the lives of patients with IBS over the long term (Martino et al., 2020). In this context, clinical psychological interventions are needed to enhance adaptive capacities in patients to improve their quality of life and better adherence.

It seems that patients with IBS, due to problems and risk factors such as bad and negative life experiences, being in stressful situations, perceiving an anxious state, and sometimes facing depression, are unable to recognize and describe their emotions. This inability, especially in the area of identifying emotions, can lead to the individual's failure to regulate negative emotions. Patients who are unable to identify negative emotions and regulate them experience many problems in adapting better to disease conditions. Moreover, in these patients, difficulty in identifying and describing emotions is associated with variables such as non-adaptive disease behaviors, high sensitivity to pain experience, and the use of unhealthy coping strategies, which in turn affect adaptation to disease conditions (Nowakowski et al., 2013). In this regard, the use of emotion-focused therapeutic methods can well provide conditions for these patients to identify negative emotions, try to self-regulate these emotions, and over time, by managing them properly, improve their alexithymia.

5 Limitations and Suggestions

The current treatment for IBS (IBS) is focused on managing the most troublesome symptom of the disease. These treatments are quite effective for bowel dysfunction. However, it should be noted that this disease is influenced by psychological factors and risk factors that, if reduced, lead to improvements in the quality and lifestyle of these patients in the medium and long term, significantly impacting the treatment process of the disease itself. Among the various factors affecting the severity of the disease, psychological factors such as patient behaviors, low quality of life, acute psychological stress, and stressful life events can be noted. All of these factors can lead to a reduction in the well-being of the patient and cause numerous disorders such as problems in sleep and low quality of sleep, increased rumination, encountering negative thoughts, and ultimately alexithymia and the inability to express emotions. Therefore,

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Psychology of Woman Journal
E-ISSN: 2783-333X

it is necessary to use therapeutic methods to manage this disease and improve the condition of the patient.

While pharmacological treatments and attention to nutrition and lifestyle are used to manage this disease, evidence-based psychological treatments can also be beneficial in treating this disease and reducing its symptoms. Therefore, this research attempted to examine the effectiveness of emotion-focused therapy on the sleep quality, rumination, and alexithymia of patients with IBS.

The results of this study, which was one of the first conducted in the field of IBS and examined three variables of sleep quality, rumination, and alexithymia, indicated that emotion-focused therapy could improve patients' sleep quality, reduce their rumination, and have an impact on their alexithymia.

When selecting therapeutic methods to improve the condition affected by IBS in patients, it should be noted that each therapeutic approach considers individuals from a specific perspective and addresses the issue of adaptation and conflict resolution. Among these, emotion-focused therapy is a short-term systemic treatment related to the activation and reorganization of emotional schemas.

Given the effectiveness of the treatment in this research, on rumination, sleep quality, and alexithymia in patients with IBS, it can be stated that in order to reduce the problems caused by this disease and its consequences, it is necessary to address the cognitive, behavioral, and emotional problems of patients to mitigate the effects and consequences of IBS.

The limitation of the study population to patients of one treatment center, while the condition of the disease in other cities of the country can be different due to chosen lifestyle, nutritional methods, and other similar factors, limits the generalizability of the results to the entire group of patients with IBS. Considering the prevalence of this disease in the country, it is suggested that the effectiveness of emotion-focused therapy on the variables of this research among other patients with IBS in the country be carried out. It is also suggested that this psychological intervention be used as effective methods in the area of sleep quality, rumination, and alexithymia by therapists and specialists in counseling and mental health in educational centers, organizations, health institutions, and other environments related to patients with IBS.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Authors' Contributions

Maryam Dana, Farnaz Keshavarzi Arshadi, Fariba Hassani, and Parvaneh Mohammadkhani all made substantial contributions to this study. Maryam Dana contributed to the study's conception, design, and data collection. Farnaz Keshavarzi Arshadi played a key role in the implementation of emotion-focused therapy and data analysis. Fariba Hassani contributed to the research design and the interpretation of results. Parvaneh Mohammadkhani supervised the study's progression, provided expertise in data analysis, and contributed to the interpretation of findings.

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