



Effectiveness of Mindfulness-Based Stress Reduction and Intensive Short-Term Dynamic Psychotherapy in Improving Mental Health and Mitigating Alexithymia in Fibromyalgia Patients

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ABSTRACT

Aim: The pain and disability caused by chronic diseases such as fibromyalgia disrupt physical, mental, and social activities and job performance. These factors, in turn, diminish mental health in such patients. The present study aimed to investigate the effectiveness of Mindfulness-Based Stress Reduction (MBSR) and Intensive Short-Term Dynamic Psychotherapy (ISTDP) in improving mental health and mitigating alexithymia in fibromyalgia patients.

Method and Materials: This quasi-experimental research adopted a pretest-posttest design with a control group and a three-month follow-up. The statistical population consisted of all females with fibromyalgia in the rheumatology clinic of Rasoul Akram Hospital in Tehran, Iran. Thirty-six of them were selected via convenience sampling based on inclusion criteria. The participants were randomly divided into a control group and two experimental groups, one receiving eight 120-min MBSR sessions and the other one receiving eight 120-min ISTDP sessions. The research instruments included the Mental Health Inventory (MHI) and the Toronto Alexithymia Scale (TAS-20). The data were analyzed via repeated measures ANOVA.

Findings: It was found that MBSR and ISTDP interventions were effective in mitigating alexithymia and improving mental health in fibromyalgia patients ($P < 0.001$). There was a significant difference between MBSR and ISTDP, which ISTDP having higher effectiveness and more extended durability in the follow-up stage ($P < 0.05$).

Conclusions: The MBSR and ISTDP interventions effectively mitigate alexithymia and improve mental health in fibromyalgia patients. Therefore, it is suggested that clinical psychologists use such interventions to improve the Quality of Life (QoL) for patients with fibromyalgia.

Keywords: Fibromyalgia, Alexithymia, Stress, Mindfulness, Psychotherapy, Mental health.

Introduction

Fibromyalgia is a common chronic musculoskeletal pain disorder characterized by muscle stiffness and paresthesia [1, 2]. This disease has a set of symptoms, including widespread musculoskeletal pain, multiple tender points, sleep disturbance, fatigue, long muscle spasms, organ weakness, muscular inflexibility, cognitive mood disorders [e.g., short-term memory and poor concentration disorders], depression, stress, anxiety, and morning joint stiffness [3, 4]. Many fibromyalgia patients referred to rheumatology clinic while they suffer from a large show a large percentage of psychological disorders. This, along with a lack of specific physiopathology, has led to a

number of researchers assuming fibromyalgia has a psychological cause [5]. Psychological factors including beliefs, expectations, and positive feedback of patients toward the disorder are important determinants of their responses to it [6].

Alexithymia refers to the limited ability to recognize a process and/or describe one's emotions. It consists of four major characteristics, including difficulty in detecting emotions and distinguishing between them and physical and emotional arousals, difficulty in describing feelings to others, reduced visual processing together with insufficient daydreaming, and externally oriented cognitive style [7]. Alexithymia is

observed in many psychosomatic patients. Alexithymia is not the main complaint of psychosomatic patients to doctors; they mostly reflect it in their sick bodies and provide details rather than describing their feelings. They tend to describe events rather than express emotions [8]. People with high levels of alexithymia are more vulnerable to developing a physical illness. Emotional and cognitive difficulties make people more susceptible to alexithymia [9,10].

Since it reflects defects in the cognitive processing of emotions, alexithymia could induce psychological and physical disorders, diminishing Health-Related Quality of Life [HRQoL] in such patients. Alexithymia is a risk factor for psychological reactions such as anxiety and depression, which may cause, aggravate and preserve fibromyalgia symptoms in patients [11]. Due to the high prevalence of depression among fibromyalgia patients, the inference of depression with the treatment, pain relief and the ever-increasing disillusionment in these patients, among the one-dimensional, biological treatments for fibromyalgia syndrome, the treatment of depression and other psychological disorders should be among the priorities for fibromyalgia patients [12]. Furthermore, early research on psychological disorders in fibromyalgia patients, which was often conducted via self-report questionnaires, verified the high rate of psychological disorders in such patients [13]. Studies have shown that individuals with anxiety disorders have a higher rate of alexithymia, and that anxiety is positively related to the dimensions of difficulty in detecting and describing feelings [14, 15].

The World Health Organization [WHO] defines mental health in the general concept of health as the full ability to play social, mental, and physical roles and considers it the ability to establish harmonic communications with other individuals, to modify the individual

and social environments and to resolve personal conflicts and tendencies in a fair, reasonable, and proper manner. In stressful life conditions, psychological disorders appear in the form of anxiety, frustration, feeling worthless, rage, and depression [16]. The pain and disability caused by chronic diseases such as fibromyalgia disrupt physical, mental, and social activities and job performance. These factors, in turn, diminish mental health in such patients [17]. Stress is a response to requests that are imposed on the body and mind. The MBSR approach is concerned with being mindful and aware of what is happening in the present moment instead of extending any particular state of the mind or the body. Through paying full and direct attention to the experience [pleasant and unpleasant], individuals probably learn to relate to stress, pain, or other states differently [18]. It has been argued that MBSR is a clinical treatment developed essentially to facilitate adaptation to diseases and offers systematic training of mindfulness meditation as a self-adjustment approach to stress reduction and emotion management [19,20]. Kabat-Zinn et al. [21] evaluated efficiency of MindfulnessBased Stress Reduction (MBSR) in patients with anxiety disorders and chronic pain. (Table 1). Evidence showed that most participants experienced a reduction of psychological and physical syndromes and developed positive changes in their attitude, behavior, and perception of themselves, others, and the environment around them.

Intensive Short-Term Dynamic Psychotherapy [ISTDP] is among the therapies that help individuals deal with their unconscious conflicts and emotions, which in fact arise from loss and psychological harm; therefore, such individuals will not rely on defenses that are recessive and defeatist in nature [22]. Under these conditions, the "ego" achieves its autonomy and can live at the highest level of

its abilities. The therapist using ISTDP helps patients overcome their fear, anxiety and defensive avoidances and learn to experience their exhausting and intolerable emotions and be able to tolerate the painful feelings of wounds they suffered in the past [23]. Hence, the patients achieve control over anxiety, defense, and emotional avoidance and may recover from emotional injuries of the past to a great extent. Finally, the symptoms and maladaptive defensive behavior are reduced and awareness is improved followed by mental health [24].

Consequently, as fibromyalgia has high prevalence among the general public in Iran, given its mutual impact psychological states, and considering the fact that there is a small body of interventionist research on mental health predictors of this group in the community, it was necessary to carry out this research. Accordingly, this study aimed to compare the effectiveness of MBSR and ISTDP in improving mental health and mitigating alexithymia in fibromyalgia patients.

Method and Materials

This quasi-experimental research adopted a pretest-posttest design and had a control group. The statistical population consisted of female fibromyalgia patients in the rheumatology clinic of Rasoul Akram Hospital, Tehran, Iran during October-December, 2021. The participants were selected through convenience sampling. The inclusion criteria were fibromyalgia symptoms, a minimum of middle school degree in education, an age of 20-50, no history of psychological disorders or hospitalization, and willingness to participate in the research. The exclusion criteria, on the other hand, were refusal to participate in the research, failure to fulfill weekly tasks, and withdrawal from the study. The instruments which were used in this study were as: Mental Health Inventory: The Mental Health Inventory [MHI] is a 38-item scale developed by Veit and Ware [25]. It consists of two sub-scales: psychological well-being [14 items] and psychological distress [14 items]. The MHI measures psychological well-being and psychological distress on a five-point Likert scale ranging from 1 [very low] to 5 [very high]. The

Table 1) A summary of the Mindfulness-Based Stress Reduction (MBSR) program

Session	Content
1	Introducing the automatic guidance system/teaching how to use instantaneous mindfulness of body sensations, thoughts, and emotions in stress reduction/ eating raisins, feedback, and discussing the training/three minutes of breathing
2	Repeating the body scan /feedback and body scan discussion/ mindful breathing meditation/yoga stretch
3	Sitting meditation and breathing mindfulness/yoga practices/three minutes of breathing
4	Repeating body scan/mindfulness yoga practice/five minutes of seeing or hearing training/seated mindfulness practice with mindfulness breathing and mindfulness body scan
5	Mindful breathing/mindful sitting (mindfulness of breaths, body, sounds, and thoughts/ explanations concerning stress and detection of the participants' reactions to stress/mindfulness of pleasant and unpleasant events on feelings, thoughts, and body sensations/mindfulness yoga)
6	Mindfulness yoga/sitting meditation (mindfulness of sounds and thoughts)
7	Mountain meditation/repeating the exercises in session 6/preparing a list of pleasant activities
8	Body scan/review of the entire program /examining the programs and discussing them/stone, bead, and marble meditation

minimum and maximum scores of the well-being and distress subscales are 14 and 70, respectively. A lower MHI score represents higher level of mental health. Mousavi et al.^[26] reported alpha Cronbach coefficient of 0.82 for the questionnaire.

Toronto Alexithymia Scale: The Toronto Alexithymia Scale [TAS-20] is a 20-item measure introduced by Bagby et al.^[27]. The TAS-20 has three subscales, including Difficulty Identifying Feelings [DIF] [seven items], Difficulty Describing Feelings [DDF] [five items], and Externally Oriented Thinking [EOT] [eight items]. The items are scored on a five-point Likert scale, ranging from 1 [strongly disagree] to 5 [strongly agree]. Items 4, 10, 18, and 19 are reverse scored. The minimum and maximum TAS-20 scores are 20 and 100, respectively. Besharat et al.^[28] reported alpha Cronbach coefficient of 0.75 for tAs intervention program, the MBSR program of Kabat-Zinn^[29] in eight 120-min sessions was carried. Table 1 shows the sessions' content. Furthermore, in this study, ISTDP protocol of Davanloo^[30] was implemented in eight 120-min sessions. The content of these sessions are shown in Table 2.

To do this study, the fibromyalgia patients meet the inclusion criteria which were included in the study upon their informed consent. Thirty-six participants were randomly divided into a control group, an MBSR group, and an ISTDP group [n= 12 per groups]. The objectives and phases of the research, confidentiality of the results, and freedom of withdrawal from the study were explained to the participants. They completed the questionnaires in the pre-test phase. The MBSR and ISTDP interventions were implemented in eight 120-min sessions, but the control group received no intervention. When the sessions were completed, the participants in all three groups were re-evaluated. A follow-up

phase was carried out three months after the posttest phase, and the three groups filled out the questionnaires again. There was no communication between the control and intervention groups. Furthermore, the training material was provided to the control group in the form of a training package at the end of the study for ethical reasons.

To analyze data descriptive statistics [e.g., means and standard deviations] and inferential statistics [including, repeated measures ANOVA and the Bonferroni post hoc test] were employed to analyze the information. SPSS-25 was used to analyze the data.

Findings

The participants included 36 patients with fibromyalgia. The age of the patients in the MBSR, ISTDP, and control groups were 37.915.28±, 41.776.21±, and 38.26±5.63 years, respectively. Table 3 shows the mean and standard deviation [pretest, posttest, and follow-up] of research variables. The Kolmogorov-Smirnov test demonstrated the normality of the data. Levene's test showed the equality of variances of the variables for the groups in the pretest, posttest, and follow-up phases.

A repeated measures ANOVA was used to measure the significance of the difference between the mental health and alexithymia scores of the two intervention groups and the control group. The results of repeated measures ANOVA for the variables of mental health and alexithymia in the studied groups revealed that the intergroup effect was significant [$P < 0.001$]. This suggested that at least one of the groups differed in at least one of the two variables. The intragroup effect was also significant for the variables of the research implying that the mean changed in line with the change from the pretest to the follow-up phase at least in one of the variables [$P < 0.001$] (Table 4). According to Table 4, ANOVA was significant

Table 2) A summary of the Intensive Short-Term Dynamic Psychotherapy protocol

Session	Content
1	Asking questions/pushing to touch feelings/challenging transference resistance/focusing on the patient's feelings/working on the triangle of conflict/ analyzing cost-benefit of defenses/ investigating other problems of the individual and prioritizing them
2	Pushing and challenging the defenses/acquiring a relative understanding of the self-destructive nature of defenses/gaining a relative understanding of the triangle of conflict/specifying and clarifying the defenses/arousing the patient against the self-destructive nature of maladaptive defenses/exploring the unconscious dynamically
3	Studying the patient's adjustment capacity /investigating the physical path of the patient's anxiety/ examining the patient's conscious tolerance of anxiety/investigating whether all three components of emotions (i.e., cognitive, physiological, and behavioral) are experienced/determining which of the emotions the patient is aware of and which unaware of
4	Determining whether defenses are compatible with the patient or not/finding out whether the defenses are oriented externally or internally/observing the defenses when anxiety increases and clarifying them at such times/observing the gradual confrontation of the patient with the defenses
5	Clarifying the nature of the therapy for the patient/making it clear that there must be cooperation between the therapist and patient/clarifying the therapy goals/enhancing the therapeutic alliance
6	Concentrating on the current state side of the triangle of person and relating it to the transference side in the triangle / focusing on directly touching and experiencing feelings in transference and clarifying and challenging the defenses/dynamically exploring the patient's past and the patterns of communication between the patient and the people important in his/her life/investigating the corners of the triangle of conflict in relation to important people in the past/focusing on the similarities and differences between the communication and defense patterns
7	Linking the triangle of conflict with transference/linking the triangle of conflict with the current state/linking the current state with transference/focusing on the similarities between the defense and communication patterns and defense patterns at the corners of the triangle of person
8	Trying to make the patient aware of their communication and defense patterns/focusing on how the patient defends against painful feelings and emotional closeness at all three corners of the triangle/concentrating on insights obtained by the patient in order to analyze them/encouraging the patient to use more mature defenses/urging the patient not to suppress feelings and adopt a realistic and honest perspective about feelings

Table 3) Mean and standard deviation of the variables in experimental and control groups

Variables	phases	MBSR	ISTDP	Control
		Mean \pm SD	Mean \pm SD	Mean \pm SD
Mental health	Pretest	75.00 \pm 1.68	74.17 \pm 1.27	75.50 \pm 1.52
	Posttest	72.92 \pm 1.44	70.50 \pm 1.45	75.83 \pm 1.11
	Follow-up	71.75 \pm 1.10	70.30 \pm 1.77	75.56 \pm 1.15
Alexithymia	Pretest	64.42 \pm 1.62	65.08 \pm 1.88	63.67 \pm 1.67
	Posttest	62.23 \pm 1.60	60.33 \pm 1.37	63.75 \pm 1.71
	Follow-up	62.20 \pm 1.97	60.35 \pm 1.74	63.60 \pm 1.68

MBSR: Mindfulness-Based Stress Reduction; ISTDP: Intensive Short-Term Dynamic Psychotherapy; SD: Standard Deviation

Table 4) Repeated measurement results for the effects of time and interaction time and group

Variables	Source	SS	DF	MSe	F	P	η^2
Mental health	Time	119.46	1.13	105.72	148.15	0.001	0.84
	Time \times group	93.95	2.26	41.75	116.52	0.001	0.80
	Group	34.06	2	17.32	41.21	0.001	0.74
Alexithymia	Time	400.08	1.13	354.02	261.46	0.001	0.90
	Time \times group	277.06	2.26	122.59	181.07	0.001	0.86
	Group	39.02	2	19.51	61.26	0.001	0.81

SS: Sum of Square; DF; Degree of Freedom; MS; Mean Squared error

for the intragroup factor [time] and intergroup factor. Hence, it can be said that the time effect was individually significant, considering the group effect. In addition, the group-time interaction was also significant [$P < 0.001$].

For the pairwise comparison of the groups, the Bonferroni post hoc test was employed. The results indicated that the MBSR and ISTDP groups showed mental health improvement and alexithymia mitigation compared to the control group in the posttest phase [$P < 0.05$]. Furthermore, comparison of the MBSR and ISTDP intervention groups showed that there were significant differences between them in the scores for mental health and alexithymia [$P < 0.05$]: the ISTDP group showed higher improvement in mental health improvement and alexithymia mitigation [Table 5].

Discussion

This study aimed to compare the effectiveness of MBSR and ISTDP in improving mental health and mitigating alexithymia in fibromyalgia patients. The results showed that MBSR and ISTDP mitigated alexithymia and improved mental health in fibromyalgia patients. However, ISTDP was more effective than MBSR in mitigating alexithymia and improving mental health and had longer durability in the follow-up phase. Earlier works did not compare MBSR and ISTDP interventions with respect to effectiveness.

However, their improvement of mental health and alexithymia were separately studied. The findings of the present work support the importance of MBSR and ISTDP interventions in mental health and alexithymia. This finding is consistent with the results of previous studies [18, 19, 22, 23]. It was found that these interventions were effective in mitigating alexithymia and improving mental health.

It was observed that both MBSR and ISTDP programs were effective; however, ISTDP was more effective and durable in the follow-up phase. These interventions emphasized cognition and insight, except that MBSR enhanced flexible cognitive activities, whereas ISTDP emphasized emotional conflicts. The better performance of ISTDP can be explained by relying on the theoretical dimensions. The MBSR and ISTDP interventions have different therapeutic approaches. The MBSR process trains mindfulness meditation in the context of mind-body medicine to reduce stress and improve quality of life. It can be said that mindfulness-based techniques play an effective role in preventing emotional arousals and impulsive behaviors and in mitigating alexithymia and reducing negative emotional experiences. Mindfulness methods are effective in reducing negative emotions and thus enable patients to convert their subjective knowledge and attitude and the value of their human life into objective

Table 5) Bonferroni post-hoc test for paired comparison of the variables in the posttest phase

Variables	Groups	Mean difference	SE	P
Mental health	MBSR - Control	2.91	0.53	0.001
	ISTDP - Control	5.53	0.53	0.001
Alexithymia	MBSR - ISTDP	-2.42	0.59	0.001
	MBSR - Control	1.52	0.68	0.036
	ISTDP - Control	3.42	0.63	0.001
	MBSR - ISTDP	-1.90	1.61	0.004

MBSR: Mindfulness-Based Stress Reduction; ISTDP: Intensive Short-Term Dynamic Psychotherapy; SE: Standard Error

capabilities and use them to live a positive and happy life. Mindfulness training enhances factors such as not judging, not behaving reactively, and acting mindfully^[31]. In MBSR techniques uses to change patients' attitude toward coping with thoughts and emotions and directs them toward correcting unpleasant emotions and accepting them so that the patients develop self-control over their emotions and show higher levels of emotional self-regulation. Mindfulness interactions lead to processes that are the basis of well-being and mental health^[18]. On the other hand, ISTDP directly clarifies the defenses and then applies pressure to experience feelings and challenge the defense barriers. Mindfulness helps patients deal with the present rather than the past or future and give up instantaneous future objectives, whereas ISTDP provides the opportunity for the patient to experience original feelings more deeply and quickly^[22]. As another explanation for the higher effectiveness and longer durability of ISTDP than MBSR, it can be said that one of the dimensions of the higher efficiency of ISTDP compared to MBSR is that it relies on the essential principles to access the unconscious forces that stimulate non-adaptive behaviors. According to ISTDP, the current emotions and behaviors of a patient are in fact based on their past experiences. Putting the patients under pressure and arousing their emotions in therapeutic

sessions push away their defenses, and the buried experiences related to these emotions emerge from the unconscious. This links the past experiences with the present ones and allows preparation and interpretation of a pattern^[23]. The expression of emotions in a safe along with clarification and without the feeling of being abandoned by the therapist in ISTDP sessions leads to alexithymia mitigation. In other words, once emotional conflicts have been resolved, the patient can be present in a group without feeling rejected and prevent the projection of the past experiences to the present^[24]. Alexithymia appears when forbidden feelings and thoughts are stimulated, and the patient is unaware of their unconscious underlying feelings. In ISTDP, this reduction in alexithymia substantially helps in decreasing alexithymia and mitigating clinical symptoms in fibromyalgia patients by influencing abreaction and controlling carefully and monitoring moment by moment emotions, feelings, and defenses. The costs of maladaptive defenses are clarified to the patients, and adaptive defenses gradually replace the maladaptive ones. Fibromyalgia patients can then be in contact with their emotional pain in ISTDP and, after abreaction, their feelings and emotions become gentler. Then, stress, non-acceptance, fear, anxiety, depression, and other mental health disorders are mitigated, leading to improved mental

health [22]. Furthermore, according to what happens in ISTDP according to the triangle of conflict and the triangle of person [active confrontation with the defenses], pushes the patients to experience their real feelings in the moment. Hence, ISDTP can be more effective and durable in light of patients facing the unconscious and anxiety provoking conflicts. This reorganizes the "self" and helps the patients give up sick defenses thus improving the psychological capacity and, finally, the mental health of fibromyalgia patients. ISTDP enhances the patient's insight into repeated conflicts [intrapsychic and interpersonal ones] and into blows that cause creation and continuance of problems for the patients. It also increases the patient's understanding of the "self;" i.e., gaining deep insight, which is one of the important aspects of the process of change in his/her personality structure [24]. In fact, gaining insight refers to the cognitive and emotional understanding of internal conflicts, interpersonal patterns, and repetitive behaviors and their association with past experiences. Research has shown that increased insight during the therapeutic period has positive outcomes, e.g., positive personality capabilities, healthier communications with other people, improved quality of life, and improved mental health. In the ISTDP process, patients gain insight into internal conflicts [in the conflict triangle] and into how these conflicts are repeated in life [the triangle of person]. They learn not to hide their emotions behind the defenses [23]. Moreover, once they have reviewed the buried unpleasant memories, they acquire new corrective experiences in therapy sessions and gradually move toward moderation, self-regulation, and hence higher levels of mental health. The findings are to be carefully generalized to other communities because the sample was limited to female patients with

fibromyalgia in Tehran. This study employed questionnaires to collect data, and future works should be aware of the shortcomings of such tools.

Conclusion

The MBSR and ISTDP interventions were effective in mitigating alexithymia and improving mental health in fibromyalgia patients. Therefore, it is suggested that clinical psychologists use such interventions to improve quality of life for patients with fibromyalgia. To moderate mental health issues and control the mental health and alexithymia in fibromyalgia patients, it is suggested that the positive aspects of ISTDP be considered a new construct in psychology. ISTDP is an efficient and effective approach to mental health and alexithymia. It is suggested that ISTDP sessions be held extensively for fibromyalgia patients. It is also suggested that healthcare centers and psychotherapy clinics exploit ISTDP techniques to correct emotions, enhance psychological capacities, and improve the quality of life for fibromyalgia patients. It is suggested that psychotherapists use the findings of this research in developing clinical and educational interventions and the ISTDP approach to mitigate alexithymia and improve mental health in fibromyalgia patients and help in reducing disorder symptoms.

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