

The Effect of Mindfulness Psych-Educational Group Intervention on Improving Sexual Function of Women with Multiple Sclerosis

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Abstract

Background: Chronic diseases such as Multiple Sclerosis (MS), as one of the hot topics in the literature, have frequently been associated with sexual dysfunction.

Objectives: The present study aimed to investigate the effect of mindfulness psycho educational group intervention on improving the sexual function of women with MS.

Methods: To this end, 350 women with MS from Isfahan province, who had medical records in Kashani Hospital and Isfahan MS Center, were first screened out by the Female Sexual Function Index (FSFI), among whom the ones scored below 28 were clinically diagnosed with sexual dysfunction. Then 47 patients with sexual dysfunction were randomly assigned to experimental (N=24) and control (N=23) groups using the simple random sampling method. The experimental group received five sessions of Mindfulness-Based Group Psychotherapy; however, the control group received no treatment. The two groups were assessed by a pre-test, post-test, and two follow-ups (one and two months after the end of the intervention, respectively), and MANCOVA was used to analyze the data in SPSS software 16.

Results: According to the results, mindfulness-based psycho educational group therapy was effective in improving the sexual function of women with MS in all the six domains (namely desire, arousal, lubrication, orgasm, satisfaction, and pain) and the total FSFI score ($p \leq .05$).

Conclusion: The findings revealed the effectiveness of psycho educational group intervention in improving the sexual function of women with MS. Accordingly, clinicians and therapists working with this group of women are recommended to include mindfulness in their interventions.

Keywords: *multiple sclerosis (MS), women, mindfulness psycho educational group intervention, sexual function*

Introduction

Multiple Sclerosis (MS) is a chronic autoimmune and inflammatory disease affecting the brain and spinal cord neurons in the central nervous system and the electrical conduction of nerve signals [1,2]. Charcot, a French neurologist, well-

described MS in the early 1868 [3]; however, some epidemiological studies [4,5] suggest that MS results from the interaction of a complex genetic background with environmental factors. MS is more prevalent among women [6], whose symptoms are fatigue, blurred vision, weakness,

decreased mobility, bladder and bowel dysfunction, sensory problems, impaired sexual function, cognitive impairment, mood disorders, and neurological disorders [7].

Rosen et al. [8] defined women's sexual function regarding six domains (namely desire, arousal, lubrication, orgasm, satisfaction, and pain). This debilitating disease is more prevalent among individuals aged 18-50 years who are sexually active. It not only leads to physical disabilities but also may arouse sexual dysfunction [9].

Although the prevalence of sexual disorders is high among women with MS, little information is available about removing sexual disorders among these women [10]. Furthermore, health care providers often do not inquire about these patients' sexual problems, and patients rarely voice their sexual concerns. However, relevant research has highlighted the significance of sexual counseling for the MS patients. Accordingly, health care providers dealing with patients suffering from MS should inquire about their sexual function and possible disorders solicitously and examine the extent of sexual dysfunction and its impact on their marital relations and the quality of their lives so that they would find the best way to reduce or eliminate such underlying problems [11]. Studies have revealed that the biological and psychological factors, either alone or in combination with each other, are the leading causes of sexual dysfunction in the MS patients [12].

Mindfulness is one of the psychological interventions, which is defined by Kabat-Zinn [13] as being in the present moment intentionally and non-judgmentally. Since mindfulness focuses on living in the moment, Chodron [14] described it as a full consciousness when our senses are fully active.

Mindfulness-based cognitive therapy helps patients learn how to become aware of their physical feelings, thoughts, and emotions [15]. On the other hand, psychological problems such as depression, anxiety, stress, and fatigue in patients with MS affect how they adapt and focus on possible future problems. Accordingly, mindfulness allows them to challenge pervasive vulnerabilities [16]. When the mind concentrates on the past or the future, mindfulness non-judgmentally helps it come back to the present. In this regard, Segal et al. [17] claim that

mindfulness exercises are useful and practical for different individuals with different problems, including depression, insomnia, chronic pain, and sexual problems.

Moreover, mindfulness exercises promote various mindfulness factors such as observation and non-judgmental, non-reactive, and conscious action, resulting in psychological development [18]. Furthermore, as psychological factors may affect sexual function, interventions such as mindfulness may improve sexual functioning by promoting psychological well-being [19]. Furthermore, mindfulness leads to improved sexual performance by promoting marital and sexual satisfaction in couples [20].

Finally, many studies [21,22] have documented that the sexual dysfunction of patients with MS has received little attention; hence, the issue needs to be addressed in detail. Research on mindfulness indicates that mindfulness-based therapy can be considered as an effective psychological intervention improving psychological well-being, promoting the psychological dimension of quality of life, and consequently promoting the sexual function in patients with MS [23]. As one of the strengths of physical and medical treatments, such therapy would reduce the suffering of these patients. However, to the best knowledge of the researchers knowledge, few, if any, research has examined the effect of mindfulness therapies on women's sexual function. Accordingly, the present study aimed to investigate the effectiveness of mindfulness-based psycho educational group therapy in improving the sexual function of women with MS.

Methods

The statistical population of the present study encompassed 4000 women with MS in Isfahan, Iran, who had a medical record in Kashani Hospital and Isfahan MS Center. The sample consisted of 350 women with MS who were selected based on Morgan's table and with regard to the medical records and inclusion and exclusion criteria. They were then screened using the Female Sexual Function Index (FSFI) (scores <28), according to which 240 women had sexual dysfunction. In the next step, 47 women were selected using the simple random sampling method, of whom 24 women were randomly assigned to the experimental group, and 23

women were in the control group (Figure 1). Inclusion criteria were having a sexual partner, willingness to participate in the study, having sexual dysfunction based on initial screening and medical records, and not suffering from mental disorders and chronic physical illnesses other than MS. Exclusion criteria were non-participation in the intervention for more than two sessions, pregnancy, divorce or separation, not doing the

assignments, or lack of interest in continuing the intervention.

To avoid any bias, the participants and individuals in contact with them, including physicians and clinical caregivers, had no information about the assignments of the experimental group and mindfulness intervention; hence, the study was a single-blind one.

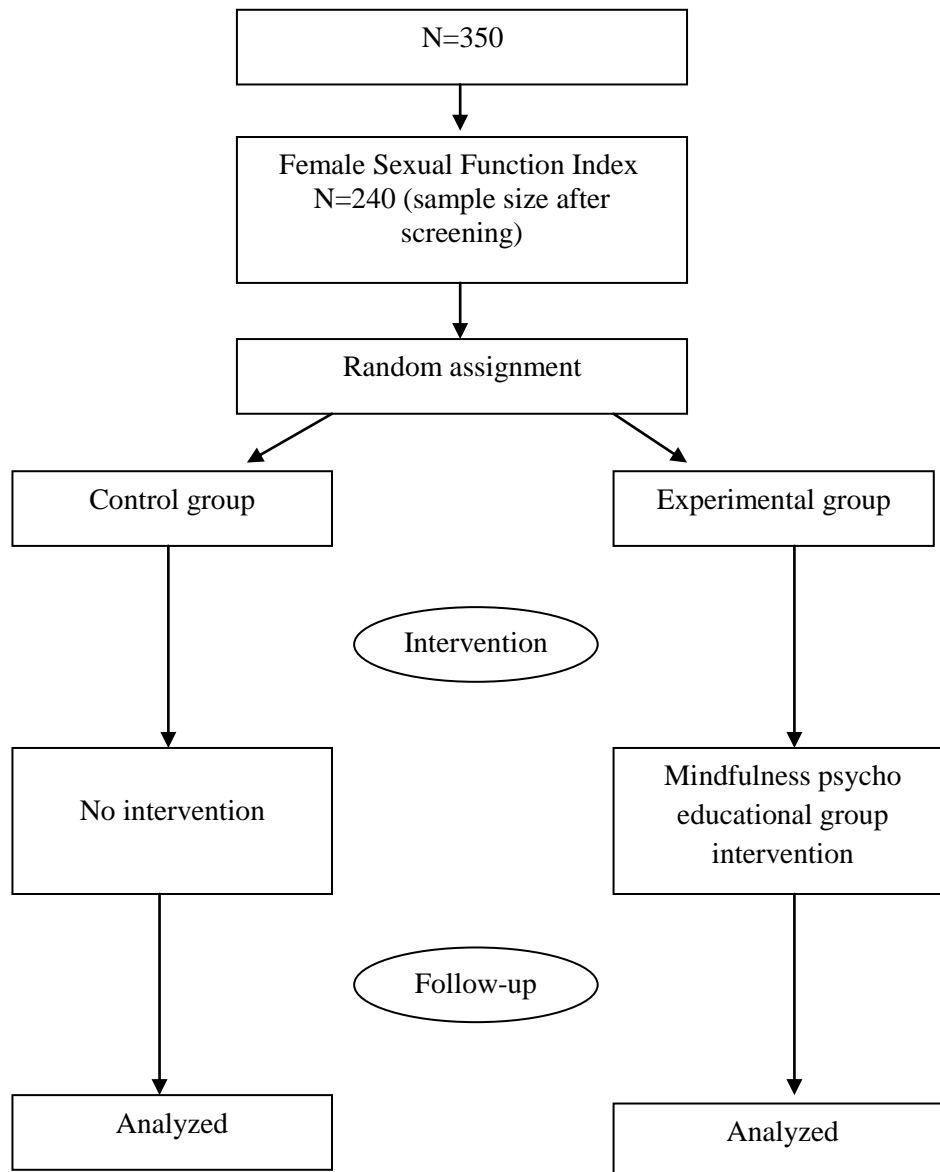


Figure 1: Sampling procedures

The Female Sexual Function Index (FSFI) [8], a 19-item self-report questionnaire, evaluated female sexual function and comprised the

following six domains: desire (e.g., How often did you feel sexual desire or interest?), arousal (e.g., How often did you feel sexually aroused (“turned

on”) during sexual activity or intercourse?), orgasm (e.g., How often do you reach orgasm when you have sexual stimulation or intercourse?), pain (e.g., How often did you experience discomfort or pain during vaginal penetration?), lubrication (e.g., How often did you become lubricated (“wet”) during sexual activity or intercourse?), and satisfaction (e.g., How satisfied have you been with your sexual relationship with your partner?). The test-retest reliability of the six domains ranged from 0.79 to 0.86, and the reliability of the total score was 0.88 [8]. Mohammadi et al. [23] validated the FSFI in Iran, and the reliability coefficients of the domains, estimated by Cronbach’s alpha, were 0.70, 0.75, 0.93, .90, 0.90, and 0.84. The reliability of the total score was 0.92.

After obtaining the informed consent, the experimental group received mindfulness psycho educational intervention to improve their sexual function; however, the control group received no intervention. Furthermore, FSFI was administered

to the two groups in the pre-test, post-test, and two follow-up stages (one and two months after the intervention, respectively). The results were analyzed using Multivariate Analysis of Covariance (MANCOVA) with SPSS software version 23. The training sessions were held by a Ph.D. student of Psychology, who was professionally working on women with sexual dysfunction. This single-blind study was approved by the Ethics Committee of the Islamic Azad University, Shahrekord Branch (Code: IR.IAU.SHK.REC.1400.001). It should be noted that the control group participated in a Mindfulness psycho educational group workshop at the end of the study.

The mindfulness psycho educational intervention [24] was conducted in five 90-min sessions with two-week intervals. This intervention contained education, cognitive behavioral therapy (CBT), and mindfulness-based therapy. Table 1 summarizes the intervention sessions.

Table 1: Summary of mindfulness psychoeducational group intervention (Hocaloski et al., 2016, p. 187)

Topic	Theme
Education	Prevalence, the four Ps (namely predisposing, precipitating, perpetuating, and protective factors), anatomy and physiology of physical response, sexual desire, relationship evaluation, relationship enhancement/ communication exercise, Kegels, and sexual aids
Mindfulness	Introduction to mindfulness, self-observation, self-observation, and touch, mindfulness of thoughts in life, self-sensate focus, body mapping, partnered senate focus, mindfulness, and observing judgments
CBT	Common sexual beliefs, body image, CBT model, thought record

Results

The participants’ demographic information, including age, level of education, and others are

shown in Table 2.

Table 2: The participants' demographic information

Demographics	Experimental group	Control group
	N(%)	N(%)
Age	19-29	4(15.21)
	30-40	16(66.66)
	41-48	5(20.83)
Education	Diploma	12(52.17)
	Bachelors degree	9(39.13)
	Masters degree	2(8.69)
Duration of the disease (years)	0-5	7(30.43)
	5-10	10(43.47)
	10>	6(20.08)
Disease conditions	Recurrence and recovery	21(91.30)
	Recurrence-progressive	1(4.34)
	Primary-progressive	0(0)
	Secondary-progressive	1(4.34)
Socio-economic Status	Low	4(17.39)
	Medium	16(69.56)
	High	3(13.043)

To investigate the effectiveness of mindfulness psycho educational group intervention in improving the sexual function of women with MS, MANCOVA analysis was used to test the significant differences between the experimental and control groups' mean scores in the six domains (namely desire, arousal, orgasm, pain, lubrication, and satisfaction) and total FSFI scores in pre-test, post-test, and two follow-up phases.

The descriptive statistics of the two groups are presented in Table 3.

According to the findings, there was no significant difference between the two groups before the intervention regarding the six domains and the total FSFI score; however, the scores changed in the post-test and follow-up stages ($p \leq .05$) (Table3).

Table 3: Descriptive statistics of experimental and control groups regarding the six domains and the total FSFI score

Variable	Experimental group		Control group		P value
	M	SD	M	SD	
Pre-test					
Desire	3.25	.58	2.8	1	.06
Arousal	3.07	.83	2.71	.93	.1
Lubrication	2.85	1.15	3	1.32	.08
Orgasm	3.2	1.29	2.59	1.21	.06
Satisfaction	4.1	.77	3.72	.8	.14
Pain	4.58	1	4.41	1.12	.09
Total score	21.06	3.52	19.21	4.75	.08
Post-test					
Desire	3.92	.79	2.86	.87	.02
Arousal	4.06	.85	2.66	.81	.00
Lubrication	4	1.04	3.22	1.06	0.01
Orgasm	4.66	1.09	2.93	1.41	.001
Satisfaction	4.58	.83	3.79	.94	.32
Pain	5.21	.87	4.29	1.23	.002
Total score	26.55	4.16	19.81	4.26	.02

Follow-up 1*					
Desire	3.85	.65	2.77	.86	.04
Arousal	2.92	.77	.66	.74	.005
Lubrication	4.03	1.05	3.23	.96	.01
Orgasm	4.8	1.15	3.09	1.13	.002
Satisfaction	4.53	.86	3.79	.89	.12
Pain	5.16	.87	4.19	1.2	.02
Total score	26.28	4.01	19.29	3.85	.02
Follow-up2**					
Desire	3.87	.56	2.93	.61	.004
Arousal	3.66	.74	2.53	.65	.01
Lubrication	4	.98	3.06	.85	.03
Orgasm	4.81	1.12	2.83	.97	.03
Satisfaction	4.46	.82	3.47	.75	.001
Pain	5.1	.88	4.26	1.16	.001
Total score	25.89	3.76	19.08	3.77	.01

*Follow-up 1: after one month

**Follow-up 2: after two months

Moreover, the results of Wilks' Lambda revealed a significant difference between the experimental and control groups in at least one dependent variable (Wilks' Lambda: $F_{21,16}=4.36$, $p=.00$). Table 4 represents the difference.

As shown in Table 4, the difference between the experimental and control groups is significant for all the six domains and the total score in the post-test phase as well as the first and the second follow-ups. However, the difference between the groups was not statistically significant concerning the post-test and the first follow-up of the satisfaction domain. Moreover, the efficacy of the mindfulness psycho educational group intervention ranged from 23% to 51%, and the observed power indicated the adequacy of the sample size. Furthermore, the experimental group had higher scores on the desired domain after the intervention in the post-test stage, compared to the control group, and the same result was also noticed in the first and the second follow-ups. Considering the arousal component, the experimental group obtained higher post-test scores than the control group, and the same came true for the first and the second follow-ups. The

same was found when comparing the experimental and control groups in the post-test phase regarding the lubrication domain and the first and the second follow-ups.

Regarding the orgasm domain, the experimental group obtained higher scores than the control group after the intervention in the post-test stage. The same was found in the first and second follow-ups. In the case of the pain domain, the experimental group obtained higher scores after the intervention in the post-test phase compared to the control group, and the same was found in the first and the second follow-ups. Considering the satisfaction domain, the experimental group obtained higher scores in the second follow-up phase than the control group. Finally, the comparison of the total scores showed that the experimental group received higher scores than the control group in the post-test phase, and the same was found in the first and the second follow-ups. In general, these findings confirmed the effectiveness of mindfulness psycho educational group intervention in improving the sexual function of women with MS.

Table 4: Comparison of difference of sexual function mean scores in Experimental and Control groups

Stage	Dependent variable	Sum of Squares	df	Mean Square	Mean Difference (I-J)**	Std. Error	P-value
After intervention	Desire	6.53	1	6.53	.89*	.25	.001
	Arousal	11.31	1	11.31	1.17*	.25	.005
	Lubrication	4.77	1	4.77	.76*	.23	.008
	Orgasm	16.26	1	16.26	1.41*	.29	.01
	Pain	1.22	1	1.22	1.04*	.27	.003
	Total score	8.84	1	8.84	5.78*	1.06	.02
Follow up 1	Desire	272.65	1	272.65	1.01*	.23	.03
	Arousal	8.32	1	8.32	1.07*	.21	.008
	Lubrication	9.44	1	9.44	.83*	.25	.001
	Orgasm	5.68	1	5.68	1.43*	.31	.004
	Pain	16.75	1	16.75	1.17*	.25	.02
	Total score	.81	1	.81	5.7*	1.07	.01
Follow up 2	Desire	11.25	1	11.25	.77*	.18	.002
	Arousal	265.47	1	265.47	.98*	.22	.007
	Lubrication	4.84	1	4.84	.9*	.24	.005
	Orgasm	7.87	1	7.87	1.69*	.28	.009
	Satisfaction	9.73	1	9.73	.74*	.21	.011
	Pain	23.33	1	23.33	.81*	.23	.015
	Total score (follow-up 2)	4.75	1	4.75	6.07*	.98	.009

*The mean difference is significant at $p=0.05$.

**Experimental-control group's mean difference

Discussion

The results revealed that the intervention positively significantly influenced the sexual function of the participants in all the six domains, namely desire, arousal, lubrication, orgasm, satisfaction, and pain, and the total score of FSFI. The findings of some studies on the sexual disorders of women, not exclusive to women with MS, are consistent with the present study's findings. For example, Brotto et al. [25] reported that mindfulness dramatically improves several dimensions of the sexual response and reduces sexual anxiety in women with impaired sexual desire and arousal. Paterson et al. [26] also concluded that mindfulness-based cognitive therapy could effectively regulate women's sexual dysfunction. Similarly, Vilarinho [27] referred to the promising effect of mindfulness on women's sexual dysfunction. Brotto and Basson's [28] findings are also in line with those of the present study as they reported that mindfulness therapy increases sexual desire, arousal, lubrication, and satisfaction and improves women's sexual function. According to Brotto et al. [29], genital-

subjective sexual arousal concordance significantly increased after mindfulness intervention, and changes in subjective sexual arousal predicted contemporaneous genital sexual arousal; hence, mindfulness therapy improves sexual function. Shabani and Abdi [30] concluded that mindfulness affects many psychological variables such as sexual dysfunction and sexual satisfaction among women with spouses' extra-marital relationships.

Leavitt et al. [31] stated that the participants' understanding of the change mechanism indicates that they spare their efforts to reduce their attention to their sexual experience or emotions, communicate more effectively, and then share those feelings or thoughts with their partner non-judgmentally and receptively. Leavitt et al. [32] mentioned that sexual mindfulness play an important role in relationship between well-being and self-esteem in middle-aged men and women; hence, therapists should help individuals acquire mindfulness skills during sexual experiences. Farajkhoda et al. [33] concluded that mindfulness-

based cognitive therapy is effective and practical in improving sexual satisfaction.

Kegel exercises included in the present study strengthened the pelvic floor muscles; thus, they improve vaginal friction and muscle function during intercourse. Furthermore, they enhance the number of motor neurons and blood circulation in the vaginal area [34] and rhythmic contractions and control the clitoris condition during orgasm. Finally, these exercises increase sexual arousal [19], and improved sexual arousal can thus increase vaginal lubrication levels, proper orgasm, and satisfactory sexual function. Shioukhi Soqanlou's et al. [35] findings are in line with those of the present study. These researchers showed that sexual awareness training is effective in promoting women's sexual satisfaction and sexual function. Mosalanejad et al. [19] also concluded that mindfulness-based stress-relieving intervention is effective in the sexual function of women with MS.

Segal et al. [36] stated that individuals get aware of experiences and the mind's automatic functioning in the past and future by focusing on the present, as an attribute of mindfulness-based exercises. Furthermore, as a result of the moment-by-moment awareness of thoughts and feelings, the physical states can be in the present moment without falling into the trap of the past or the future. Similar to Segal et al. [36], Velten et al. [37] showed that mindfulness-based interventions make women focus on their physical arousal at the moment and may increase their sexual arousal during sexual activity, which, in turn, improves their sexual function.

Mindfulness therapy allows an individual to pay more attention to external and internal stimuli such as emotions, cognitions, sounds, and smells. Accordingly, after being aware of the mind, an individual is likely to pay more attention to the external and internal stimuli during the sexual relationship (e.g., physical symptoms, feelings and emotions, and sexual partner). The individual would also better understand the signs of sexual desire. Mindfulness therapy also arouses sexual desire, thereby bringing about better orgasm and, subsequently, higher satisfaction. Furthermore, as an individual acquires the ability to describe the sensitive parts of the body and their resulting emotions non-judgmentally via observation, attention, and touching their sexual organs,

desirable outcomes are achieved regarding the sexual relationship.

Some previous studies on mindfulness [38] have indicated that mindfulness training is effective in reducing negative automatic thoughts, anxiety, and inefficient judgment about thoughts and feelings. Accordingly, mindfulness during sexual activity might make individuals focus more on their relationships and ultimately improve their sexual function.

Unresponsiveness to inner experiences implies that one can only observe them and allow them to come and go with no engagement in inner thoughts and feelings [39]. The present findings are in line with the underlying methodology of mindfulness therapy, which aims to teach individuals how to avoid reactive behaviors and select an appropriate response in different situations [40]. In other words, mindfulness-based therapy helps individuals avoid getting involved in inner thoughts and feelings during sexual intercourse. Unresponsiveness to inner experiences make individuals experience the current feelings and emotions more obviously, leading to improved sexual function.

To help women understand how sexual problems develop, this study used the biopsychological formulation model developed by Engel [41] as the intervention. This model presents the biological, psychological, and social factors predisposing individuals to sexual dysfunction and introduces factors accelerating, perpetuating, and protecting against sexual problems. Furthermore, this general framework increases individuals' awareness of their sexual dysfunction and ways to overcome it.

Preliminary information about women's sexual structure (namely clitoris, vaginal, labia, and hymen) was provided by some anatomy images. The intervention also encompassed a review of women's sexual cycle to help individuals understand their sexual experience arousal. Moreover, they were provided with some information about sexual fantasies, arousals, and common sexual beliefs. Then the relationship and its components were evaluated with regard to the patients' recent sexual experiences. Gottman and Silver's communication principles [42] were also taught to strengthen marital relationships. The present findings, which are in line with those reported by MerghatiKhoei et al. [43], showed

that sexual training could improve sexual function. In other words, discussing the sexual structures and relevant components in sexual experience and familiarity with the underlying causes of sexual dysfunction can be useful in providing a more desirable sexual function.

In mindfulness training, the unconscious state of mind is compared to an autopilot, in which actions are performed automatically and mechanically with no mental awareness. Following this mindfulness-based intervention, which emphasizes the highlighted role of consciousness, sexual activity is likely to become a conscious act to prevent individuals to act automatically. Furthermore, during sexual intercourse, the awareness of sexual desire and arousal develops by the moment-by-moment presence of the mind; hence, the person consciously experiences the pleasurable feelings in his/her body and the physical and emotional states of the sexual partner during the intercourse. By performing mindfulness exercises, an individual acquires the ability to live in the present moment under different conditions. Accordingly, after teaching the mindfulness principles in this intervention, exercises were provided to observe and focus on the sexual organs and touch the genitals, helping the patients experience sensory concentration during sexual activity. This makes the patient experience a better orgasm due to the reduced anxiety resulting from this exercise.

The CBT models of training were introduced after mindfulness intervention to make patients be familiar with their thoughts, feelings, and behaviors in sexual situations. By recording thoughts in recent experiences, the patient practices how to replace automatic and irrational thoughts with more appropriate ones. Since training was introduced after mindfulness training, replacing correct cognitions with inhibitory and incorrect cognitions seems to put an individual on the path of having a conscious sexual activity, which may ultimately improve sexual function. Some studies [44] have confirmed the effectiveness of CBT in improving female sexual function.

Concerning the limitations of the study, this study was limited to women with MS in Isfahan province. Moreover, a self-report measure was used for data collection. Accordingly, future

researchers are recommended to investigate the sexual problems among men with MS and also use other data collection instruments such as interviews to obtain more comprehensive information about sexual function.

Conclusion

The present study was to investigate the effectiveness of mindfulness psycho educational group intervention in improving the sexual function among women with MS and revealed promising findings. Some adequate measures have also been adopted to improve the quality of life in patients with MS in Iran; however, given the wide range of disorders associated with MS and their direct or indirect impact on the patients' lives and the high cost of the MS treatment, researchers and therapists have paid less attention to the sexual function among these patients.

The present findings are applicable for women with MS, physicians, psychologists, and the family members of these patients. Moreover, the findings can provide the grounds for other researchers who are interested in this field. It is hoped that therapists and clinicians help to improve the sexual function of women with MS and other patients with similar physical disabilities by conducting mindfulness-based interventions and highlighting the role of enhanced awareness. Further, the intimate relationships of couples affected by this disease and prevent separation as one of the consequences of sexual dysfunction can be prevented.

A review of research on the treatment of women's sexual disorders indicates that mindfulness-based interventions effectively improve their sexual function. However, to the best knowledge of researchers, this study was among the few ones investigating the effectiveness of mindfulness intervention in improving the sexual function of women with MS.

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Conflict of interest

The authors report no potential conflict of interests.

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