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ORIGINAL PAPER

Effectiveness of Sexual Counseling Using BETTER Model to Promote Sexual Function and Satisfaction of Married Women with Multiple Sclerosis

Faezeh Ghafoori[1,2] · Maryam Bagheri[3] · Nahid Dehghan-Nayeri[4] · Zohreh Khakbazan[1] · Hamid Haghani[5] · Mahmoud Hedayatnejad[6] · Keshvar Samadaee-Gelehkolaee[1,7]

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Abstract
Sexual dysfunction is a common concern in women with multiple sclerosis (MS). This study aims to assess the effect of counseling based on the BETTER model (Bring up, Explain, Tell resources, Time, Educate, and Record) on sexual function and satisfaction in married women with MS. This randomized clinical trial included 72 married women between the ages of 18–49 years from the MS Society of Iran. The data were collected using a socio-demographic questionnaire, Female Sexual Function Index (FSFI) and the Index of Sexual Satisfaction (ISS) at three points in time. The intervention involved the use of the BETTER model-based counseling approach with married women during four weekly sessions. The control group received routine care. The results of the analysis showed that the mean of FSFI for the women in the intervention group improved at 8 and 12 weeks after the counseling compared to the control group ($p<0.001$). However, a significant difference was not observed between the mean score of ISS among the women in the intervention group compared to the control group ($p=0.06$). These results suggest that intervention based on the BETTER model counseling can significantly improve the sexual function of married women with MS. However, in order to improve the sexual satisfaction of these women multidisciplinary interventions are also recommended.

Keywords BETTER model · Sexual counseling · Sexual function · Sexual satisfaction · Women · Multiple Sclerosis · Iran

Introduction

Multiple sclerosis (MS) is a chronic neurological disease [1]. More than 2.3 million people worldwide have been diagnosed with MS [2, 3]. The prevalence of MS is at least 51.9 per 100,000 in Iran, with the female to male ratio being 3:1 [4, 5]. Affected women are often reproductive age (between 20 and 40 years old) and at the peak of sexual activity. Because

Extended author information available on the last page of the article

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chronic illness and their treatment can negatively impact patients' sexual lives, [6–8], sexual dysfunction is a common concern in women with MS. [2, 9]. A population-based study showed that more than 31% of Iranian women with MS are suffering from sexual dysfunctions though little attention has been paid to how to approach addressing this issue [10].

The sexual dysfunctions often reported in these women include the loss of libido, dyspareunia, vaginal dryness, reduced vagina sensitivity, and reduced sexual pleasure [6, 11]. These sexual dysfunctions may involve nerve damage relate to MS and its consequences (e.g., fatigue, bladder dysfunction, intestinal dysfunction), as well as psychological contributors (e.g., depression, body image concerns, low self-esteem) [12, 13]; therefore, there are multiple intervention options [14, 15].

In recent decades various models have been suggested for improving counseling in sexual dysfunction, including the ALARM (Activity, Libido/desire, Arousal/orgasm, Resolution, Medical information), PLISSIT (Permission, Limited Information, Specific Suggestion, Intensive Therapy) and BETTER models (Bringing up the topic of sexuality, Explaining, Telling, Timing, Educate, and Recording) [15–18]. Among these models the BETTER model [18] appears to be an ideal fit to reduce the cultural barriers to providing and receiving sexual health care. More specifically, since Iranian women are not comfortable talking to providers about their sexual problems, it is advantageous that the provider starts conversations and clarifies the importance of sexual issues. Having providers set the stage may enhance sexual self-disclosure by female Iranian patients [19]. Further, the BETTER model can be a helpful guide for health care professionals in promoting sexual well-being in patients with cancer and other chronic illnesses [20]. This model consists of six stages with aims to ascertain the patient's concerns, understand the patient's actual experiences, and identify the best ways to improve the patient's sexual life [16, 21].

A review of studies has confirmed that sexual function is a core component of women with MS [22]. Due to the limitations of sexual education in Iran, couples, especially women, have little knowledge about sexual problems and therefore suffer a lot, which is in addition to the suffering of their physical illness. Therefore, the present study was done to determine the effect of sexual counseling using the BETTER model on sexual function and satisfaction in married women who are sexually active and diagnosed with MS.

Materials and methods

Study Design

This randomized controlled clinical trial study was carried out to evaluate the efficacy of the BETTER model-based counseling on the sexual function and satisfaction of women with MS.

Data Collection Tools

Main study questionnaires include:

1. The Female Sexual Function Index (FSFI) was used to assess the women's sexual function. The 19-item self-report questionnaire evaluates six dimensions of female sexual

function including desire, arousal, lubrication, orgasm, satisfaction, and pain. The reliability of this questionnaire in the Iranian version of FSFI have been assessed and well documented, also the Cronbach's alpha coefficient for the total scale was reported 0.70 and higher [23]. The cut-off point of the total FSFI score of the Iranian version was found to be 28 (sensitivity = 83% and specificity = 82%). A higher score of the total FSFI showed a better sexual function. Women who had a FSFI score equal or less than 28 were diagnosed to suffer from sexual dysfunction [23]. In this study, Intraclass correlation coefficient (ICC) of FSFI was 0.83.

2. The Index of Sexual Satisfaction (ISS) was used to assess the women's sexual satisfaction. This questionnaire is a validated 25-item self-reported measure and scoring of each item is based on a scale ranging from 0 to 6. The total ISS score ranges from 0 to 150 and higher scores indicate more sexual satisfaction. The reliability of Persian version was calculated by the Cronbach's alpha coefficient values for all positives and negative items were above 0.70 [24]. The Persian version of the ISS has a good validity and reliability in MS [25, 26]. In this study, ICC of ISS was 0.92.

Additional study questionnaires include:

3. A questionnaire contained socio-demographic and clinical status such as age, occupation, education, length of disease, onset age of MS, economic status, contraception method, number of children, length of medications for MS, and degree of physical disability, as determined by the neurologist's assessment on the EDSS (scoring between 0 and 10).
4. The Beck Depression Inventory-II (BDI-II) was used to assess the depression. It is a 21-item self-report measure. Scores range from 0 to 63 and a score less than 13 indicates minimal depression, a score between 14 and 19 shows mild depression, a score between 20 and 28 represents moderate depression, and a score equal to or more than 29 reflects severe depression [27]. BDI-II has been validated in the MS population [28, 29]. In this study, the ICC of BDI-II was 0.83.
5. The personal perception of fatigue in the patients was evaluated using the Fatigue Severity Scale (FSS) that was designed by Krupp and her colleagues [30]. It is a visual analogous scale consisting of 9 items that are rated on a 7-point scale; a score of 1 represents "strongly disagree" and a score of 7 suggests "strongly agree". A score below 2.8 indicated mild fatigue, a score between 2.8 and 5.1 showed average fatigue, and a score equal to or greater than 5.1 was considered severe fatigue. The validity and reliability of the Persian version of this questionnaire have been confirmed in several studies [31, 32]. In this study, the ICC of FSS was 0.87.

Inclusion and Exclusion Criteria

Participants were 18–49 years old married women who had a clear diagnosis of MS by a neurologist, had no other chronic condition save MS, were not pregnant, agreed to participate in the experiment, had a phone number for follow-up, and were sexually active in the previous six months.

In order to better measure the effect of the intervention, the research team decided to include only participants with sexual dysfunction (FSFI score $\leq$ 28) in the study. In addition, because fatigue, depression, and physical disability impact sexuality and are common

symptoms in patients with MS, they were carefully considered by the research team. It was decided that women with severe depression, severe fatigue, and/or severe physical disability would be excluded from the study due to these symptoms confounding the ability to detect the effect of the intervention. These women were referred to specialists for specific treatments. Additional exclusion criteria included MS relapse, pregnancy, and receiving treatment for sexual dysfunction, all based on self-report. In the end, women who had sexual dysfunction did not endorse severe fatigue or depression, and could walk at least 100 m with or without an aid were included in the study.

To determine the degree of sexual dysfunction participants completed the FSFI. Women who had a disorder in their sexual function (FSFI score ≤ 28) were then asked to answer

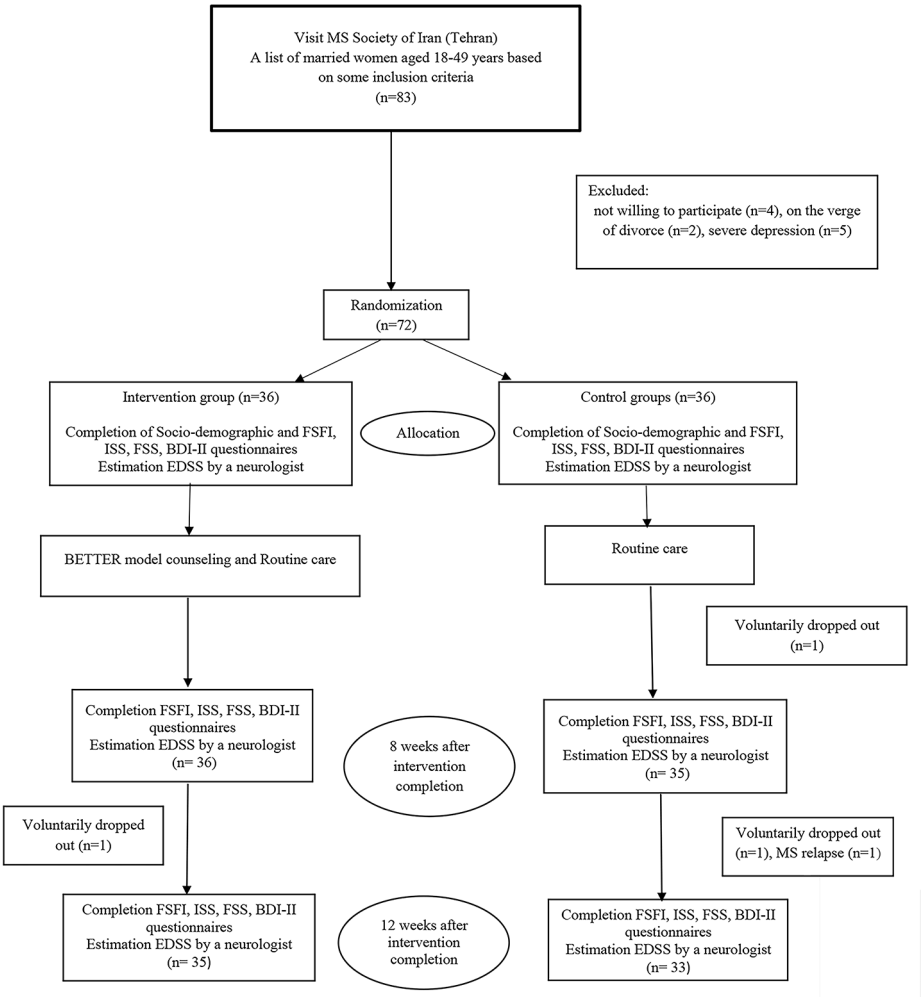

Fig. 1 Flowchart of the study steps

questionnaires on socio-demographic, FSS, and BDI-II, and also EDSS was indicated by a neurologist, to determine if they had the inclusion criteria to participate in the study.

An FSS score < 5.1, BDI-II score < 29, EDSS score < 7, were necessary for inclusion in the study. In addition, the FSS, BDI-II and EDSS was used to assess the homogeneity of fatigue severity, depression severity and disability severity among two groups during the study phases. The study phases are shown in flowchart as Fig. 1.

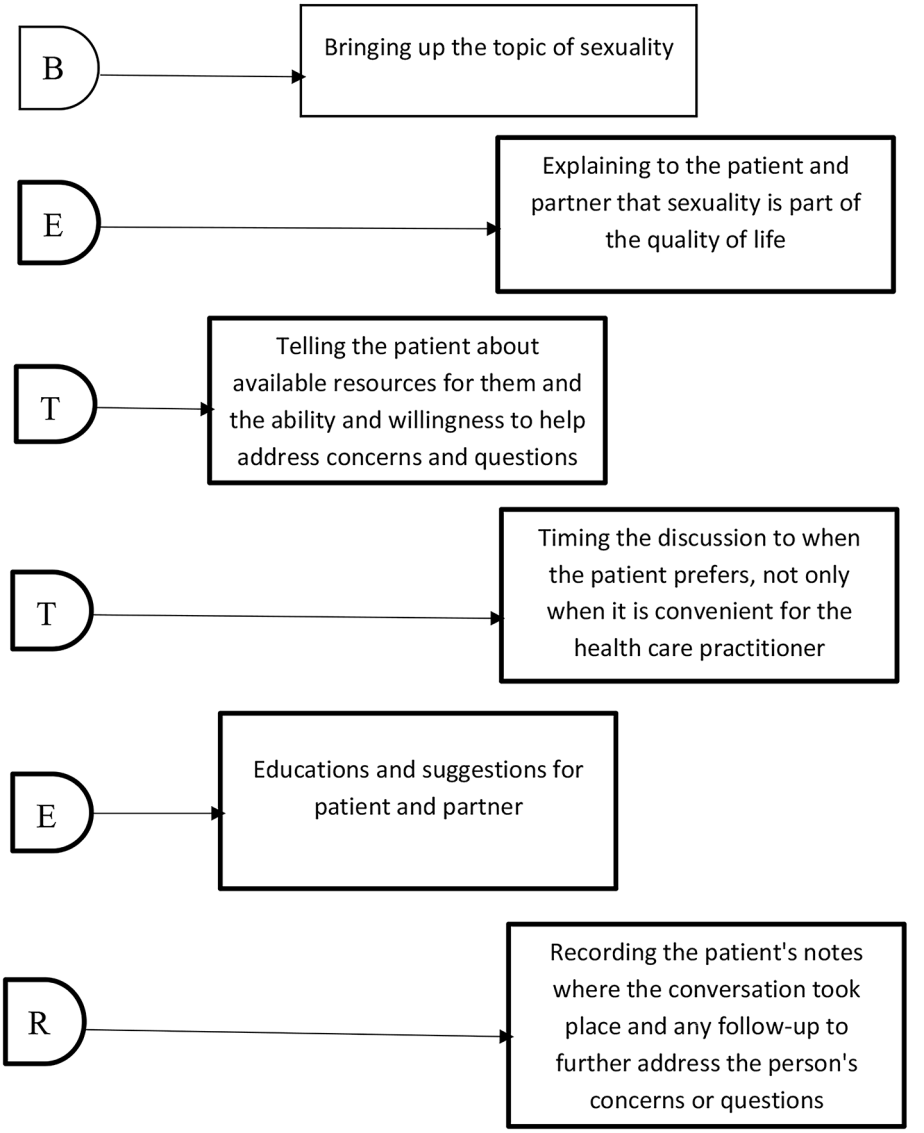

Fig. 2 BETTER Assessment Model

Recruitment

After approval by the Ethics Committee of Tehran University of Medical Sciences and registration at the Registry of Clinical Trials website with No: IRCT2017100936679N1, this study was conducted at the Iranian MS Society in Tehran from January to July 2018. Assuming standard deviation of 15 for sexual dysfunction in women with MS according the previous study [8, 33, 34], and considering a significance level of 95% and a test power of 80%, a sample size of 36 per group was estimated.

The Iranian MS Society provided a list of patients and their demographic characteristics (e.g., sex, age, etc.) and phone numbers. Through phone calls, the goals of the study were explained to them, and they were invited to participate in the study. They were assured that their information would remain confidential.

Participants were then asked to visit the MS society in person to complete the informed consent and study questionnaires. All the eligible women were thoroughly informed about the study method by researcher, and signed an informed consent form. They were also evaluated by a neurologist at that time to determine degree of physical disability. There were 72 women who met inclusion criteria. They were randomly assigned to either the intervention or control group. To randomize two groups, the blocked randomization was conducted using Random allocation software with block sizes of four and the allocation ratio of 1:1. The allocation concealment was conducted by opaque envelopes numbered from 1 to 72 which was contained assignment papers. Follow-up assessments were completed with both the intervention and the control groups 8 and 12 weeks after the intervention.

Intervention

Based on the BETTER model standards, the research team designed the content and format of consultation sessions. [21] (Fig. 2). The intervention was administered for women and their spouses in the intervention group during four weekly sessions (60 to 90 min per session) by the researcher, who was a PhD candidate in reproductive health, after obtaining counseling skills based on the BETTER model (by participating in the workshop). The control group got normal care from the center.

Counseling sessions were for couples (each pair separately) who received knowledge about the anatomy and physiology of the sexual organs in females and men, the sexual response cycle, and the primary reasons of sexual dysfunction in MS patients and the impact of MS during the first session consultation (Bring up and Explain phase) following the creation of therapeutic alliance and confidential environment. The most common kind is caused by MS-related neurologic abnormalities that impede sexual response, such as genital organ numbness. The secondary kind is linked to MS-related physical problems that influence sexual performance indirectly, such as muscle weakness and urinary problems. The tertiary type is caused by MS-related social, cultural, and psychological concerns that might influence sexual function, such as low sexual self-esteem, low self-confidence, and mood disorders [1]. In this step, the researcher attempted to rectify patients' and their partners' incorrect views and misconceptions about sexual behavior.

The wife and their husbands were educated about accessible resources such as books, websites, and specialists who could receive the correct information from them during the second session (Tell resources and Time step). The participants were also given time to

express their concerns, anxieties, opinions, and problems relating to their sickness, and knowledge regarding sexual function throughout this session. They were asked to talk about changes in their personal and sexual lives, as well as changes in their mood and relationships.

The third session, which followed the BETTER model's "Educate" step, identified and explored the priorities and essential demands of each woman in order to improve her sexual performance. To address the women's sexual issues, specific advice and suggestions were employed, such as the usage of water-based lubricants, optimal sexual positions for mobility limits, and selecting the optimal time for sexual intercourse (mornings when there is no physical fatigue). Furthermore, the ladies were advised to work on their emotional relationships with their partners and to try to communicate their worries. During the consultation meetings, visual materials and educational brochures were also used to provide them with additional information about MS, its affects, and therapies.

The counseling procedure was reviewed briefly in the last session and noted in the medical records of the patients (Record step). Participants were asked to share their thoughts and opinions on the consultation process. All of the participants' queries and possible misunderstandings were answered, and the researcher's phone number was provided to answer their queries. Finally, some women were directed to a psychologist, while others were instructed to speak with their neurologists about their drug and treatment concerns.

Telephone reminders for each participant to visit MS society for follow-up phases of the study were considered for 8 and 12 weeks following the last session. In addition, to reduce sample loss, phone calls were made to remind members in the intervention group about upcoming sessions. The control group received just standard MS Society care, such as subsidized drugs, free neurology consultations, subsidized physiotherapy services, and educational brochures. They were also told that roughly 12 weeks after the last session in this arm of the study ended, they could engage in free counseling sessions in the intervention arm of the trial.

Statistical analysis

Data analysis was done by a person who was blind to intervention and control groups. To analyze the findings, depending on the type of data, Fisher's Exact test and Chi-square test (for nominal and categorical variables) and Independent t-test (for numerical variables) were used to analyze socio-demographic and clinical characteristics of MS between the two groups.

Two-way repeated Measures ANOVA was used to compare the mean values of the total FSFI scores and ISS scores among three evaluations (before the intervention, 8 weeks and 12 weeks after the intervention) between the two groups. This statistical analysis method is often used in studies where you have measured a dependent variable over two or more time points. P-values < 0.05 were considered as statistically significant. Data were analyzed using the intention-to-treat principle and by SPSS software, version 16.0 (SPSS for Windows, SPSS Inc., Chicago, IL).

Results

Only 4 of the 72 participants in the study (5.5%) dropped out after randomization. Reasons for dropping in the study is shown as Fig. 1.

No statistically significant difference was found between the two groups in terms of socio-demographic and clinical characteristics such as economic, job, and education status of the participants and their husbands, MS duration, and onset age of MS ($p>0.05$) (Tables 1 and 2).

Sexual function

FSFI scores assessing sexual function were compared by repeated measures analysis. Comparison mean FSFI scores within the intervention group showed statistically significant differences between baseline and 8 weeks ($p<0.001$) and 12 weeks ($p<0.001$) after the intervention. Thus, the score of sexual function in this group has increased after the intervention. But there is no statistically significant difference between the 8 weeks with 12 weeks after the intervention in this group ($P=0.32$). In the CONTROL group, there was no significant difference between the mean FSFI score at different time points ($p=0.71$). Considering group and time INTRECTION, it was also observed that the mean FSFI score was statistically significant between the two groups during the study period (23.49 ± 3.5 VS. 24.15 ± 3.5 at baseline; 28.09 ± 2.4 VS. 24.05 ± 3.6 in 8 weeks; 28.20 ± 2.3 VS. 24.16 ± 3.5 in 12 weeks) ($P<0.001$). Mean FSFI Scores are depicted in Fig. 3.

Sexual satisfaction

ISS scores assessing sexual satisfaction were compared by repeated measures analysis. Comparison mean ISS scores within the intervention group showed statistically significant differences between baseline with 8 weeks ($p=0.04$) and 12 weeks ($p=0.01$) after the inter-

Table 1 Socio-demographic and clinical characteristics (quantitative variables) of the participants

Characteristics	Intervention group Mean ± SD	Control group Mean ± SD	*P* value
Participant's age (years)	36.89 ± 6.4	37.75 ± 7.1	0.59
Spouse's age (years)	41.28 ± 7.2	43.33 ± 9.1	0.29
Length of marriage (years)	12.87 ± 7.6	15.26 ± 9.5	0.24
Number of pregnancies	1.14 ± 0.9	1.36 ± 1.1	0.34
Number of children	1.00 ± 0.8	1.11 ± 0.8	0.56
MS duration (years)	9.29 ± 6.1	9.69 ± 5.9	0.77
Onset age of MS (years)	27.58 ± 4.9	28.1 ± 7.8	0.74
Length of drug therapy (years)	6.23 ± 5.0	5.84 ± 4.7	0.73
Expanded disability status scale (EDSS)	2.69 ± 1.4	3.19 ± 1.3	0.12
Fatigue Severity Scale (FSS)	3.58 ± 0.8	3.18 ± 0.9	0.08
Depression Severity Index (BDI-II)	15.78 ± 5.1	15.11 ± 5.4	0.59

*Independent *t* test

Table 2 Socio-demographic and clinical characteristics (qualitative variables) of the participants

Characteristics	Intervention group (n=36)	Control group (n=36)	*P* value
Participant's education level	13.9%	11.2%	0.28
Elementary	36.1%	47.2%	
Intermediary	50%	41.6%	
Diploma and higher			
Spouse's education level	8.3%	13.9%	0.40
Elementary	38.9%	44.4%	
Intermediary	52.8%	41.7%	
Diploma and higher			
Participant's occupation	77.8%	91.6%	0.17
Housewife	22.2%	5.6%	
Employed	0	2.8%	
Retired			
Spouse's occupation	27.8%	19.4%	0.47
Unemployed	66.7%	63.9%	
Employed	5.5%	16.7%	
Retired			
Family monthly income status	36.1%	30.6%	0.77
Adequate	38.9%	47.2%	
Relatively adequate	25%	22.2%	
Not adequate			
Contraception method	2.8%	0	0.91
OCPs	44.4%	41.8%	
DMPA	5.5%	5.5%	
Vasectomy	2.8%	2.8%	
TL	27.8%	33.3%	
Condom	13.9%	8.3%	
IUD	2.8%	8.3%	
None of them			
MS phenotype	69.4%	61.1%	0.75
Relapsing-remitting	13.9%	16.7%	
Primary progressive	16.7%	22.2%	
Secondary progressive			

*Chi square test

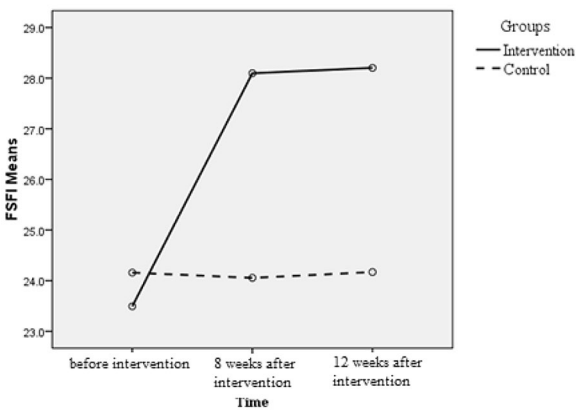

Fig. 3 Participant sexual function scores

vention. Thus, the score of sexual satisfaction in this group has increased after the interven-

tion. But there is no statistically significant difference between the 8 weeks with 12 weeks after the intervention in terms of the average sexual satisfaction in the intervention group (P = 0.46). In the CONTROL group, there was no significant difference between the mean ISS score at different time points (p = 0.67). Considering group and time INTRACTION, it was also observed that the mean ISS score was not statistically significant between the two groups during the study stages (92.33 ± 17.18 VS. 93.19 ± 20.35 at baseline; 95.14 ± 17.07 VS. 91.92 ± 18.51 in 8 weeks; 96.31 ± 17.11 VS. 93.44 ± 17.99 in 12 weeks) (P = 0.06). Mean ISS Scores are depicted in Fig. 4.

Fatigue severity

The distribution of FSS scores between study groups at the beginning of the study were as follows: 22.2% of participants in the intervention group versus 38.9% of participants in the control group endorsed mild fatigue (FSS < 2.8) and 77.8% of the intervention group and 61.1% of the control group endorsed moderate fatigue (FSS = 2.8–5.1). There were no significant differences in FSS scores between groups was observed at the beginning of the study (p = 0.08). At the end of the study observed that: 27.8% of participants in intervention group versus 36.1% of participants in control group endorsed mild fatigue (FSS < 2.8) and about 72% of intervention group and 63.9% of control group endorsed moderate fatigue (FSS = 2.8–5.1). There were no significant differences in FSS scores between groups was observed at the ending of the study (p = 0.61).

Depression severity

The distribution of BDI-II scores between study groups at the beginning of the study were as follows: 38.9% of participants in the intervention group versus 47.3% of participants in the control group endorsed minimal depression (BDI-II = 0–13) and 38.9% of the intervention group and 33.3% of the control group endorsed mild depression (BDI-II = 14–19) and 22.2% of the intervention group and 19.4% of the control group endorsed moderate depression

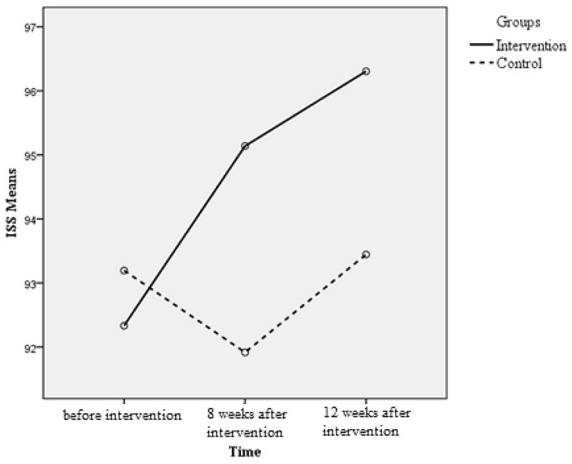

Fig. 4 Participant sexual satisfaction scores

(BDI-II = 20–28). There were no significant differences in BDI-II scores between groups was observed at the beginning of the study (p = 0.59). At the end of the study observed that: 50% of participants in intervention group versus 38.9% of participants in control group endorsed minimal depression (BDI-II = 0–13) and 38.9% of intervention group and 38.9% of control group endorsed mild depression (BDI-II = 14–19) and 11.1% of intervention group and 22.2% of control group endorsed moderate depression (BDI-II = 20–28). There were no significant differences in BDI-II scores between two groups at the ending of the study (p = 0.30).

Physical disability

Mean EDSS scores for participants did not significantly differ at the outset of the study (p = 0.12; intervention = 2.69 ± 1.43 vs. control = 3.19 ± 1.32) or at the conclusion of the study (p = 0.16; intervention = 2.10 ± 6.40 vs. control = 3.10 ± 1.31).

Discussion

Results showed a statistically significant increase in sexual functioning in participants in the intervention group as compared to the control group.

The mean score of female sexual function in the intervention group had a significant increase compared to the control group. This finding is in line with Quinn and Happell study (2013) that measures the effectiveness of the BETTER model for the sexual health improvement of in recipients' patients of mental health services. In this study, BETTER model has been effective in improving sexual function and intimacy, and in reducing the sexual distress [35].

Browne et al. (2011) also examined in a qualitative study, the experiences of health care providers about using the BETTER model in sexual counseling. Their study suggests that this model can improve the satisfaction of healthcare providers and patients from sexual counseling. They stated that this model is a valuable method for sexual counseling which by creating a structure and framework, can be as guidance, and causes easier counseling and help to solve the patient's sexual problems and concerns [21, 36].

Consistent with Rezaei Fard's study, the result of this study also did not show a difference between the sexual function total score between weeks 8 and 12 after the intervention [37]. It can be stated that the use of the BETTER model positively improved the sexual function of women with MS, but some needs of these women in improving sexual function were understood after using this consultation method. This finding shows the necessity of multidisciplinary approach and probably neurologic, urologic, and physiotherapy interventions. Comparison of the sexual satisfaction of the participants indicated that the mean score of the sexual satisfaction in the intervention group was not significantly different during the study compared to the control group (p = 0.06). However, it is notable that the mean score of the sexual satisfaction in the intervention group during the study was statistically significant (p = 0.03), while there was no statistically significant difference in the control group at different times (p = 0.67). Although the psychological impact scale MCID (Minimal Clinically Important Differences) among persons with MS has yet to be agreed upon in literature [38,

39] but the experts of the research team considered this level of significance to be clinically important by patient statements.

Few studies have examined the BETTER-based counseling on improving patient sexual satisfaction. Nevertheless, this finding of the present study is contradict with the findings of Quinn et al. (2013), which emphasizes the BETTER model increases the patients' satisfaction of sexual relations [21, 40]. Of course, it should be emphasized that this study was conducted with a qualitative approach and on patients referred to the mental health services. Therefore, results of this study with the present study cannot be accurately compared, which was done quantitatively and on women with MS.

On the other hand, Blackmore et al. (2011) stated in their study that a large proportion of sexual dysfunction in patients with MS is due to the physical effects of MS, while sexual satisfaction is a subjective experience. Thus, these researchers stated that sexual satisfaction in patients with MS is more likely to be altered by psychosocial interventions [41]. This finding showed that improving women's sexual satisfaction goes beyond their sexual function. This finding also seems to confirm the complexity of factors related to sexual satisfaction in women compared to men, which was mentioned in Mrs. Basson's sexual response cycle [42].

However, sexual function is recognized as an effective factor in the sexual satisfaction of individuals, but because other factors such as cultural, social, psychological, and emotional factors also affect the sexual satisfaction of patients [41, 43]; maybe for this reason, in our study, the improvement of sexual function as a factor has been able to improve the sexual satisfaction of patients with MS, but not significantly.

Perhaps BETTER-based counseling may need to be combined with other methods and interventions such as aromatherapy, acupuncture, and etc. to be significantly effective on the sexual satisfaction of patients. In addition, it is recommended that in future studies on sexual satisfaction, a higher sample size be considered for patients with MS.

There were some limitations in this study, for example the participants' reluctance to talk about sexual matters created some problems in counseling sessions but the researcher managed to overcome this limitation through appropriate communication by choosing the better model, planning several counseling sessions, creating a confidential environment, and using visual material. In addition, because of cultural limitations and social barriers caused to researcher could only recruit married women, and no single or widowed women we not invited to the study.

Conclusions

Study results suggest that the designed intervention based on the BETTER model of sexual counseling can improve the sexual function of married women with MS in Iran, which in turn can positively impact sexual satisfaction. However, improving sexual satisfaction goes beyond simply enhancing sexual function. Future studies of sexual satisfaction in women with MS should consider psychosocial and multidisciplinary interventions.

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study and sharing their sexual information with the researcher. Thanks to the manager and staff of the Iran MS Society for their cooperation.

Declarations

Conflict of interest The authors are declared that they have no conflict of interest.

Ethical approval All procedures performed in this study were in accordance with the ethical standards of the Ethics Committee of Tehran University of Medical Sciences and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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Authors and Affiliations

Faezeh Ghafoori[1,2] · Maryam Bagheri[3] · Nahid Dehghan-Nayeri[4] · Zohreh Khakbazan[1] · Hamid Haghani[5] · Mahmoud Hedayatnejad[6] · Keshvar Samadaee-Gelehkolaee[1,7]

✉ Keshvar Samadaee-Gelehkolaee
k-samadaee@razi.tums.ac.ir; moshaversamadai@yahoo.com

Faezeh Ghafoori
f-ghafoori@razi.tums.ac.ir

Maryam Bagheri
bagherim@tums.ac.ir

Nahid Dehghan-Nayeri
Nahid.nayeri@gmail.com

Zohreh Khakbazan
Khakbaza@tums.ac.ir

Hamid Haghani
Haghani51@yahoo.com

Mahmoud Hedayatnejad
Mh.hedayatnejad@gmail.com

[1] Reproductive Health Department, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

[2] Ministry Area, Iran Ministry of Health and Medical Education, Tehran, Iran

[3] Vali-E-Asr Reproductive Health Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran

[4] Nursing Management Department, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

[5] University of medical sciences, Tehran, Iran

[6] Psychology Department, Shahed University, Tehran, Iran

[7] Men's Health and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran