

The effect of a midwife-based counseling education program on sexual function in postmenopausal women: a randomized controlled clinical trial

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Abstract

Objective: The present study was conducted to investigate the effect of a midwife-based counseling education program on sexual function in postmenopausal women.

Methods: A randomized clinical trial was conducted on 52 eligible postmenopausal women. Participants' sexual function was assessed using the Female Sexual Function Index (FSFI). The women were randomly allocated into two groups: (1) the intervention group, in which the participants received a midwife-based counseling education program in 4 sessions held at 10-day intervals, with each session lasting for 70 minutes; (2) the control group, in which the participants only received routine care. Data were collected 1 week before the start of the sessions, 2 weeks after the end of the sessions, and 2 months after the last follow-up.

Results: No statistically significant differences were reported between the groups in terms of personal and sociodemographic characteristics and sexual function before the intervention; the total FSFI score was 17.05 (± 4.54) in the intervention group and 16.66 (± 3.62) in the control group. After the program, in the first and second follow-ups, the scores reached 27.18 (± 4.61) and 28.20 (± 4.43) in the intervention group and 16.06 (± 3.94) and 16.32 (± 2.98) in the control group. Significant improvements were observed in the total score of sexual function and all the FSFI domains in the intervention group, but not in the control group ($P < 0.001$).

Conclusion: Midwife-based counseling education can be an appropriate approach to improving sexual function in postmenopausal women.

Key Words: Counseling – Education – Intervention – Midwifery – Postmenopausal – Sexual function.

Menopause is defined as the physiological end of menstruation for at least 1 year due to the decline or cessation of ovarian function.^{1,2} This time is one of the most critical ones in the lives of some women.³ Biological, psychological, and social changes that can cause stress and vulnerability occur in 50% to 85% of women during

menopause.⁴ Sexual function is affected by menopause and requires further attention.⁵

Sexual function refers to the ability to respond to the various stages of the sexual cycle, and sexual dysfunction can be defined as impairment in one or more elements of the sexual response cycle.⁶ Studies have reported the prevalence of postmenopausal sexual dysfunction as 45.3% to 67.9%.^{7,8} In a study conducted in postmenopausal women in Iran, 69.8% of women had impaired desire, 61.7% impaired arousal, 49.7% lubrication problems, 45% pain, 40.3% orgasm problems, and 36.9% satisfaction issues.⁹ Approximately 14% of women aged 45 to 64 years report at least one sexual problem as a significant source of discomfort; however, only 21% of women with persistent sexual problems discuss their issues with healthcare providers.¹⁰ Sexual dysfunction in menopause is far from a hormonal problem; rather, it is affected by women's general health, social and physical environment, knowledge and education, cultural background, and relationship with their spouse.⁷ Sexual health and function are essential components of care in postmenopausal women¹¹ that significantly affect their general and social health, and their own and their husband's quality of life.¹²

Safer and more effective treatments are needed for women's sexual dysfunction, especially in middle-aged and older

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women.¹⁰ Sex education can target many of these concerns.¹³ Sex education is necessary for improving people's sexual function because it encourages effective communication between couples, can lead to more pleasurable sex, increases self-confidence and self-esteem, and promotes informed decision-making at the personal and interpersonal levels.¹⁴ Information about sexual function should be available to all people as part of a comprehensive sex education program.¹⁵ There are currently no sex education programs offered in health centers in Iran, and information about sexual issues is not easily accessible.^{15,16} The midwives working in Iran's health centers often lack the ability to offer sexual counseling and training, and this deficiency has caused many sexual problems and much sexual dissatisfaction in couples.¹⁵ The International Confederation of Midwives regards counseling and education on sexual issues and sexual health as one of the responsibilities of midwives that should be performed in conjunction with their WHO-assigned responsibilities.¹⁷

There is little information available on the effectiveness of counseling and educational programs in improving the sexual function of postmenopausal women. In their educational program to improve sexual function in postmenopausal women, Nazarpour et al demonstrated the effectiveness of interventions in improving the total score of sexual function and the scores of its dimensions, including arousal and pain, but not desire.¹⁴ In another study, Tiznobek et al investigated the effect of counseling on sexual function and sexual behavior in postmenopausal women and their spouses and demonstrated its effectiveness in both groups.¹⁸ Given the fairly high prevalence of sexual dysfunction and the factors involved in its incidence, and the key role of primary health service providers, especially midwives, in resolving this problem at its early stages, the present study was conducted to investigate the effectiveness of a midwife-based counseling education program on sexual function in postmenopausal women.

MATERIALS AND METHODS

Design

The present randomized, controlled, clinical trial was conducted on eligible postmenopausal women selected from health centers in Mahmoodabad in the north of Iran. The study began in November 2016 and ended in September 2017. The research project was registered at the Iranian Registry of Clinical Trials under the code IRCT2016112631117N1 and was approved and registered by the Ethics Committee of Mazandaran University of Medical Sciences with the project No. 2574 (IR.MAZUMS.REC.95-2574). Full written consent was obtained from all the participants.

Samples and setting

The statistical population of the study consisted of postmenopausal women aged 44 to 55 years, presenting to the health centers under scrutiny, who were suffering from sexual dysfunction, as identified and confirmed by the researcher using the study tools (Female Sexual Function Index [FSFI]

score < 26.5). The participants who met the inclusion criteria entered the study.

Inclusion criteria

Inclusion criteria include the following: (1) living with their spouse; (2) at least 1 year since their last menstruation; (3) FSFI score < 26.5; (4) at least basic literacy¹⁹; (5) age 44 to 55 years²⁰; (6) sexual dysfunction over at least the last 4 weeks; (7) no drug dependence problems²¹; (8) general health for postmenopausal women as per the 28-item Goldberg General Health Questionnaire/GHQ-28 with a score > 14 for each subscale and a total score > 23.²²

Exclusion criteria

Exclusion criteria include the following: (1) receiving any psychiatric therapy or additional therapy such as hormone or supplementary therapies for menopause before or during the study; (2) advanced chronic physical and psychological diseases such as diabetes, multiple sclerosis, cardiac diseases, and psychosis²³; (3) the occurrence of any particular events construed as a life crisis, such as the death of relatives or incurable diseases among family members, over the last month; (4) receiving any formal sex education before or during the study²⁴; (5) the spouse's lack of consent for participation in the sessions; (6) sexual dysfunction in the spouse identified by the International Index of Erectile Function (scores 0-10 indicated severe sexual dysfunction and 11-16 indicated moderate sexual dysfunction).

The sample size was determined as 26 in the intervention group and 26 in the control group based on the results reported by Shams Mofarrah et al,²⁵ with a 95% CI, 90% test power, postintervention satisfaction of 100% in the trial group and 70% in the control group, and using the comparison of two ratios formula in G-POWER and considering a 10% potential withdrawal (Fig. 1).

Procedure

The candidates were briefed on the study objectives over the phone or in face-to-face interviews and were then asked to set up an appointment to visit the clinic with their spouse and get the initial assessment by the researcher if their spouse agreed to cooperate. In the visit to the center, the researcher completed a demographic details questionnaire, the FSFI, the Goldberg General Health Questionnaire (GHQ-28), and the International Index of Erectile Function (IIEF) for the candidates in face-to-face interviews. She then reassessed their eligibility using a checklist, and those who met the criteria entered the study. At this stage, before beginning the educational sessions, a preliminary interview was held with the eligible participants by a counseling midwife, and after a brief discussion of the treatment process with the participants and their spouses and responding to their questions and concerns. The women's menopause and psychiatric status and medical health were examined. This examination included a genital and pelvic examination and a check-up of various disorders and sexually transmitted diseases, and all STDs were treated before the women began the study.

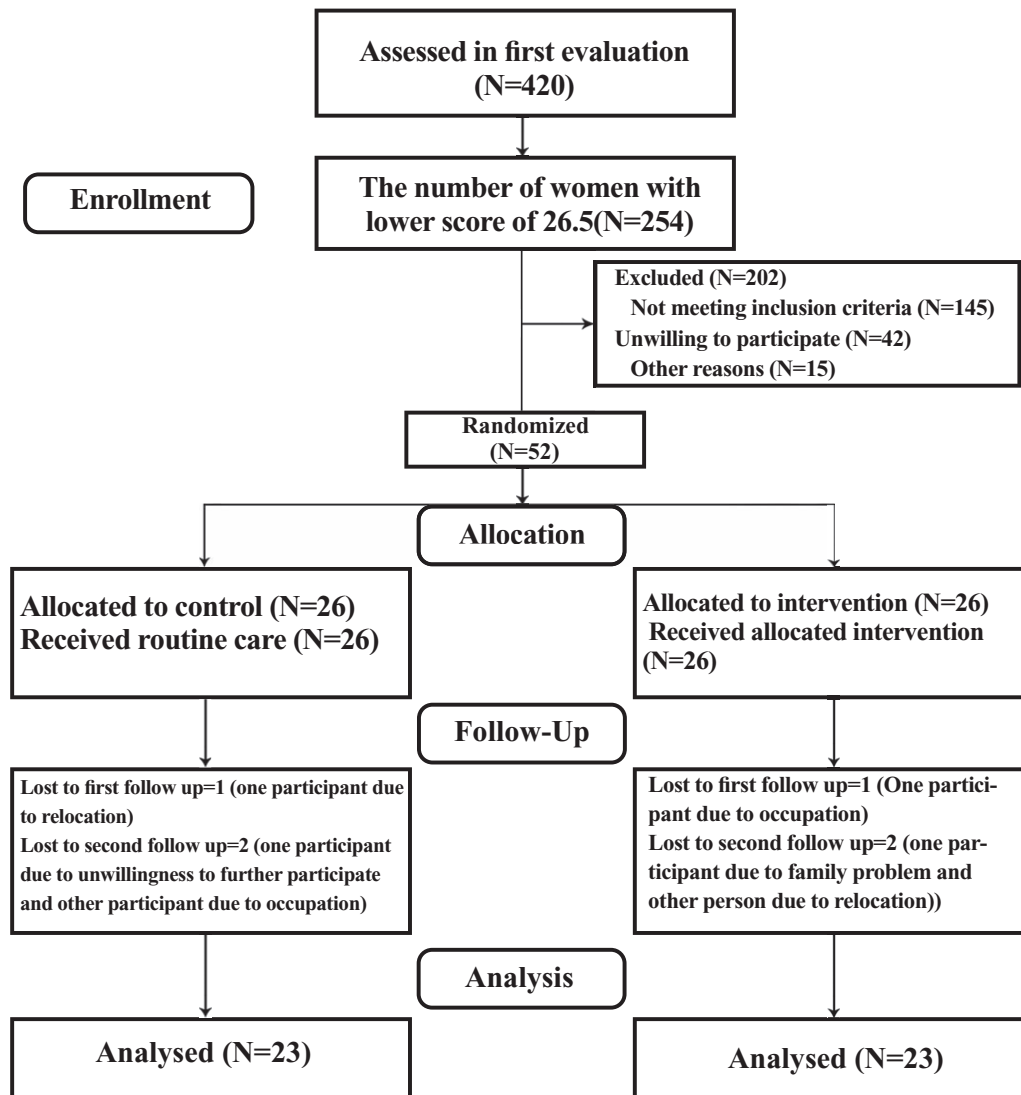


FIG. 1. CONSORT 2010 flow diagram.

The randomization step was carried out using the Random Allocation software, and random numbers from 1 to 52 were put in two blocks (equal to the sample size and group size). The trial group was identified as group A and the control group as group B. After obtaining informed consent from the eligible participants, they were assigned to either the trial or control groups by a research assistant who was blinded to the study procedure, by the order of their attendance and their designated number (for instance, if number 1 fell in group B, the first eligible participant visiting the clinic was assigned to the control group, whereas if number 3 fell in group A, the third participant visiting was assigned to the trial group).

The dates of the educational sessions were separately fixed with each participant in the trial group, and these women were invited to attend the sessions with their spouse 1 week after completing the pretest. The sessions were held individually for each couple and included four 70-minute sessions held at

10-day intervals.²¹ The posttest was given 2 weeks later, and the follow-up and reassessment of sexual function were carried out 2 months after the first follow-up.²⁶ All the assessments were made separately for each of the women and their spouses. The trial group was allowed to ask any questions they had over the phone. The control group received no such interventions over this period and only received routine care for the middle-aged, including comprehensive diabetes, blood pressure and blood lipid care, and screening for cervical and breast cancer. The control group received the same assessment and follow-up as in the trial group. The appointments were made such that the participants of the trial group did not meet the control group. In the secondary assessments, the project collaborator (the midwife) was also invited to help. For ethical considerations, an intensive 90-minute educational session was held for the control group after the study was over, and booklets covering the content

discussed in the educational sessions were presented to them. Both groups received gifts and educational notes on menopause after the study period.

All the interviews were conducted by an MSc student in midwifery counseling trained in all the stages of the research by the project supervisor and advisor (a psychologist). It is worth noting that sexual health education and the treatment of sexual dysfunction are included in the official curriculum of midwifery counseling master's programs in Iranian universities. Nonetheless, the interviewing student attended seminars and workshops on sexual health and the treatment of sexual dysfunction and obtained valid certificates before carrying out the intervention.

Intervention

To carry out the intervention, the research team designed a protocol for a midwife-based counseling education program. Table 1 presents a summary of the protocol. The protocol was developed based on a review of literature by the researchers and its content validity was examined. For the content validity, the views expressed by seven sexual and reproductive health and psychiatry experts were collected and implemented, and the protocol was ultimately confirmed by them as well. As part of the counseling education program, and to ensure that the topics were fully comprehended and the sessions continued, the participants received home assignments at the end of each session. Finishing all the assignments was a prerequisite for continuing the sessions. All the sessions were held as face-to-face, single-couple interviews. Each

session included a review of the previous session, Q&A and discussion, checking the completed assignments and presenting the educational content, and giving assignments for the next session.

Measures

Demographic details questionnaire

This questionnaire included items about the couple's age, occupation, education, monthly income, number of children, housing status, menopause status, known physical illness, history of psychiatric therapy or additional treatment for menopause, critical events in recent months, history of addiction in the woman, sex education before or during the study, frequency of sex with the spouse per month, the woman's view about the adequacy of their frequency of sex per month, and the use of blood pressure-lowering medications, antidepressants, and antipsychotic drugs.

The Female Sexual Function Index (FSFI)

This 19-item scale measures 6 domains of women's sexual function over the preceding 4 weeks, including desire, arousal, lubrication, orgasm, satisfaction, and pain. The total score is the sum of the scores of these 6 domains, with a minimum of 12 and a maximum of 36. Higher scores imply better sexual function (in the domain of pain a higher score implies less pain), and a score of 0 indicates the absence of sexual activity over the last 4 weeks. A total score less than 26.5 suggests sexual dysfunction.²⁷ In the study conducted by Mohammadi et al, the reliability of the Persian version of the

TABLE 1. *The topics covered in the training sessions and the home assignments*

Stage	Topics covered	Assignments
First	Menopause and its stages, physiological and anatomic changes in menopause, sexual function and dysfunction, factors and domains affecting sexual function in menopause	At the end of the session, as an assignment, the couples were asked to identify, compare, and record positive and negative factors in three key domains, that is, the physical (biological), psychological—emotional and interpersonal or marital and environmental domains and bring them to the next session
Second	Stimulus control, thorough study of the positive and negative stimuli in healthy and unhealthy sexual functions in each domain, myths about sex in menopause	The couples were asked to find a special time at home to talk about and list the factors or conditions that positively affected their sexual function and its continuation by the next week. The listed factors could include the right time of the day, the spouse's mood, or the best possible environmental and physical conditions. They were also asked to work at increasing the number of positive factors in each sexual encounter. They were then asked to try to identify the negative factors affecting sexual function as well. They were also asked to study the myths sheet and talk about them with each other and identify the myths, and talk about them in the next session as a challenge exercise
Third	Further identification and discovery of the positive and negative stimuli affecting interpersonal relationships through assignments calling for togetherness and closing communication outputs	The couples were asked to list the things they did to avoid intimacy and being together (ie, the negative stimuli or factors about coupledom). They studied the effect of interpersonal stimuli and negative or positive factors
Fourth	Review of the previous sessions, sensate focus types 1 and 2, assignments in the form of an intervention of real exposure and paradoxical technique with symptom prescription	(A) The man's assignment: (1)—task related to sensate focus type 2; (2)—helping the woman through her sexual response cycle; (3)—monitoring physiological and mental changes in the woman and sharing them with her. (B) Woman's assignment: (1)—practice not to get stimulated; (2)—practice not to get lubricated; (3)—practice not to reach orgasm. (C) The last task was a dual assignment given to the couple, where the woman was the subject and the man tried not to allow his wife to make him fully erect.

FSFI was assessed in terms of the internal consistency of the items. The Cronbach's alpha coefficient was 0.7 or higher in each domain and in the entire scale for all the samples, which is consistent with the results obtained by Rosen et al (0.89 or higher).^{28,29}

The International Index of Erectile Function

This 15-item scale measures male sexual function and its responses are assessed based on a Likert scale. Higher scores indicate better sexual function, and the maximal score is 75, which shows the best sexual status in different domains. The severity of sexual dysfunction is assessed as follows: a score of 0 to 10 indicates severe sexual dysfunction, 11 to 16 moderate dysfunction, 17 to 21 moderate-to-mild dysfunction, 22 to 25 mild dysfunction, and 26 to 30 no sexual dysfunction.³⁰ The reliability and validity of the IIEF were confirmed by Fakhri et al in a research paper that standardized the psychometric properties of the Persian version of the IIEF in Iran.³¹ This index was also validated by Nikoobakht et al ($\alpha = 0.7$).²²

The General Health Questionnaire

This questionnaire does not seek to diagnose any specific psychological disorders in the respondents; rather, its main purpose is to differentiate between mental illness and mental health. Each group of items in this questionnaire assesses a specific subscale: items 1 to 7 assess somatic symptoms (the individual's general health and somatic symptoms in the last month), items 8 to 14 assess anxiety, items 15 to 21 assess social dysfunction, and items 22 to 28 assess severe depression. The items are scored based on a Likert scale from 1 to 4 for the responses "A" to "D". The scores in each subscale vary from 4 (minimum) to 28 (maximum). Scores higher than 14 for each subscale indicate a potential mental problem. The cutoff point for the total scale is 23. The extent to which the participant's total score exceeds 23 shows the risk imposed on his/her general health. Goldberg and Williams reported a face validity of 0.95 for the total scale.³² Nazifi et al reported Cronbach's alpha coefficients of 0.86, 0.88, 0.74, 0.89, and 0.92 for the subscales "somatic symptoms," "anxiety/insomnia," "social dysfunction," and "severe depression," and the total scale.³³

Checklist for identifying the stimuli affecting sexual function

This checklist was developed based on a review of the literature to identify the stimuli affecting sexual function in different domains, including personal, interpersonal, environmental, and medical resources, and its validity and the intervention protocol were assessed and confirmed by seven experts in sexual and reproductive and psychiatric health.

Analysis

Data were entered into SPSS-22. The study variables were described using the mean, SD, and frequency percentage. The Kolmogorov–Smirnov and Levene tests were used to assess if

the assumptions for using parametric tests (ie, normal distribution and variance equality) held. The qualitative or ranked variables were analyzed using the χ^2 test. The mean scores of sexual function were compared within each group before and after the intervention using a paired *t* test, and the mean sexual function was compared between the intervention and control groups using an independent *t* test. A repeated measures ANOVA was also used to compare participants' mean sexual function at different stages of the study. The participants who were excluded from the study in the follow-up stages were considered the intention-to-treat population (none of them were eliminated from the study and the data pertaining to their last stage of participation in the study were used for the later stages in which they did not take part). The test power and effect size were also calculated. The level of statistical significance was set at less than 0.05.

RESULTS

One of the 52 participants withdrew from each of the intervention and control groups at the end of the intervention and before the follow-ups ($n = 25$ in the intervention group and $n = 25$ in the control group at the first follow-up). Two participants from each group did not continue their cooperation after the first follow-up assessment. A total of 46 participants completed the follow-up stage of the study ($n = 23$ in the intervention group and $n = 23$ in the control group). The results showed no significant differences between the two groups before the study in terms of demographic details, the women's sexual function score, the men's sexual function score, and the women's general health. In the intervention group, one person had mild heart disease, and in the control group, two participants had heart disease and one had mild diabetes. None of the participants abused substances (Table 2). Before the intervention, the mean and SD of the total score of the FSFI was 17.05 (± 4.54) in the intervention group and 16.66 (± 3.62) in the control group. In the first follow-up, this score was 27.18 (± 4.61) in the intervention group and 16.06 (± 3.94) in the control group. In the second follow-up, the total score of sexual function reached 28.2 (± 4.43) in the intervention group and 16.32 (± 2.98) in the control group, suggesting a significant difference between the intervention and control groups ($P < 0.001$; Table 3). A significant improvement was also observed in all the FSFI domains in the intervention group compared with the control group (Table 4). Tables 5 and 6 present the intention-to-treat results. As shown in the table, the exclusion of two participants from each group did not affect the treatment outcome. In the intervention group, the repeated measures ANOVA showed significant differences between the mean total score of sexual function and the mean scores of all its domains on the three occasions, that is, before the intervention, in the first follow-up and in the second follow-up. Figure 2 shows an ascending trend from before the intervention to the first follow-up, whereas the trend remains relatively constant from the first to the second follow-up (Figure 2A-G).

TABLE 2. Characteristics of study groups (comparison of intervention and control group) at baseline

Quantitative Variable	Intervention (N=26), mean (SD)	Control (N=26), mean (SD)	P
Age of the woman, y	51.53 (3.34)	50.69 (2.54)	0.310
Age of the spouse y	54.38 (5.74)	54.03 (4.81)	0.815
Duration of menopause	3.50 (1.55)	3.46 (1.52)	0.805
The number of sexual encounters in the month	3.7 (3.1)	3.19 (1.93)	0.425
General health in women	15.61 (4.34)	16.07 (3.80)	0.685
Sexual function in women	17.05 (4.54)	16.66 (3.62)	0.798
Sexual function in men	55.65 (10.39)	55.11 (10.29)	0.852
Qualitative variables	N (%)	N (%)	P
Education, n (%)			
Middle school	15 (58)	16 (62)	0.50
High school diploma and undergraduate	11 (42)	10 (38)	
Job			
Housewife	24 (92)	24 (92)	0.695
Employee	2 (8)	2 (8)	
Income			
Less than enough	10 (38)	11 (42)	0.50
Enough	16 (62)	15 (58)	
Number of children			
One	1 (4)	2 (8)	0.06
Two	10 (38)	11 (42)	
Three	8 (31)	12 (46)	
Four or more	7 (27)	1 (4)	
Cause of menopause			
Normal	21 (81)	22 (85)	0.714
Surgical	5 (19)	4 (15)	
History of psychological illness			
Yes	3 (12)	3 (12)	1
No	23 (88)	23 (88)	
History of joint pain			
Yes	12 (46)	8 (31)	0.254
No	14 (54)	18 (69)	
Anemia history			
Yes	5 (19)	4 (15)	0.714
No	21 (81)	22 (85)	
Thyroid history			
Yes	5 (19)	4 (15)	0.714
No	21 (81)	22 (85)	
The woman's view about frequency of sex			
Not enough	8 (31)	6 (23)	0.378
Enough	18 (69)	20 (77)	
Taking antihypertensive medication			
Yes	4 (15)	6 (23)	0.482
No	22 (85)	20 (77)	
Taking antidepressant medication			
Yes	4 (15)	2 (8)	0.385
No	22 (85)	24 (92)	

DISCUSSION

Menopause is a period associated with physical, mental, social, and interpersonal problems, each of which affects sexual function.¹⁰ Reducing these problems requires interventions in various dimensions. The present study was conducted to investigate the effect of the implementation of a midwife-based counseling education program on the sexual

function of postmenopausal Iranian women. The results showed the effectiveness of implementing this program in improving the total score and the scores of all the domains of sexual function in the women in the intervention group. The results of the independent *t* test showed no significant differences between the intervention and control groups before the intervention in terms of the sexual function score. In the

TABLE 3. One-way ANOVA comparison between and within the two groups in terms of sexual function (FSFI) in the three stages of the study (results presented based on preprotocol)

Variable		Intervention group, mean (SD)	Control group, mean (SD)	P (between groups)	P (repeated measure)
Sexual function in women	Before intervention (N=26)	17.05 (4.54)	16.66 (3.62)	0.798	<0.001
	First follow-up (N=25)	27.18 (4.61)	16.06 (3.94)	<0.001	
	Second follow-up (N=23)	28.20 (4.43)	16.32 (2.98)	<0.001	

TABLE 4. One-way ANOVA comparison of between and within the two groups in terms of sexual function domains in the three stages of the study (results presented based on preprotocol)

Variable		Intervention group, mean (SD)	Control group, mean (SD)	P (between groups)	P (ANOVA)
Desire	Before intervention (n = 26)	2.52 (0.81)	2.42 (0.87)	0.989	<0.001
	First follow-up (n = 25)	4.08 (0.57)	2.54 (0.79)	<0.001	
	Second follow-up (n = 23)	4.25 (0.72)	2.34 (0.65)	<0.001	
Arousal	Before intervention (n = 26)	2.61 (1.08)	2.41 (0.89)	0.44	<0.001
	First follow-up (n = 25)	4.47 (0.81)	2.34 (0.87)	<0.001	
	Second follow-up (n = 23)	4.61 (0.77)	2.36 (0.77)	<0.001	
Lubrication	Before intervention (n = 26)	2.79 (0.92)	2.56 (0.75)	0.461	<0.001
	First follow-up (n = 25)	4.34 (1.24)	2.49 (0.94)	<0.001	
	Second follow-up (n = 23)	4.66 (0.80)	2.66 (0.72)	<0.001	
Orgasm	Before intervention (n = 26)	2.91 (1.30)	2.67 (1.08)	0.485	<0.001
	First follow-up (n = 25)	4.78 (0.90)	2.43 (0.99)	<0.001	
	Second follow-up (n = 23)	4.76 (0.97)	2.34 (0.91)	<0.001	
Satisfaction	Before intervention (n = 26)	3.58 (1.16)	3.32 (0.86)	0.383	<0.001
	First follow-up (n = 25)	4.92 (0.91)	3.15 (0.77)	<0.001	
	Second follow-up (n = 23)	5.00 (0.97)	3.42 (0.77)	<0.001	
Pain	Before intervention (n = 26)	2.64 (1.14)	3.26 (1.14)	<0.04	<0.001
	First follow-up (n = 25)	4.57 (1.37)	3.1 (1.26)	<0.001	
	Second follow-up (n = 23)	4.88 (1.21)	3.18 (1.14)	<0.001	

intervention group, the repeated measures ANOVA showed a significant increase in the women's sexual function score after the intervention; however, this difference was not significant in the control group.

The results were comparable to those obtained by Nazarpour et al in some domains, which showed the effectiveness of a sexual function-promoting program on the total score of

the FSFI and the scores of its arousal and pain domains in postmenopausal Iranian women.¹⁴ The factors affecting arousal include beliefs and attitudes about sexual issues and the quality of the relationship with the spouse.^{14,34} Similar to this study and to Nazarpour et al,³⁵ the present study also sought to reshape participants' attitudes and beliefs toward sexual issues after menopause by providing the knowledge

TABLE 5. One-way ANOVA comparison between and within the two groups in terms of sexual function (FSFI) in the three stages of the study (results presented based on intention-to-treat)

Variable		Intervention group, mean (SD)	Control group, mean (SD)	Effect size	P (between groups)	P (repeated measure)
Sexual function in women	Before intervention (N = 26)	17.05 (4.54)	16.66 (3.62)	0.09	0.798	<0.001
	First follow-up (N = 26)	26.77 (4.99)	16.16 (3.89)	2.37	<0.001	
	Second follow-up (N = 26)	27.21 (5.06)	16.56 (2.95)	2.57	<0.001	

TABLE 6. One-way ANOVA comparison between and within the two groups in terms of sexual function domains in the three stages of the study (results presented based on intention to treat)

Variable		Intervention group (N = 26), mean (SD)	Control group (N = 26), mean (SD)	Effect size	P (between groups)	P (ANOVA)
Desire	Before intervention	2.52 (0.81)	2.42 (0.87)	0.12	0.989	<0.001
	First follow-up	4.01 (0.65)	2.53 (0.78)	2.06	<0.001	
	Second follow-up	4.13 (0.80)	2.35 (0.61)	2.50	<0.001	
Arousal	Before intervention	2.61 (1.08)	2.41 (0.89)	0.20	0.44	<0.001
	First follow-up	4.40 (0.86)	2.34 (0.85)	2.41	<0.001	
	Second follow-up	4.45 (0.87)	2.44 (0.79)	2.42	<0.001	
Lubrication	Before intervention	2.79 (0.92)	2.56 (0.75)	0.27	0.461	<0.001
	First follow-up	4.25 (1.29)	2.52 (0.93)	1.54	<0.001	
	Second follow-up	4.41 (1.03)	2.67 (0.69)	1.98	<0.001	
Orgasm	Before intervention	2.91 (1.30)	2.67 (1.08)	0.20	0.485	<0.001
	First follow-up	4.72 (0.93)	2.46 (0.98)	2.36	<0.001	
	Second follow-up	4.63 (0.99)	2.47 (0.93)	2.25	<0.001	
Satisfaction	Before intervention	3.58 (1.16)	3.32 (0.86)	0.25	0.383	<0.001
	First follow-up	4.87 (0.93)	3.15 (0.76)	2.02	<0.001	
	Second follow-up	4.90 (0.96)	3.44 (0.73)	1.71	<0.001	
Pain	Before intervention	2.64 (1.14)	3.26 (1.14)	0.54	<0.04	<0.001
	First follow-up	4.49 (1.41)	3.13 (1.25)	1.02	<0.001	
	Second follow-up	4.67 (1.29)	3.16 (1.16)	1.23	<0.001	

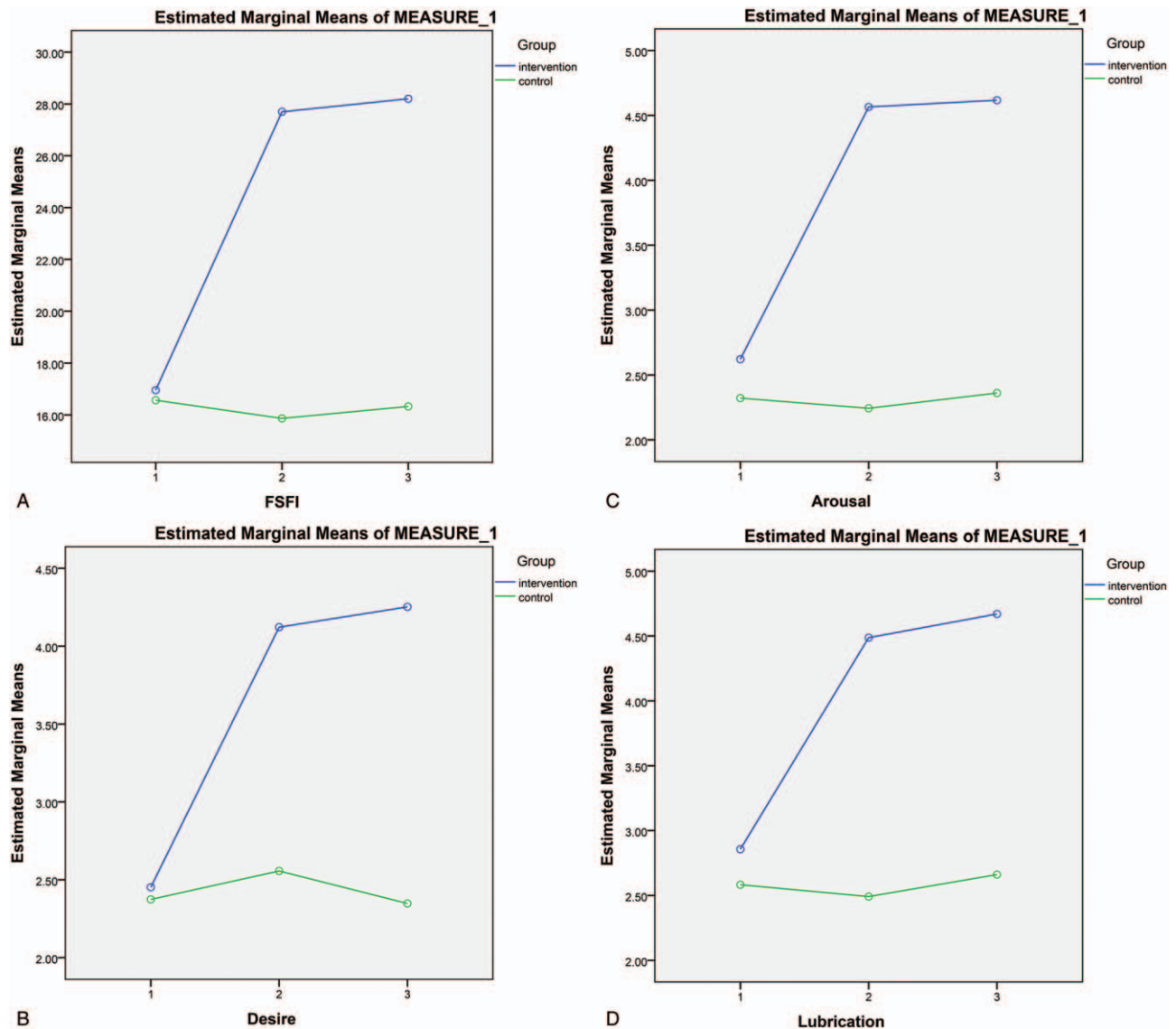


FIG. 2. (A-G) The Repeated Measures ANOVA of the total score of the FSFI and the scores of its domains in the two groups. (A) Changes in the total FSFI score in the two groups at baseline, 2 weeks after and 2 months after the intervention. (B) Changes in the desire score in the two groups at baseline, 2 weeks after and 2 months after the intervention. (C) Changes in the arousal score in the two groups at baseline, 2 weeks after and 2 months after the intervention. (D) Changes in the lubrication score in the two groups at baseline, 2 weeks after and 2 months after the intervention. (E) Changes in the orgasm score in the two groups at baseline, 2 weeks after and 2 months after the intervention. (F). Changes in the satisfaction score in the two groups at baseline, 2 weeks after and 2 months after the intervention. (G) Changes in the pain score in the two groups at baseline, 2 weeks after and 2 months after the intervention.

and skills needed for engaging in good and healthy sexual activities through the management and control of negative and positive stimuli.^{36,37} As a result, the women in the present study noticed improved arousal, similar to the previous two studies.^{14,35} Women, who better understand the means of their own arousal and stimulation, also better understand the sexual response cycle and learn to place themselves in a suitable sexual relationship, therefore experience improved vaginal lubrication during sex³⁸ and end up experiencing less pain during sex. The present study also trained the participants on the sexual response cycle, its contributing factors, and their management so as to achieve the same results. In line with the

study by Nazarpour et al, the researchers of this study also advised the participants to use a negligible amount of lubricant before penetration. Regarding the other domains, including orgasm, satisfaction, and desire, the present findings disagreed with the results obtained by Nazarpour et al in their two studies, which could be due to the differences in the content, frequency, and structure of the training sessions.

In a study conducted by Smith et al,³⁹ after a group psychoeducational program for women with sexual dysfunction, a significant improvement was observed in the total score on the FSFI and the scores of all the domains, except for pain. The present findings were in line with Smith's results,

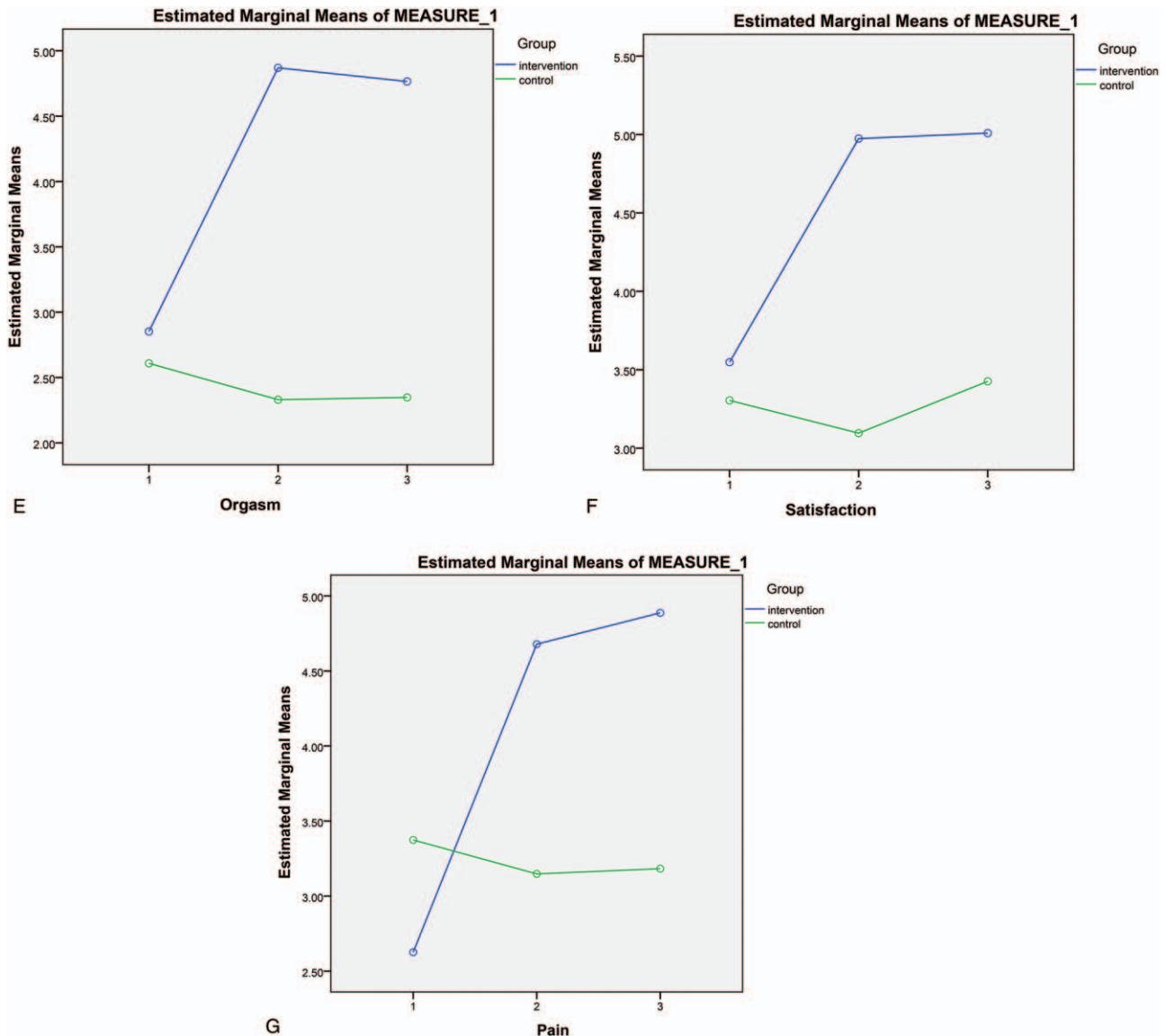


FIG. 2. (Continued)

except in the pain domain. Their study was conducted in a group form and had no control groups. In another study conducted by Behboodi Moghadam et al,²¹ after a sex education program, the total score of sexual function and its domains (except for orgasm and pain) increased, which disagrees with the present findings. This difference may be due to the fact that Behboodi Moghadam's study was conducted on women of reproductive age, who have no estrogen deficiency or vaginal dryness.

According to previous studies, postmenopausal women's concerns regarding sexual health and function involve all the stages of the sexual response cycle, that is, desire/arousal, orgasm, pain, and satisfaction.^{10,34} Sensate focus type 2 consists of touching activities designed with a focus on senses to derive pleasure from touching the erogenous zones and to help overcome functional anxiety and increase physical intimacy.^{40,41} By giving assignments on sensate focus type 2 and

an intervention consisting of real exposure, the postmenopausal women were given the opportunity to face every single negative sign again, in the presence of their husband and through him. The women were given the task of passing through every single stage, and their husbands were to accompany them on the path. In real exposure, the individual has to face every single external and internal stressor without avoiding them. Tolerating anxiety will automatically reduce it.⁴²

Finally, through the paradoxical intervention with symptom prescription, an order is issued to not change, even when change is expected. This method has been demonstrated to help eliminate resistance against change, irrespective of the action taken—compliance or resistance.⁴³ In the present study, one of the assignments given to the postmenopausal women was that change is not necessary (“reaching orgasm is not a must,” “gaining satisfaction is not a must,” etc.), even

when change is expected, regardless of the action taken. This method helped control the women's concern about the sexual dysfunction that can be caused by menopause, and led to an improvement in their sexual function and a change in all the domains of the sexual response cycle, including orgasm, desire, and satisfaction.

Yazdkhasti et al,⁴⁴ Forouhari et al,²⁰ Maridi et al,⁴⁵ and Sehhatie et al⁴⁶ examined the effect of education on the quality of life in postmenopausal women using the MENQOL. All of these studies showed significant improvements in participants' scores of quality of life in different dimensions, including vasomotor, psychosocial, physical, and sexual dimensions, which included vaginal dryness, avoiding sex, and change in desire. These results agree with those of the present study.

Marital success depends on the sexual relationship between the husband and wife over the years of marriage, from youth to old age. Couples should reach union through happiness, satisfaction, compassion, and love, and this union can be a reliable means for achieving sexual satisfaction and desire.¹⁸ In the counseling education program given in the present study, assignments were issued to enrich the couples' relationship by being together and by the closure of their relationship outlets; these outlets were regarded as barriers to togetherness or increased togetherness. As a result, the couples used these periods of being together for improving their sexual health and intimacy.⁴⁷ This intervention method may be responsible for the disparity between the present findings and the results obtained by Nazarpour et al^{14,35} in terms of achieving desire.

In a study conducted by Parsa et al on the effect of counseling on the quality of life in postmenopausal women, significant changes were observed in the sexual dimension of quality of life in the intervention group compared with the control group, and sexual problems, including reduced desire and avoiding sex, decreased in the intervention group. This study gave counseling to its participants using the GATHER method (Greeting-Ask-Tell-Help-Explain-Return), and the results obtained agreed with those of the present study.⁴⁸ The present findings also agreed with the results obtained by Tiznobek et al, who investigated the effect of counseling on sexual function and behavior in postmenopausal women and their husbands. The results showed a significant difference in the frequency of sex, dyspareunia, intercourse failure, and the degree of satisfaction and love for the husband in the intervention group compared with the controls. Tiznobek et al's study disagreed with the present study in terms of the sexual function assessment tool used.¹⁸ The study conducted by Bober et al on the effect of a brief psychosexual intervention on sexual function in women with induced menopause showed changes with a moderate-to-high effect size in desire and arousal, and with a small effect size in the total FSFI score, lubrication, orgasm, and pain.⁴⁹ The better effectiveness of the intervention given in the present study may have been because the participants in Bober et al's study had a university education, whereas the participants had little education in the present study and nearly half of them did not even

have a high school diploma. The frequency of the sessions and the duration of the intervention were also higher in the present study; in addition, Bober et al's study had no control groups.

The strengths of the present study include the random division and allocation concealment, the presence of a control group, the weekly intervention sessions, and the accurate multistage assessment. All the cited studies implemented their counseling education program in group form and only with postmenopausal women, except for the study by Tiznobek et al. No similar studies were found on this group of women. The present study held its intervention sessions in a single-couple form to create a safe atmosphere for the participants to ask all their questions and attempt to solve the problems. The given assignments and feedback and the Q&A in the sessions consolidated the content of the sessions for the participants and constitute another strength of this study. Women who had been postmenopausal for over 5 years were excluded from the study, and as a result, the effect of age on sexual function was diminished.

Limitations

The 2-month follow-up of the intervention may have impeded the assessment of the sustained long-term effect of the intervention. Future studies are recommended to consider a longer-term follow-up. Another limitation was the chances of the poorly educated participants giving a wrong answer, even though the items were properly explained to them by the researcher. Another limitation was the use of the FSFI, which assessed sexual function over 1 month; if the participants had no sex during that month, they could not score in any of the domains, except for satisfaction and desire, but these scores were prone to change after even one sexual encounter.

Potential clinical value

Based on the results of this study, healthcare providers and counseling midwives are recommended to get specialized training in this method due to its simplicity of use and significant effectiveness. Implementing this program can also help improve families' health by solving the sexual problems of middle-aged couples.

CONCLUSION

The midwife-based counseling education program with four educational sessions improved sexual function significantly in postmenopausal women. Counseling education programs targeting certain stages of life, such as menopause, should be further promoted. Men and women at this age may suffer from dramatic psychological changes that could potentially affect their sexual relationships. Proper counseling and education are one of the main responsibilities of midwives which could help overcome such problems.

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