

The Effect of Mindfulness-based Stress Reduction Group Counseling on Sexual Satisfaction of Pregnant Women

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| ARTICLE INFO | ABSTRACT |
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| Article type: Original article | Background & aim: Sexual satisfaction of pregnant women is affected by physiological and psychological conditions of this period. The mindfulness-based stress reduction, as it can increase awareness of sexual responses, may help improve pregnant women's sexual satisfaction. This study was carried out to evaluate the effect of mindfulness-based stress reduction group counseling on sexual satisfaction of pregnant women. |
| Article History: Received: 18-Feb-2022 Accepted: 01-May-2022 | Methods: This randomized clinical trial was performed in 2021 on 60 pregnant women aged 18-35 years with gestational age of 20-26 weeks, referring to the health care centers in Mashhad, Iran. In the intervention group, 8 sessions of 60-minute group counseling were conducted through Skyroom in the groups of 10-12 people. The control group received routine care. Sexual Satisfaction for Women (SSSW) and Depression, Anxiety and Stress-21 (DASS-21) were used to collect data. Data were measured before and 4 weeks after the intervention and were analyzed by SPSS software and independent t-test and Mann-Whitney test. |
| Key words: Mindfulness Counseling Stress Reduction Sexual Satisfaction Pregnancy | Results: Before the intervention, the mean score of sexual satisfaction of pregnant women was not significantly different in the two groups of intervention (83.80±16.49) and control (85.82±11.46). After the intervention, the mean score of sexual satisfaction of pregnant women significantly increased in the intervention group (110.65±6.53) compared to the control group (95.18±15.12) (P<0.001). Conclusion: Considering the effect of mindfulness-based stress reduction group counseling on sexual satisfaction improvement of pregnant women, it is suggested to use it to improve sexual satisfaction of pregnant women. |

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Introduction

Sexual relation is one of the most complex aspects of a woman's life, which is multidimensional and includes biological, psychological, socio-economic and spiritual components (1). On the other hand, one of the most important programs for personal health is sexual health that sexual function and sexual satisfaction are central and affect family life (2,3). Thus, sexual health care for women includes identifying concerns and helping women to increase sexual function and sexual satisfaction

(1). Sexual satisfaction is to judge and analyze each person's sexual behavior based on pleasure (4). Many factors can affect sexual satisfaction. One of these factors is pregnancy (5). Pregnancy is one of the most sensitive stages of human life (6). According to a study in the Netherlands, all areas of sexual function (desire, satisfaction, orgasm, arousal and pain during intercourse) were significantly reduced during pregnancy compared to before pregnancy (7). In Tunisia (2017), 70% of pregnant women had sexual

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dysfunction (8). In Iran (2019) sexual dysfunction (desire, satisfaction, orgasm, arousal and pain during intercourse) was higher in the third trimester of pregnancy than in the second and third trimesters (9).

Sexual dissatisfaction for any reason is closely related to issues such as crime, rape, mental illness, depression, anger, anxiety, fear, and suicide thoughts. It can also have negative effects on self-esteem and interpersonal relationships, and leads to stress (10, 11). In addition, it can lead to feelings of failure, deprivation, lack of security feelings and reduced mental health, and as a result, reduced marital happiness and the breakdown of families (13). Along with other conditions, it destabilizes the family foundation and increases the likelihood of divorce (14).

Changes which occur during pregnancy in the physical, psychological, social dimensions and quality of life of pregnant women at different levels can lead to increased anxiety, worry and distress (15). Therefore, physical, emotional and economic stressors caused by pregnancy can have a negative effect on emotional intimacy and sexual satisfaction (16). Factors such as: changing a person's mental image of her body, reducing attractiveness for the spouse, fear of injury to the fetus and fear of preterm delivery, which causes no sexual activity and feeling of guilt about sex during pregnancy and consequently has a negative effect on the sexual response of the person and the couple's sexual relationship and causes the couple's sexual dissatisfaction (17).

Emphasis on increasing women's awareness during pregnancy to prevent anxiety during this period, and providing the necessary training, can reduce women's anxiety and increase the quality of sexual life during pregnancy (18). Therapeutic efforts should cover as many aspects as possible. One of these efforts that can avoid one-dimensional intervention is mindfulness. Unlike sexual counseling and training, mindfulness is a type of treatment that has a different way of dealing with thoughts, feelings and physical emotions, which is one of the most important factors affecting the quality and sexual relations of spouses. This different way occurs in mindfulness-based treatments. People with a high mindset can create a constantly dynamic and flexible environment in their lives due to

their mastery of time and not being afraid of change (19).

Practicing mindfulness can not only increase awareness of sexual responses which occur moment by moment, but also reduce harsh or in some cases non-standard judgments. Since in some cases, distraction is a major barrier to sexual arousal in women, this method can improve sexual relations (20). Sensory focus is considered as one of the basic components of sex therapy and remains as the main basis of treatment and includes a structural and progressive touch between the two partners, progressing from the initial non-genital touch to a more pleasure-oriented touch in later stages. Thus, mindfulness improves the coordination between sexual-genital arousal and mental arousal in women. Women through this training are more coordinated with subtle increases in genital response, and thus lead to improved sexual arousal (21).

A study entitled "The effect of sexual education on pregnant women's beliefs about sexual activity during pregnancy" showed that although there was no significant differences between the two groups in beliefs such as fear of miscarriage, fear of bleeding, fear of pain during intercourse, fear of preterm delivery, feeling of guilt, but the beliefs such as fear of injury to the fetus, fear of infection, fear of abdominal pain, and discomfort with sexual activity during pregnancy significantly decreased one month after group intervention in the intervention group than the control group that could confirm the positive role of education in correcting the general belief of pregnant women about sexual relations during this period (22). In the study of Heydari et al. (2019), it was stated that education based on PLISSIT model (permission (P), limited information (LI), specific suggestions (SS), and intensive therapy (IT) could increase sexual satisfaction in the experimental group at the end of the second trimester and the end of the third trimester of pregnancy compared to the control group, but didn't show a significant difference (23).

Since satisfying sexual relations, which is one of the most important components of relationship between couples, is often affected by the physical and emotional demands of pregnancy, as well as the need to pay attention to

sexual satisfaction during pregnancy, and the lack of research on this topic on pregnant women, the present study was designed to measure the effect of mindfulness-based stress reduction group counseling on sexual satisfaction in pregnant women.

Materials and Methods

This randomized controlled clinical trial study with pre-test post-test design was performed on all women aged 18-35 years who met the inclusion criteria and referred to the health centers in Mashhad from July to December 2020. Multistage sampling was used to collect data. Accordingly, two sub-centers were selected using cluster sampling. These centers were assigned to the intervention and control groups using simple random sampling. So that, two centers were registered with codes A and B and one of the centers was selected using oblique coin. The selected center was assigned to the intervention group and the other center to the control group. In the next step, the individuals within each cluster (n=30) were selected using convenience sampling.

According to the study of Eghlimapour et al. (2016) who reported that the mean difference of the total score of sexual satisfaction after the intervention was -16.52 ± 11.06 in the intervention group and 0.351 ± 2.51 in the control group (24); and considering the 5% error and 80% test power, the minimum sample size was estimated as 6 people in each group using the formula of mean of two independent communities. Due to the interventional nature of the study and the possibility of sample loss of 10% and the possibility of using statistical tests with higher power, the final sample size was determined as 33 people in each group. (figure 1)

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2 (\sigma_1^2 + \sigma_2^2)}{(\mu_2 - \mu_1)^2}$$

$$= \frac{(1.96 + 0.84)^2 (11.06^2 + 2.51^2)}{(-16.52 - 0.3)^2}$$

Inclusion criteria were: being Iranian and living in Mashhad, age of 18 to 35 years, a minimum education of high school of pregnant woman and her husband, no tobacco and alcohol addiction in pregnant woman and her husband,

having a smartphone and headphone and facilities of the cyberspace, being only wife of the husband, giving birth to a live singleton pregnancy, having at least one intercourse in a week, not attending mindfulness courses, not having chronic underlying diseases (renal disorders, heart disease, diabetes, ...), no history of midwifery complications during pregnancy and postpartum (preterm delivery, placental abnormalities, history of stillbirth), gestational age of 20-26 weeks, having no depression, severe anxiety and stress, no underlying mental illness (obtaining the total score < 60 based on DASS-21 questionnaire), no history of sexual disorders of pregnant woman and her husband no major accident during the previous six months (death of a loved one or severe family disputes). Exclusion criteria were: unwillingness to participate in the study, not participating in more than one session of counseling, midwifery problems during the study, use of drugs affecting sexual function during the study, occurrence of adverse events during the study, absence of more than two sessions of counseling sessions, not doing more than 10% of therapy homework.

Data collection tools included demographic and obstetric characteristics questionnaire, depression anxiety stress scale DASS-21 (1995) (25), Sexual Satisfaction scale for Women (SSSW) (26) that were completed by the intervention and control groups before the intervention and 4 weeks after the last counseling session. Also, the therapy homework checklist was checked by the researcher during the intervention as well as getting feedback from pregnant mothers. The demographic and midwifery characteristics questionnaire was prepared according to the objectives of the research and study of the latest related sources and articles and consultation with the research team, and their validity in this study was approved by obtaining the opinion of 7 faculty members and completed by the subjects with the researcher's help.

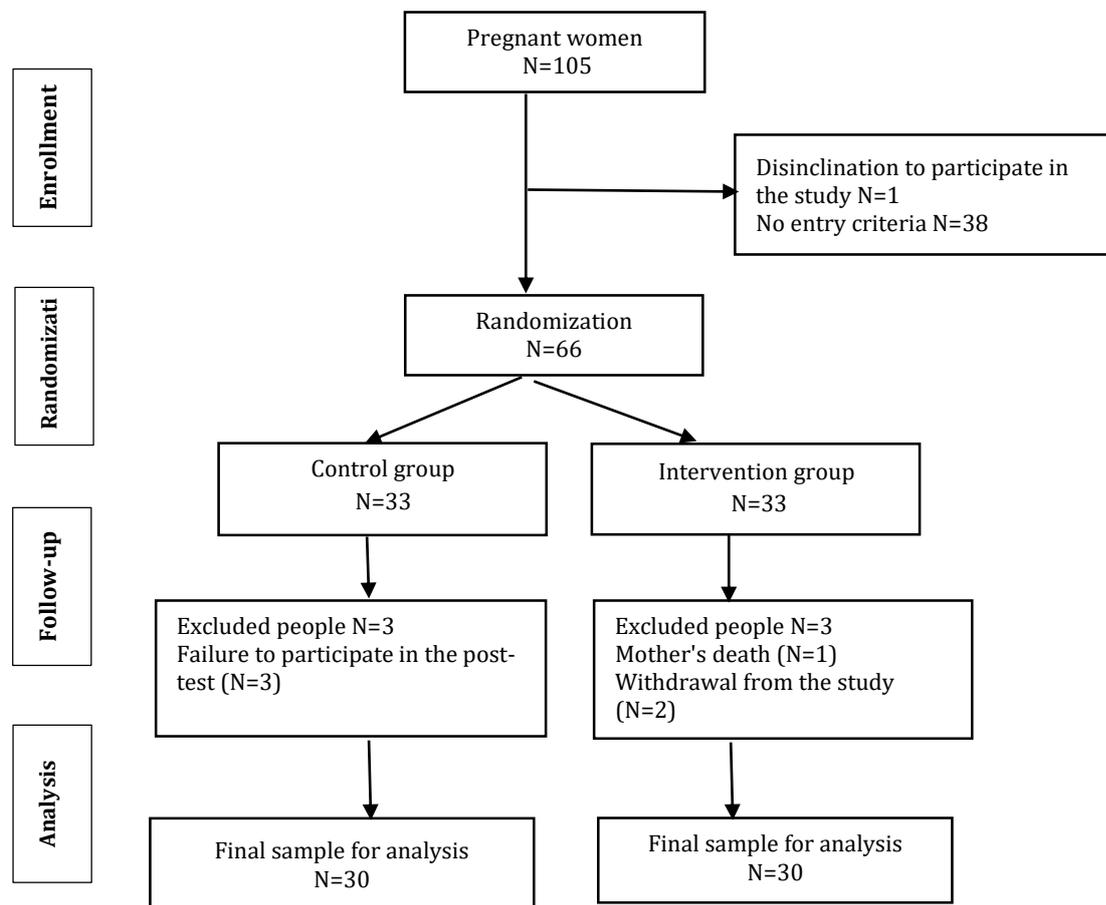
The depression anxiety stress scale was designed by Loviband (1995) (25) and had 21 questions. This questionnaire consists of 3 components and each subscales includes 7 questions (depression: 3,5,10,13,16,17,21), anxiety (2,4,7,7,15,15,19,20), stress (1,6,8,11,12,14,18). The final score of each part is obtained through the sum of the scores of the

related questions. The scoring method is as follows: the scores of zero (does not apply to me at all) to 3 (absolutely applies to me), which were for each question. It is the abbreviated form of the main scale (42 questions), therefore, the final score of each of the subscales should be doubled. In the study of Samani et al. (2007), the validity of the DASS-21 was checked. The retest validity coefficient for stress was 0.80, for depression was 0.81, for anxiety was 0.78 and for the whole scale was 0.82 ($p < 0.001$). In addition to the retest method, the alpha validity coefficient was used to evaluate the internal consistency of the scale. This coefficient for stress, depression and anxiety were $r=78\%$, $r=85\%$ and $r=75\%$,

respectively (27). Also, the validity and reliability of this questionnaire has been confirmed in previous studies.

The SSSW questionnaire was designed by Meston and Trapnell (2005) (26) and has 30 questions and 5 dimensions including satisfaction (questions 1 to 6), communication (questions 7 to 12), adjustment (questions 13 to 18), relationship anxiety (questions 19 to 24) and personal anxiety (questions 25 to 30) that is scored based on a 5-options Likert scale (from strongly agree to strongly disagree). The questions 1, 4, 5, 6, 9, 10, 11, and 12 are scored reversely.

Figure 1. CONSORT Flowchart



The scores of each area are obtained from the sum of the questions of that area. The total score is obtained as follows: (satisfaction + relation + compatibility + (relational anxiety + personal anxiety)/2).

The highest score indicates more satisfaction. Cronbach's alpha coefficient has been reported for the questionnaire dimensions up to 90%, for personal anxiety up to 74%, for the communication dimension and for the total score of sexual satisfaction up to 94%. The highest test-retest reliability among women with sexual dysfunction in relational anxiety is 80%. It was confirmed by Roshan Chesli et al. (2014) through content validity in Iran. To evaluate the validity, structural validity with confirmatory factor analysis and convergent-divergent validity were used. Also, retest coefficients for sexual satisfaction score and dimensions were obtained as 73% to 97% (28). Therefore, the validity of this questionnaire has been confirmed in previous studies in Iran.

Homework checklist: This checklist included exercises that were assigned to the pregnant mother by the researcher after each intervention session. These exercises in all sessions include: raisin eating practice, sitting meditation, body scan, recording pleasant events, three minutes breathing space, recording an unpleasant event schedule, conscious walking, mindfulness of a new activity, three minutes of breathing space in a pleasant event, mindfulness practice " thoughts are not real ", doing a combination of meditation that is preferred for the person, and reviewing what women have learned so far.

The control group received no intervention and received only the routine care of the comprehensive health services. For the intervention group, eight sessions of counselling (three groups, average of 12 people) was held by the researcher at intervals of two sessions. per week and 45-60 minutes for each session. The first counselling session was held in person in the mothers' classroom, and the next seven sessions were conducted virtually and in groups between counsellors and clients through Skyroom. The general content of the sessions and how to present the material was designed based on the techniques of Kabat Zain mindfulness protocol (29). First session (automatic performance) included: familiarization of group members with

each other and greeting, brief description of eight sessions, performing meditations of eating a raisin, body scan, and giving homework. Second session (removing obstacles) consisted of: body scan, sitting meditation, discussion on the obstacles to exercise and the solutions of mindfulness program for it and awareness of pleasant events. Third session (breathing with mindfulness) included: calm and mindfulness movements as ways to calm the physical symptoms of stress, practice seeing and hearing, meditation, three-minute practice of breathing space and mindfulness of unpleasant event. Fourth session (staying in the moment) comprised of: sitting meditation with emphasis on breathing, body sounds and thoughts, discussing stress responses and a person's reaction to difficult situations and alternative attitudes and behaviors, practicing mindfulness walking. Fifth session (accepting and allowing) made up of: sitting meditation, three-minute breathing space in an unpleasant event, and mindfulness of a new activity in daily life.

Sixth session (thoughts do not have a real origin): practicing three-minute breathing space, discussing homework in groups of 10 people, providing a practice that the majority of thoughts are not real, choosing a combination of meditations that is a personal preference. Seventh session (how to take the best care of yourself): meditation and awareness of everything that comes to consciousness in the moment. What is the best way to take care of myself? Eight session (how to use these in future decisions): body scan, apply what they have learned so far, and summarize. A file of sessions' summary is also provided for home practice.

Data were collected and analysed in descriptive and analytical formats. First, the Kolmogorov-Smirnov test was used to evaluate the normality of data distribution of quantitative variables. Independent t-test was used to compare the two groups in terms of normal quantitative variables and Mann-Whitney test was used for non-normal quantitative variables and ranking variables. Nominal variables were compared and tested in two groups using Chi-square test and Fisher's exact test. Paired t-test and Wilcoxon tests were also used in the intergroup evaluations. Data were analysed by

SPSS software (version 25). P<0.05 was considered statistically significant.

Results

The mean age of women was 29.67±4.26 in the intervention group and 30.73±4.97 in the control group (P=0.240). Most women and their husbands had an education level of diploma or higher. Demographic and midwifery variables of

women were not significantly different between the intervention and control groups; therefore, the two groups were homogeneous in terms of demographic and midwifery variables including age, age of spouse, level of education, level of spouse's education, number of pregnancies, gestational age, monthly income, history of medical and obstetric disease in pregnancy (Tables 1,2).

Table 1. Demographic and obstetric characteristics of women in intervention and control groups

| Variable | Group | | Test result |
|----------------------|-------------------------|--------------------|--------------------------|
| | Intervention Mean±SD | Control Mean±SD | |
| Age (year) | 29.67 ± 4.26 | 30.73 ± 4.97 | P=0.24 Mann-Whitney |
| Husband's age (year) | 33.50 ± 4.60 | 35.30 ± 5.55 | P=0.177 Independent t |
| Number of pregnancy | 1.40 ± 0.56 | 1.57 ± 0.73 | P=0.438 Mann-Whitney |
| Gestational age | 23.25 ± 2.42 | 23.25 ± 2.50 | P>0.999 Mann-Whitney |

Table 2. Demographic and obstetric characteristics of women in intervention and control groups

| Variable | Group | | Test's result |
|----------------------------------|-----------------------|------------------|-------------------------|
| | Intervention N (%) | Control N (%) | |
| Education level | | | |
| High school | 1(3.33) | 2(6.67) | Fisher Exact P=0.560 |
| Diploma | 2(6.67) | 4(13.33) | |
| College | 27(90.00) | 24(80.00) | |
| Total | 30(100.00) | 30(100.00) | |
| Husband's education level | | | |
| High school | 0(0.00) | 2(6.67) | Fisher Exact P=0.107 |
| Diploma | 2(6.67) | 6(20.00) | |
| College | 26(86.67) | 22(73.33) | |
| Total | 30(100.00) | 30(100.00) | |
| Monthly income | | | |
| Less than enough | 2(6.67) | 3 (10.00) | Fisher Exact P=0.786 |
| Enough | 26(86.67) | 24(80.00) | |
| More than enough | 2(6.67) | 3 (10.00) | |
| Total | 30(100.00) | 30(100.00) | |
| Current pregnancy | | | |
| Wanted | 25(83.33) | 21(70.00) | Fisher Exact P=0.475 |
| Unwanted | 1(3.33) | 3 (10.00) | |
| Unplanned | 4(13.33) | 6(20.00) | |
| Total | 30(100.00) | 30(100.00) | |

Mann-Whitney test showed no significant difference between the mean total score of sexual satisfaction of pregnant women in the intervention and control groups before the consultation (P=0.859). After the intervention, the mean total score of sexual satisfaction in the intervention group was 110.65±6.53 and in the control group was 95.18±15.12.

Mann-Whitney test showed that the difference was significant (P<0.001). In the intergroup comparison in the intervention group, paired t-test showed that the difference between before and after the intervention was significant (P<0.001). In the intergroup comparison in the control group, Wilcoxon test showed that the difference between before and after the intervention was significant (P<0.001).

Table 3. Mean and standard deviation of the total score of sexual satisfaction of women during different stages of the study in intervention and control groups

| Total score of sexual satisfaction | Group | | Test result |
|--|---------------------------------|--------------------------------|--------------------------|
| | Intervention Mean±SD | Control Mean±SD | |
| Before intervention | 83.80 ± 16.49 | 85.82 ± 11.46 | P=0.859 Mann-Whitney |
| After intervention | 110.65 ± 6.53 | 95.18 ± 15.12 | P<0.001 Mann-Whitney |
| After intervention compared to before intervention | 26.85 ± 11.94 | 9.37 ± 6/03 | P<0.001 Independent t |
| Intergroup test's result | t=-12.32 P<0.001 Paired-t | Z=-4.51 P<0.001 Wilcoxon | |

In other words, the total score of sexual satisfaction after the intervention increased by 26.85±11.94 in the intervention group and increased by 9.37±6.03 in the control group compared to before the intervention. Independent t-test showed that the difference was significant (P<0.001). This increase in the intervention group indicates the effect of counseling (Table 3).

Also, in all dimensions of sexual satisfaction (satisfaction, relation, compatibility, relational anxiety, personal anxiety) the results were significant in the intervention group 4 weeks after the intervention (P <0.001). In the intergroup comparison in the control group, the difference between before and after the intervention was significant in all dimensions (P <0.001) (Table 4).

Table 4. Mean and standard deviation of sexual satisfaction dimensions in pregnant women during the stages of the study by group

| Sexual satisfaction | Group | | Test result |
|--|-------------------------|---------------------|-------------------------|
| | Intervention Mean±SD | Control Mean±SD | |
| Before intervention | 20.80 ± 4.68 | 21.17 ± 3.71 | P=0.947 Mann-Whitney |
| After intervention | 27.93 ± 1.96 | 23.73 ± 5.02 | P<0.001 Mann-Whitney |
| After intervention compared to before intervention | 7.13 ± 3.69 | 2.57 ± 2.62 | P<0.001 Mann-Whitney |
| Intergroup test's result | P<0.001 Wilcoxon | P<0.001 Wilcoxon | |
| Relation | | | |
| Before intervention | 21.70 ± 4.21 | 21.90 ± 2.73 | P=0.806 Mann-Whitney |
| After intervention | 28.13 ± 1.61 | 24.33 ± 3.76 | P<0.001 |

| Sexual satisfaction | Group | | Test result |
|--|---------------------|---------------------|-------------------------|
| | Intervention | Control | |
| | Mean±SD | Mean±SD | |
| After intervention compared to before intervention | 6.43 ± 3.24 | 2.43 ± 2.08 | Mann-Whitney P<0.001 |
| Intergroup test's result | P<0.001 Wilcoxon | P<0.001 Wilcoxon | Mann-Whitney |
| Compatibility | | | |
| Before intervention | 20.60 ± 4.84 | 21.07 ± 3.54 | P=0.682 Mann-Whitney |
| After intervention | 27.13 ± 2.18 | 32.70 ± 4.02 | P<0.001 Mann-Whitney |
| After intervention compared to before intervention | 6.53 ± 3.56 | 2.63 ± 2.04 | P<0.001 Mann-Whitney |
| Intergroup test's result | P<0.001 Wilcoxon | P<0.001 Wilcoxon | |
| Relational anxiety | | | |
| Before intervention | 19.87 ± 5.11 | 21.17 ± 4.36 | P=0.294 Mann-Whitney |
| After intervention | 27.53 ± 1.61 | 22.90 ± 4.30 | P<0.001 Mann-Whitney |
| After intervention compared to before intervention | 7.67 ± 4.14 | 1.73 ± 2.46 | P<0.001 Mann-Whitney |
| Intergroup test's result | P<0.001 Paired-t | P=0.002 Wilcoxon | |
| Personal anxiety | | | |
| Before intervention | 21.53 ± 4.78 | 22.20 ± 3.79 | P=0.667 Mann-Whitney |
| After intervention | 27.37 ± 2.04 | 23.93 ± 4.40 | P<0.001 Mann-Whitney |
| After intervention compared to before intervention | 5.83 ± 3.68 | 1.73 ± 2.53 | P<0.001 Mann-Whitney |
| Intergroup test's result | P<0.001 Wilcoxon | P=0.002 Wilcoxon | |

Discussion

The results of the present study showed that after the intervention, the mean score of sexual satisfaction significantly increased in the intervention group compared to the control group. In other words, mindfulness-based stress reduction counseling can affect the sexual satisfaction of pregnant women. Also in the control group, the mean score of sexual satisfaction of pregnant women significantly increased. Despite the significant increase in sexual satisfaction score in both groups, the results showed that the difference was significant in the intervention group compared to the control group.

Sexual satisfaction refers to the judgment and analysis of each person's sexual behavior based on pleasure (4). Sexual satisfaction had a significant relationship with marital satisfaction, so that any increase or decrease in sexual satisfaction leads to changes in marital satisfaction. It causes a faster increase in marital satisfaction in women than men (30). Pregnancy is one of the factors that can affect sexual satisfaction (5). Pregnancy can affect many aspects of life, including sexuality (6). Pregnancy can deepen and on the other hand cause psychological rupture of couples (31).

Beveridge et al. (2017) found that women who had fear of having sex could harm their pregnancy reported higher rates of avoiding intercourse. The results show that the interventions focused on minimizing fear of

sexual activity during pregnancy may not be necessary to promote sexual health and public relations in women during pregnancy, but may help reduce women's feelings, worries and anxiety about sexual relations (32). The present study is consistent with their study because it can overcome this fear through mindfulness-based stress reduction, and the target population was pregnant women.

The results of the study by Brotto and Basson (2014) entitled "Group mindfulness-based therapy significantly improves sexual desire in women", showed that women who participated in short-term mindfulness courses had higher mental arousal in sexual interactions. In fact, one of the goals of mindfulness is to connect the body in a non-judgmental state with his or her current psychological experiences. In fact, awareness of the body increases sexual arousal (33). Although their study was in women of childbearing age, it was consistent with the present study.

Shabani et al. (2020) also conducted a study entitled "The effectiveness of mindfulness-based cognitive therapy on sexual disorders and sexual satisfaction of women with spouses with extramarital relations (34). The results showed that mindfulness can affect many psychological variables including sexual disorders and sexual satisfaction of women with spouses who have extramarital relations. Their results are consistent with the results of the present study, although it was not in pregnant women. Foroozeh Yekta et al. (2018) also conducted a study entitled "The effect of mindfulness-based stress reduction program on psychological distress, emotion regulation and promoting marital satisfaction in adaptive women (35). Their results showed that mindfulness-based stress reduction program reduces psychological distress and increases emotion regulation skills in women and is also beneficial in couple therapy and can be used as one of the ways to promote marital relationship. The design of their study is consistent with the present study, while their study was about psychological distress, emotion regulation, and the promotion of marital satisfaction in women, and the present study is based on sexual satisfaction, which is a subscale of marital satisfaction.

However, Omidi et al. (2016) studied the effect of mindfulness-based stress reduction (MBSR)

on the promotion of sexual satisfaction and psychological well-being in women (36). The results showed that according to the effect of MBSR on psychological well-being in women, this method can be used. But it was not effective for sexual satisfaction and it has been suggested that CBT and other treatments be used which is not consistent with the results of the present study. The reason for this discrepancy may be different research community. Therefore, the results of sexual satisfaction and the target community are not consistent with the present study. This lack of significance is due to the interactive effect of time in the experimental group. But the content of the intervention is the same as the present study.

Shahoie et al. (2019) conducted a study entitled "Evaluation of the effectiveness of mindfulness-based stress reduction program on anxiety in pregnant women" (37). The results showed that the intervention was significantly effective in reducing overt anxiety but although reduced hidden anxiety, but it was not significant. Therefore, due to the effectiveness of mindfulness-based stress reduction program on the anxiety of pregnant mothers, this method can be used to reduce the anxiety of pregnant mother. The design of their study was consistent with the present study, while their study was on anxiety and the present study was on sexual satisfaction.

Emphasis on increasing women's awareness during pregnancy and women's emotional support to prevent anxiety during pregnancy and providing the necessary training can be effective in reducing women's anxiety and increasing the quality of sexual life during pregnancy (18). Sexual satisfaction of couples during pregnancy is a field of study that has been less studied. There are several limitations, such as the lack of research on attitudes about sexual relations during pregnancy, the analysis of the relationship between sexual satisfaction and sexual behavior, and the analysis of marital interactions between couples. It is the responsibility of the health care providers to allay fears and clear up any misconceptions about such issues (38).

One of the limitations of this study was the lack of control over all factors affecting sexual satisfaction and individual differences in the

effectiveness of counseling, which was partially controlled by random allocation.

Conclusion

The results of this study can be used by health center officials to plan for health workers. It could familiarize the staff with mindfulness-based stress reduction counseling in order to provide sexual counseling services for pregnant women. Such programs could improve family health and reduce complications caused by lack of awareness or popular misconceptions about sexual relations in pregnancy and subsequently improve sexual satisfaction, and ultimately improve pregnant women's quality of life.

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Conflicts of interest

Authors declared no conflicts of interest.

References

1. Hasanzadehbeshtian M. Effective factors on woman's sexuality. *Iranian journal of obstetrics, gynecology and infertility*. 2006; 9(1): 86-91.
2. World Health Organization. Measuring sexual health: Conceptual and practical considerations and related indicators. World Health Organization; 2010. <https://apps.who.int/iris/handle/10665/70434>
3. karimi, FZ, dadgar, S, abdollahi, M, norozi, Z. The Influence of Rheumatoid arthritis on women's sexual function: A systematic review and meta-analysis. *The Iranian Journal of Obstetrics, Gynecology and Infertility*. 2019; 22(8): 74-84.
4. Young M, Denny G, Young T, Luquis R. Sexual satisfaction among married women. *American Journal of health studies*. 2000; 16(2): 73-84.
5. Dadgar S, Karimi F, Bakhshi M, Abdollahi M, Rahimzadeh Borj F. Assessment of sexual dysfunction and its related factors in pregnant women referred to Mashhad health centers (2017-2018). *The Iranian Journal of Obstetrics,*

6. *Gynecology and Infertility*. 2018; 21(8): 22-29.
6. Hasan Zahraee R, shafiee K, Bashrdoost N, Reihany M, Jabery P. Study of the related factors in couples' sexual relationship during pregnancy. *Journal of Inflammatory Diseases*. 2002; 5(4): 62-67.
7. Gałazka I, Drosdzol-Cop A, Naworska B, Czajkowska M, Skrzypulec-Plinta V. Changes in the Sexual Function During Pregnancy. *The Journal of Sexual Medicine*. 2015; 12(2):445-454.
8. Christopher FS, Sprecher S. Sexuality in Marriage, Dating, and Other Relationships: A Decade Review. *Journal of Marriage and Family*. 2000; 62(4): 999-1017.
9. Hosseini F S, Parnak F, Naroui P, Dastyar N. A review of sexual dysfunction in pregnancy, lactation and menopause, Fifth National Congress of the Student Research Committee of Rafsanjan University of Medical Sciences, Rafsanjan. 2019; <https://civilica.com/doc/997582>.
10. Bahrami N, Yaghoobzadeh A, Sharif Nia H, Soliemani M, Haghdoost A. Psychometric properties of the Persian version of Larsons sexual satisfaction questionnaire in a sample of Iranian infertile couples. *Iranian Journal of Epidemiology*. 2016; 12(2): 18-31.
11. Karimi FZ, Pourali L, Hasanzadeh E, Nosrati SF, Pouresmaeili N, Abdollahi M. Sexual Dysfunction in Postmenopausal Women. *Acta Medica Iranica*. 2021; 59(12): 720-725.
12. Maleki-Saghooni, N., Heidarian Miri, H., Karimi, F., Mirteimouri, M. The effect of systemic lupus erythematosus on women's sexual function: A systematic review and meta-analysis. *The Iranian Journal of Obstetrics, Gynecology and Infertility*. 2018; 21(7): 86-96. doi: 10.2 2038 ijogi.2018.11801.
13. Pak gouhar M, Vizheh M, Babaei GR, Ramazanzadeh F, Abedinia N. Effect of counseling on sexual satisfaction among infertile women referred to tehran fertility center. *Hayat*. 2008; 14(1): 21-30.
14. Shams mofaraheh Z, Shahsiah M, Mohebi S, Tabaraee Y. The effect of marital counseling on sexual satisfaction of couples in shiraz city. *Health system research*. 2010; 6(3): 417-424.
15. Barjasteh S, Moghaddam Tabrizi F. Antenatal anxiety and pregnancy worries in association with marital and social support. *Nursing and Midwifery Journal*. 2016; 14(6): 504-515.
16. Eryilmaz G, Ege E, Zincir H. Factors Affecting Sexual Life during Pregnancy in Eastern Turkey. *Gynecologic and Obstetric Investigation*. 2004; 57(2): 103-108.
17. Nematollahzade M, Maasoumi R, Lamyian M,

- Asghari Jafarabadi M. Study of women's attitude and sexual function during pregnancy. *Journal of ardebil university of medical sciences*. 2010; 10(3): 241-249.
18. Liu HL, Hsu P, Chen KH. Sexual Activity during Pregnancy in Taiwan: A Qualitative Study. *Sexual Medicine*. 2013; 1(2): 54-61.
19. McCarthy B, Wald LM. Mindfulness and Good Enough Sex. *Sexual and Relationship Therapy*. 2013; 28(1-2): 39-47.
20. Carvalho J, Nobre P. Predictors of Women's Sexual Desire: The Role of Psychopathology, Cognitive-Emotional Determinants, Relationship Dimensions, and Medical Factors. *The Journal of Sexual Medicine*. 2010; 7(2, Part 2): 928-937.
21. Silverstein RG, Brown A-CH, Roth HD, Britton WB. Effects of mindfulness training on body awareness to sexual stimuli: implications for female sexual dysfunction. *Psychosom Med*. 2011; 73(9): 817-825.
22. Riazi H, Banoo Zadeh S, Moghim Beigi A, Amini L. The effect of sexual health education on sexual function during pregnancy. *Payesh*. 2013; 12(4): 367-374.
23. Heidari M, Shokravi FA, Kiani Aciabar A. The effect of an educational intervention based on the PLISSIT model on sexual satisfaction of pregnant women in the third trimester of pregnancy. *Health Monitor Journal of the Iranian Institute for Health Sciences Research*. 2019; 18(5): 505-515.
24. Aqlimapur S. The effect of "mindfulness group therapy" on sexual function, sexual satisfaction and the quality of women's marital relationship. Tehran: Non-Governmental - Non-Governmental Higher Education Institutions - Non-Profit - Tehran University of Science and Culture - Faculty of Literature and Humanities; 2016. page:80-94. url: <https://ganj.irandoc.ac.ir/#/articles/e8ee45a1340b070a05774126f1111ac6>.
25. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*. 1995; 33(3): 335-343.
26. Meston C, Trapnell P. Original research—outcomes assessment: Development and validation of a five-factor sexual satisfaction and distress scale for women: The sexual satisfaction scale for women (sss-w). *The Journal of Sexual Medicine*. 2005; 2(1): 66-81.
27. Samani S, Joukar B. A study on the reliability and validity of the short form of the depression anxiety stress scale (dass-21). *Journal of social sciences and humanities of shiraz university*. 2007; 26(3): 65-77.
28. Roshan Chesli R, Mirzaei S, Nikazin A. Validity and Reliability of Multidimensional Sexual Satisfaction Scale for Women (SSSW) in One Sample of Iranian Women. *Clinical Psychology and Personality*. 2014; 12(1): 129-140.
29. Mohammadkhani P, Khanipour H. Mind-Based Therapies (with a Practical Guide to Mind-Based Therapies to Prevent Depression Recurrence). Tehran: University of Social Welfare and Rehabilitation Sciences; 2012. 350 p.
30. Guo B, Huang JIN. Marital and Sexual Satisfaction in Chinese Families: Exploring the Moderating Effects. *Journal of Sex & Marital Therapy*. 2005; 31(1): 21-29.
31. Bayrami R, Sattarzadeh N, Ranjbar koocheksarai F, Pezeshki M. Evaluation of sexual behaviors and some of its related factors in pregnant women, Tabriz, Iran 2005. *Studies in Medical Sciences*. 2009; 20(1): 1-7.
32. Beveridge JK, Vannier SA, Rosen NO. Fear-based reasons for not engaging in sexual activity during pregnancy: associations with sexual and relationship well-being. *Journal of Psychosomatic Obstetrics & Gynecology*. 2018; 39(2): 138-145.
33. Brotto LA, Basson R. Group mindfulness-based therapy significantly improves sexual desire in women. *Behaviour Research and Therapy*. 2014; 57: 43-54.
34. Shabani J, Abdi H. The Effectiveness of Mindfulness-Based Cognitive Therapy on Sexual Disorders and Sexual Satisfaction in Women with spouses' extra-marital relationships. *Journal of Research in Behavioural Sciences*. 2020; 18(1): 60-69.
35. Forouzesh Yekta F, Yaghubi H, Mootabi F, Roshan R, Gholami Fesharak M, Omid A. The Effectiveness of Mindfulness Based Stress Reduction Program on Distress, Emotion Regulation and Marital Satisfaction in Non-Maritally Distressed Women. *Clinical Psychology Studies*. 2018; 8(31): 67-90.
36. Omidy A, Shaban Zadeh Fini M, Akasheh G. The effectiveness of mindfulness-based stress reduction (MBSR) on sexual satisfaction and psychological well-being in women referred to counseling centers. *The Third National Scientific Research Congress on the Development and Promotion of Educational Sciences and Psychology, Sociology and Social Cultural Sciences of Iran 2017*. [https://civilica.com/doc/677827/Article ID \(COI\): EPCONF03_120](https://civilica.com/doc/677827/Article_ID(COI):EPCONF03_120)
37. Shahoie R, Karimi A, Sharifish S, Soufizadeh N,

- Khanpour F. Evaluation of the effectiveness of mindfulness-based stress reduction on anxiety in pregnant women. *Scientific Journal of Nursing, Midwifery and Paramedical Faculty*. 2019; 5(3): 83-94.
38. Naim M, Bhutto E. Sexuality during pregnancy in Pakistani women. *Journal-Pakistan Medical Association*. 2000; 50(1): 38-43.