



The effect of couple-centered counseling based on EX-PLISSIT model on the sexual function of couples during pregnancy: a randomized controlled trial

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Abstract

Background: Sexual problems in couples during pregnancy can be attributed to changes in their sexual performance caused by physical and mental changes experienced during this period.

Objectives: This study aimed to evaluate the impact of couple-centered counseling, using the EX-PLISSIT model, on the sexual function of couples throughout pregnancy.

Methods: In 2022, a randomized clinical trial was conducted in Hamadan, Iran. The study included 60 couples, with an equal distribution of 30 couples in each group. The Female Sexual Function Index (FSFI) was completed by the women before and four weeks after the intervention, while the men filled out the International Index of Erectile Function (IIEF) during the same time frame. Couple-centered counseling sessions were conducted using the principles of EX-PLISSIT, with four sessions. The data was analyzed using *t*-test, paired *t*-test, and Wilcoxon test.

Results: The mean FSFI and IIEF scores did not differ significantly between the two groups at baseline ($P=0.16$). After the intervention, the mean FSFI increased slightly in both groups, and this increase was statistically significant in both the intervention group ($P<0.001$) and the control group ($P=0.01$). Furthermore, after the intervention, the mean IIEF increased slightly in both groups, but the increase was statistically significant only in the intervention group ($P<0.001$).

Conclusion: Counseling based on the EX-PLISSIT model can relatively improve the sexual performance of couples during pregnancy.

Keywords: Counseling, Couples therapy, Pregnancy, Orgasm.

Introduction

Sexual desires can impact human behavior, health, and personal and social life.^[1] Sexual performance is an integral part of human life and health, impacting the quality of sexual life.^[2] The sexual performance of a couple during pregnancy can vary unpredictably, potentially decreasing, increasing, or remaining unchanged.^[3] Studies have reported sexual dysfunction in different trimesters of pregnancy, ranging from 23.4% to 70%.^[4] It has been shown that there is a connection between sexual dysfunction and pregnancy.^[5] Evidence also indicates that men's sexual performance is impacted during their wife's

pregnancy, particularly in the later stages. However, sexual activity during pregnancy can enhance marital and sexual relations after childbirth. However, women are often reluctant to talk about their sexual problems, resulting in underdiagnosed and untreated sexual disorders.^[6] Health professionals, especially midwives, ought to provide comprehensive and scientifically sound information on the mental, physical, and sexual changes that occur during pregnancy. Furthermore, prenatal education should include sexual counseling,^[7] to help couples recognize and comprehend their health status, make informed choices to preserve their well-being, and modify their behaviors

accordingly.

Couple-oriented counseling addresses existing issues by establishing a relationship with both partners and assisting them. This approach effectively addresses various factors that impact interpersonal relationships, and adopts a supportive and solution-focused approach, aiming to identify problems, offer appropriate solutions, and ultimately motivate individuals to enhance their knowledge and behavior.^[8]

Various educational and counseling models have been introduced for sexual assessment and counseling. One of the most practical models is EX-PLISSIT, which is particularly effective in addressing sexual challenges during pregnancy. This model consists of several steps, including obtaining permission, providing limited information, offering specific suggestions and treatments, making referrals, and reflecting and reviewing. It is crucial to thoroughly review and reflect on all interventions and client interactions within the EX-PLISSIT model. In this way, counselors can assess the effectiveness of each intervention and stage, allowing patients to make informed decisions and successfully implement desired solutions. Some studies have examined the effects of mindfulness-based stress reduction group counseling and virtual cognitive-behavioral sexual counseling on couples' sexual functioning during pregnancy.^[9, 10] However, there are few studies on the use of the EX-PLISSIT model to improve couples' sexual performance during pregnancy. Some studies also reported that the EX-PLISSIT model indirectly mediates "couple's responses to sexual function".^[11-13] Some studies by Nazari *et al.*,^[14] Shami *et al.*,^[15] and Malakouti *et al.*,^[16] also reported contradictory results regarding the effects of this model on sexual performance. Addressing and enhancing couples' sexual functioning is critical to improving their overall experience as a couple. Although there are several studies on enhancing sexual performance in pregnant women,^[17, 18] there is a lack of research on the effects of counseling for men and couples, highlighting the need for further studies on this matter.

Objectives

The present study aimed to investigate the impact of couple-centered counseling, utilizing the EX-PLISSIT model, on couples' sexual functioning during pregnancy.

Methods

Study design and participants

A randomized controlled trial with pretest–posttest

design was conducted in 2022. Participants were pregnant women and their husbands seeking prenatal care at selected comprehensive health centers (CHCs) in Hamadan, Iran. Inclusion criteria included gestational age between 24 and 28 weeks as determined by clinical examination and sonography, women aged between 18 and 35 years and men aged between 18 and 45 years, singleton pregnancy, no history of psychiatric disorders, no use of antidepressants or medications affecting sexual activity, no complications during pregnancy, no history of sexual dissatisfaction in couples before pregnancy, weak to moderate sexual functioning scores in women and average to good scores in men based on the Female Sexual Function Index (FSFI) or the International Index of Erectile Function (IIEF), and having at least a middle school education. Exclusion criteria included experiencing a psychological event or any pregnancy complications requiring medical intervention due to diminished fetal movements or abnormal fetal heart rate patterns, absence in the counseling sessions, and inaccessibility of the couple due to immigration or relocation.

The sample size was determined using the results of a study by Boojarzadeh *et al.* who examined the effect of an educational program on low sexual desire in women. The mean posttest and posttest libido of the intervention group were 8.8 ± 3.2 and 6.7 ± 1.7 , respectively. Accordingly, with $\alpha=0.05$, Power=0.90, $\mu_1=8.8$, $\mu_2=6.7$, $S_1=3.2$, and $S_2=1.7$, the sample size was set at 32 couples per group.^[19] However, considering the possibility of dropout, we recruited 35 couples in each group. Hamadan city was divided into three districts based on socioeconomic classes (i.e. upper, middle, and lower classes). A list of CHCs in each district was prepared and six CHCs (i.e., two from each socioeconomic class) were selected by lottery. One CHC from each geographic region was assigned to the intervention group and one to the control group. From each CHC, 10 eligible couples were chosen to participate in the study. Half of the couples from each CHC were randomly assigned to the control group and the other half to the intervention group. Finally, there were 30 couples in each group [Figure 1].

Data collection instruments

Data were collected using a two-part questionnaire. The first part gathered the couples' demographic information, and the second part included the FSFI and the IIEF, which were used as self-report measures to assess sexual performance in women and men, respectively. The FSFI comprises 19 items, 15 of which are rated on a six-point Likert scale from zero (no sexual activity) to 5 (always),

while four items are rated from 1 (never) to 5 (always). The overall score range between 2 and 36. The cutoff point for distinguishing between women with and without sexual dysfunction is 28, and higher scores indicate better sexual functioning. The reliability and validity of the Persian translation of the FSFI were confirmed by Rajabi *et al.*^[20] The IIEF includes 15 items. All items are scored on a 5-point Likert scale, and the total score ranges between zero and 75. A higher score indicates better sexual functioning. Babazadeh *et al.*, has confirmed the reliability of the Persian translation of the IIEF.^[21]

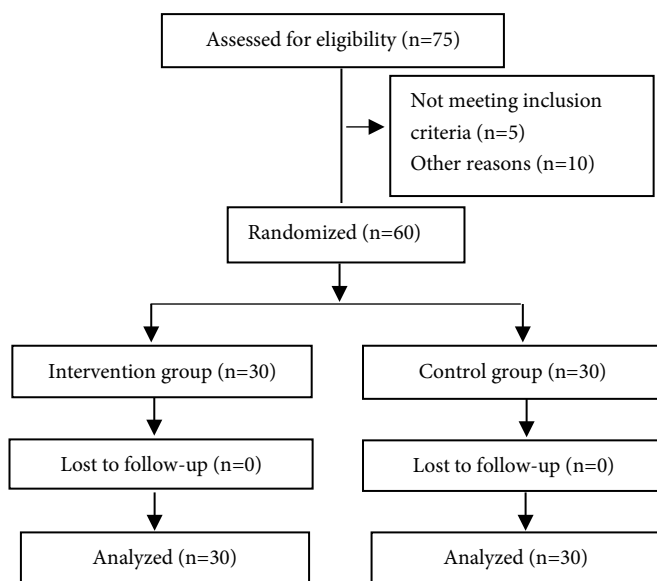


Figure 1. The study flow diagram

Intervention

Initially, both the intervention and control groups completed the study instruments. The intervention group participated in four sessions of couple-centered counseling that were held once a week for four consecutive weeks, and followed the principles of the EX-PLISSIT model. The

counseling sessions consisted of question-answer (for about 15 min), face-to-face discussions (for about 45 min), and showing relevant educational videos. All counseling sessions were facilitated by a counselor trained in the EX-PLISSIT model.^[22-24] The counseling and training sessions covered various topics to enhance sexual and marital satisfaction during pregnancy. The sessions aimed to educate participants about the changes in the sexual response cycle, both physical and psychological, that women and men experience during pregnancy. They also aimed to correct misconceptions about sexual relations during this period. A summary of these topics can be found in Table 1. The research assistants who conducted the data collection and analysis were unaware of the intervention and control groups. The control group received no intervention and did not participate in the counseling sessions. After the sessions were completed, the intervention group was contacted for feedback through weekly phone calls and social media. Additionally, both groups of pregnant women and their husbands re-completed questionnaires four weeks after the counseling intervention was completed. To ensure ethical compliance, the control group underwent a 2-hour intensive training session and received a training package containing the session content after the study ended.

Ethical considerations

All participants signed a written informed consent before participation. This study was conducted with the approval of the Research Ethics Committee of Hamadan University of Medical Sciences (IR.UMSHA.REC.1399.549) and was registered in the Iranian Registry of Clinical Trials (IRCT) of the Ministry of Health under the IRCT number (IRCT20120215009014N442).

Table 1. Content of counseling sessions

Counseling sessions (45-90 minutes)	Educational content of counseling sessions
First	Introducing the PLISSIT model, anatomy and physiology of the mother's body during pregnancy. Explaining the different sex positions during pregnancy.
Second	Explaining the changes in sexual function in women and men during pregnancy, describing the stages of the sexual response cycle and the physical and psychological differences between men and women during pregnancy, correcting misconceptions about sexual relations during pregnancy.
Third	Examining and Explaining the pattern of sexual changes during pregnancy, Summarizing the counseling session and planning the next session
Fourth	Investigation and explanation about sexual performance and description of factors affecting it in couples during pregnancy, answering possible questions, summarizing the consultation process

Data analysis

Data analysis was done using SPSS software version 16 (SPSS Inc., Chicago, IL, USA). To assess the normal distribution of variables, the Kolmogorov-Smirnov test was employed. The analysis of data with a normal distribution involved the use of independent and paired samples *t*-tests. Non-normal data of the two groups were compared using the Wilcoxon and Mann-Whitney U tests. The chi-square test was utilized to compare categorical variables among the study groups. To examine the confounding effects of pretest scores and marriage duration, the analysis of covariance was performed. Statistical significance was determined at < 0.05 .

Results

The two groups were homogeneous in terms of demographic variables ($P > 0.05$), but there was a

significant difference in the length of marriage ($P = 0.049$) [Table 2].

The between-group comparison showed that the mean FSFI did not differ significantly between the two groups either at baseline ($P = 0.16$) or after the intervention ($P = 0.054$). However, after the intervention, the mean FSFI increased slightly in both groups, and this increase was statistically significant in both the intervention group ($P < 0.001$) and the control group ($P = 0.01$). However, the increase rate was considerably higher in the intervention group [Table 3].

The between-group comparison also showed that the mean IIEF did not differ significantly between the two groups either at baseline ($P = 0.66$) or after the intervention ($P = 0.65$). However, after the intervention, the mean IIEF increased slightly in both groups, but the increase was statistically significant only in the intervention group ($P < 0.001$) [Table 4].

Table 2. Comparison of the demographic characteristics of pregnant women and their husbands between intervention and control groups

Variables	Group		P value
	Intervention, n (%)	Control, n (%)	
Women's education			
Below diploma	3 (10)	2 (6.7)	0.290 ^a
Diploma	10 (33.3)	16 (53.3)	
University	17 (56.7)	12 (40)	
Husband's education			
Below diploma	0	3 (10)	0.151 ^a
Diploma	14 (46.7)	16 (53.3)	
University	16 (53.3)	11 (36.7)	
Women's jobs			
Housewife	21 (70)	21 (70)	0.99 ^a
Employed	9 (30)	9 (30)	
Husband's job			
Unemployed	1 (3.3)	-	0.99 ^a
Employed	29 (96.7)	30 (100)	
Number of living children			
0	16 (53.3)	10 (33.3)	0.851 ^b
1	9 (30)	15 (50)	
2	5 (16.7)	5 (16.7)	
Number of abortions			
0	24 (80)	23 (76.7)	0.754 ^a
1	6 (20)	7 (23.3)	
Number of stillbirths			
0	29 (96.7)	27 (90)	0.612 ^c
1	1 (3.3)	3 (10)	
Desired pregnancy			
Yes	28 (93.3)	23 (76.7)	0.145 ^c
No	2 (6.7)	7 (23.3)	

Independent bedroom				
	Yes	27 (90)	26 (86.7)	0.99 ^c
	No	3 (10)	4 (13.3)	
Type of marriage of women				
	My family chose, but I also agreed	17 (56.7)	13 (43.3)	0.566 ^c
	I chose myself and my family agreed	12 (40)	15 (50)	
	I chose myself but my family was against	1 (3.3)	2 (6.7)	
Type of marriage of men				
	My family chose, but I also agreed	16 (53.4)	12 (40)	0.566 ^c
	I chose myself and my family agreed	13 (43.3)	16 (53.3)	
	I chose myself but my family was against	1 (3.3)	2 (6.7)	
Length of marriage, year				
	1-4	19 (63.3)	10 (33.3)	0.049 ^a
	5-8	6 (20)	8 (26.7)	
	9-12	5 (16.7)	12 (40)	
The reason for not having sex during pregnancy in women				
	Fear of harming the fetus	11 (36.7)	11 (36.7)	0.99 ^c
	Decreased sexual desire	0	1 (3.3)	
	Agreeing to sex during pregnancy	19 (63.3)	18 (60)	
The reason for not having sex during pregnancy in men				
	Fear of harming the fetus	10 (33.3)	9 (30)	0.781 ^c
	Decreased sexual desire	0	0	
	Agreeing to sex during pregnancy	20 (66.7)	21 (70)	
	Women's age, year (Mean±SD)	27.60 ± 4.81	28.33 ± 5.08	0.561 ^b
	Men's age, year (Mean±SD)	31.83 ± 4.92	32.27 ± 4.68	0.72 ^b
	Gravida (Mean±SD)	1.87 ± 0.90	2.17 ± 0.79	0.176 ^b

^a Chi-squared test; ^b t-test; ^c Fisher-exact

Table 3. Between- and within-group comparisons of the FSFI mean scores in the intervention and control groups

Variable	Group ^a		Test statistics (P value) ^c
	Intervention	Control	
Before	23.73 ± 5.37	22.40 ± 6.24	1.38 (0.16)
After	24.50 ± 4.88	22.77 ± 6.09	1.92 (0.054)
Test statistics (P value)^b	- 3.66 (<0.001)	- 2.44 (0.01)	

^a Data presented as Mean±SD, ^b Wilcoxon text, ^c Mann-Whitney U test

Table 4. Between- and within-group comparisons of the IIEF mean scores in the intervention and control groups

Variable	Group ^a		Test statistics (P-value) ^c
	Intervention	Control	
Before	59.96 ± 13.83	58.40 ± 13.78	-0.43 (0.66)
After	60.63 ± 13.90	59.00 ± 13.79	-0.45 (0.65)
Test statistics (P-value)^b	-3.55 (<0.001)	-1.87 (0.07)	

^a Data presented as Mean±SD, ^b Paired t-test, ^c Independent t-test

Discussion

The findings of this study show that couples who received counseling based on the EX-PLISSIT model experienced enhanced sexual performance, both compared to their pre-counseling state and in comparison, to the control group. In the present study, sexual performance improved in men

after counseling using the EX-PLISSIT model. Tuncer *et al.* also showed that counseling and treatment according to the principles of the PLISSIT model is an emerging and promising treatment modality for young men who suffer from sexual dysfunction. A previous study found that counseling using the PLISSIT model could reduce sexual

dysfunction in pregnant women.^[22] It seems that poor sexual performance can develop negative thoughts and sexual schemas in people. A proper counseling approach, such as the one used in the present study, can modify people's psychological responses and help them manage their emotions and reduce their anxiety. Bafrani *et al.*, also found that the implementation of the PLISSIT model in counseling can induce more constructive thoughts about sexual function, improve sensory focus, and reduce certain negative and destructive thoughts. This model utilizes desensitization behavioral techniques to change people's attitudes, promote better interaction between couples, and enhance sexual performance of both genders.^[25] Aligned with our results, Ullah *et al.* also found that counseling according to the EX-PLISSIT model can improve men's sexual performance through techniques such as cognitive reconstruction of irrational sexual thoughts, positive self-talk, attention focusing, and self-expression. It seems that this model improves sexual performance in men in different ways. One of the ways is to raise awareness and improve sexual skills while gaining a deeper understanding of the factors contributing to sexual performance. Moreover, expressing emotions and implementing behavioral interventions can effectively improve sexual performance. It is worth noting that these improvements can also benefit the woman, improve her communication, and ultimately lead to an improvement in her sexual performance.^[26]

The EX-PLISSIT counseling model improved women's sexual performance in the intervention group more than the control group. According to Malakouti *et al.*, health workers must offer couples with comprehensive information and appropriate counseling during pregnancy to ensure a safe pregnancy for women and to increase couples' sexual satisfaction.^[27] This aligns with our research, which also focuses on the sexual performance of pregnant women and emphasizes the importance of providing adequate support based on health and psychological principles. Azari-Barzandig *et al.* also found that implementing the PLISSIT model alleviates pregnant women's anxiety and fear of sexual relations during pregnancy and, as a result, leads to an enhancement in their sexual satisfaction.^[28] According to Rostamkhani *et al.*, Iranian women tend to feel ashamed and modest when discussing sexual topics, which hinders them from seeking advice from healthcare professionals. However, if the training is conducted individually, they may find it easier to openly share their questions with the counsellor.^[29] Our results and other studies have shown the positive effect of the EX-PLISSIT model on women's sexual performance.

As part of prenatal care, it is essential to focus on sexual health during pregnancy. By offering training in the EX-PLISSIT method, pregnant women can access accurate and valuable information regarding this matter. This approach also allows them to freely express their concerns to a counselor in a confidential setting.

The present study has a limitation regarding the participants' varying literacy levels and understanding of the counseling content, which may hinder effective implementation of the strategies. However, we partially addressed this issue by increasing the number of counseling sessions required for each participant. Another limitation is the small sample size resulting from time constraints during sampling, which limits the generalizability of the findings to the wider population. Additionally, the nature and methodology did not allow for blinding, which is another limitation.

Conclusions

The findings suggest that counseling based on the EX-PLISSIT model can be relatively effective in improving the sexual function in couples during pregnancy. Midwives and nurses in charge of pregnant women's care are recommended to employ this model. Additionally, future research should explore other counseling models and investigate the effectiveness of this approach in enhancing women's sexual performance after childbirth.

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Competing interests

The authors declare that they have no competing interests.

Abbreviations

Extended Permission, Limited Information, Specific Suggestions and Intensive Therapy: EX-PLISSIT;
Statistical Package for Social Sciences: SPSS.

Authors' contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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Role of the funding source

None.

Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

All participants signed a written informed consent before participation. This study was conducted with the approval of the Research Ethics Committee of Hamadan University of Medical Sciences (IR.UMSHA.REC.1399.549).

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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