

## Original Article



# Comparing the Effect of Extended PLISSIT Model and Group Counseling on Sexual Function and Satisfaction of Pregnant Women: A Randomized Clinical Trial

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## Article Info

### Article History:

Received: 16 June 2021

Accepted: 6 Sep. 2021

e-Published: 10 Jan. 2022

### Keywords:

Pregnancy, Extended PLISSIT, Counseling, Sexual function, Satisfaction

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## Abstract

**Introduction:** Changes in the performance and sexual satisfaction of women during pregnancy can be one of the important factors involved in the emergence of sexual problems in women. This study aimed to compare the effect of Extended Permission, Limited Information, Specific Suggestion, Intensive Therapy (Ex-PLISSIT) and group counseling on sexual function and satisfaction of pregnant women.

**Methods:** A randomized clinical trial was conducted on 111 pregnant women from 2016 to 2018 in Zanjan, Iran. Eligible participants were selected through convenience sampling method and allocated into three groups Ex-PLISSIT model, group counseling and control group, using block randomization method. Sexual function and sexual satisfaction were evaluated via the Female Sexual Function Index (FSFI) and Hudson's sexual satisfaction questionnaire at baseline and four weeks after the last counseling session. Data were analyzed using SPSS ver. 13 and ANCOVA, ANOVA, Wilcoxon, chi-square, Mann-Whitney U, and Kruskal Wallis tests.

**Results:** Median (interquartile range) of the participants' sexual function in the Ex-PLISSIT group was 25.9 (4) in the counseling group, 26 (5.5), in the control group, and 25.8 (4.8) at the baseline. These scores changed to 28.9 (5.4), 27.9 (5.1), and 25.2 (4.3) at the 4-week follow-up, respectively. These differences were statistically significant. Moreover, there was a statistically significant difference in the mean sexual satisfaction scores between the three groups, at the follow up period.

**Conclusion:** Providing sexual counseling by any approach during routine prenatal care by community midwives may improve couples' sexual health.

## Introduction

Sexuality is related to the concepts such as body image, self-esteem, and sexual self-concept. Physical changes, individual, and social factors could affect it. Women experience changes in their sexuality during the biological periods of life.<sup>1</sup> Pregnancy is a period in which anatomical and physiological changes may affect the sexual function of couples.<sup>2</sup> Sexual activity declines throughout pregnancy and even months after delivery.<sup>3,4</sup> Physiological and emotional changes, feeling guilty for having sex during pregnancy, altering the woman's mental body image, fear of the consequences of sexual intercourse on the outcome of pregnancy, such as abortion, injury to the fetus, and preterm labor are factors contributing to the change of sexual function and satisfaction in pregnancy. These factors may have a negative effect on women's quality of life and couples' relationship.<sup>5</sup> Some researchers

showed that during pregnancy, 86.1 % of women are suffering from sexual problems and not satisfying from sexual life.<sup>6</sup> So, counseling and educational interventions can be helpful and necessary in this regard.<sup>7</sup> However, health care professionals generally do not pay sufficient attention to sexuality as a problem during pregnancy. There are contradictory results with respect to the effect of interventions on the sexual function during pregnancy.<sup>8-10</sup> A study showed that sexual education is not different from nonsexual education during pregnancy.<sup>10</sup> Based on the findings of a systematic review, the effectiveness and safety of interventions for promoting sexual function in pregnancy is unclear.<sup>8</sup>

In recent decades, different counseling models have been used for promoting the sexual function and satisfaction, including Activity; Libido (desire); Arousal; Resolution; and Medical Information (ALARMI),<sup>11</sup> Bringing up the

topic of sexuality; Explaining to the client; Telling the client about resources available to them; Timing the discussion to when the patient would prefer, Educate the patient, and Recording (BETTER),<sup>12</sup> and Permission, Limited Information, Specific Suggestion, Intensive Therapy (PLISSIT).<sup>13</sup> The recent models has been recommended by researchers for the use of health care professionals.<sup>14</sup> The PLISSIT model was presented by Annon in 1976 and has four steps: Step 1: Permission; allowing the individuals to speak freely about their concerns about sex. Additionally, at this step many sexual behaviors that the client has experienced before and without a complaint are allowed. Step 2: Limited information; the health care professionals give limited information about the patient's concerns. Step 3: Specific suggestions are given to the patient to enable her to manage sexual problems. Step 4: focuses on the treatment.<sup>13</sup> Studies have shown that the PLISSIT model increases sexual function, marital satisfaction, sexual intimacy, and mental body image of women.<sup>15</sup> This model is an effective, simple, useful, and cost-effective counseling method.<sup>16</sup>

The limitation of the PLISSIT is getting no feed-back from the clients in each step and progression from one step to the other in a linear mode. Contrary to the linear mode of PLISSIT; the Ex-PLISSIT model is done a cyclic form. This model is repeated in each step according to the necessity of the previous steps. In each session, the counseling process is based on the first phase, and each response is based on references to previous counseling steps, so that interaction between counselors and clients is improved.<sup>17</sup>

Another method of intervention is group counseling. Group counseling is a process in which the group's interactions and evolutions are used to facilitate self-awareness. It is necessary for it to be done in a climate of respect and mutual acceptance, so that individuals can freely examine their own behaviors and behavioral modes of conduct.<sup>18</sup> Group counseling usually emphasizes on a specific problem. This kind of counseling is also intended for preventive and educational purposes in addition to correctional purposes. The logic of these groups is that the support and challenges that the group provide let the clients have an honest self-assessment and identify specific ways for their thinking, emotions, and behavioral patterns.<sup>19</sup>

There are different studies on the effects of the PLISSIT model on the sexual function and satisfaction of pregnant women. Heidari et al indicated that this model is effective on the sexual function during pregnancy.<sup>20</sup> However, it was effective on the sexual satisfaction just immediately after intervention, but not in the second and third trimesters of pregnancy.<sup>21</sup> Moreover, Shahbazi et al showed that the model was effective on the sexual function of pregnant women at 4 weeks follow-ups.<sup>22</sup> The authors did not find any studies regarding the effects of Ex-PLISSIT model on these outcomes during pregnancy. Moreover, there is

no clear evidence about the efficacy of group counseling models on the sexual outcomes in pregnant populations, nor have they been compared with standard models such as Ex-PLISSIT. The feasibility and acceptability of different counseling models vary in different social and cultural populations and they should be compared for choosing the best approaches. So, it seems necessary to compare the effectiveness of these models in pregnant women. Therefore, this study was conducted to compare the effect of Extended PLISSIT model and group counseling on Iranian pregnant women's sexual function and satisfaction.

## Materials and Methods

This study was a randomized clinical trial with a parallel design and one to one person in each group from 2016 to 2018.

Inclusion criteria were being heterosexual, sexually active pregnant women in the first and second trimester of pregnancy, and living with husbands in the last four weeks. Women with any fetal-maternal complications such as history of bleeding during pregnancy, threatened abortion, history of infertility, and those who were advised to avoid coitus due to medical conditions were excluded from the study. We also excluded the women who had severe marital conflicts, sexual dysfunction according to a qualified physician's diagnosis, and used medicine that affected sexual function such as antipsychotics, antihypertensive, phenobarbital, opium or alcohol.

The study was conducted in health care centers in Zanjan, Iran. Zanjan city is the capital of the Zanjan province located in northwest of Iran. The random allocation sequence was generated by the third author (RKh), the participants were enrolled and assigned to interventions by principal investigator (EA), and the outcomes were assessed by two midwives who were blinded to interventions. Moreover, the researcher (RKh) who did analysis was blinded too.

The study protocol was explained to all participants. We asked the participants to complete the questionnaire in a separate room with sufficient privacy. One of the researchers (EA) was available to provide additional information. To prevent contamination between the groups, the sessions were arranged on different days of the week for each group based on their agreement.

The main outcomes of the study were the sexual function and sexual satisfactions of pregnant women; which were collected from participants at two points of baseline and 4-weeks follow up.

Based on results of Rostamkhani et al,<sup>14</sup> and considering that the index of orgasm needed the largest sample size,  $\alpha=0.05$ ,  $\beta=0.2$ , and power of 80%; the sample size was calculated to be 33. Considering the probability of a 10% attrition rate, 37 individuals were assigned to each group.

From 111 participants in the study, thirty participants were excluded from the study, 12 participants of the Ex-PLISSIT group, 10 from the control group, and 8 from

the counseling group. The reason for leaving the study was being absent from counseling sessions, husband's opposition to continued participation in the study, the complications of pregnancy such as poly-hydramnios or preterm labor, and some cases who needed to be referred to the psychiatrist (Figure 1).

The convenience sampling method was used to select 111 eligible women and the blocked random method was used to assign the participants to three groups of extended PLISSIT group (A), group counseling (B), and control group (C). For blocked randomization all possible sequence of participants were considered in 6-block tables and then 19 numbers were selected from random table numbers by one the research team (RKh). So, the participants were allocated to three groups (37 women in each) of Ex-PLISSIT model, group counseling, and control group. All the eligible participants provided written informed consents before random allocation assignment.

For allocation concealment of the participants, after recognition of the sequence of them, the researchers arranged envelopes within which the group assigned and the number or code of the participant by principal investigator (EA) were specified.

The first group received counseling based on Ex-PLISSIT model by a trained PhD student of reproductive health (EA) under supervision of a sex therapist (TZ) in Sousan Alimoradian Healthcare Center in Zanjan. Two to five sessions as needed, 30-60 minutes twice a week, were conducted for each pregnant woman. During the first step of the model, (Permission), the counselor provider invited the patient to talk about sexual health and sexuality by asking certain 'cue questions', such as 'I ask all pregnant mothers about their sexuality, are these questions ok with you?' The second step, (Limited Information), concerns providing general information, for example regarding the effect of pregnancy on couple's sexual activity. The third step of the model is Specific Suggestions. In order to

provide specific suggestions, the counselor provider needs to understand the client's particular complaint. Examples of specific suggestions may include the lifestyle changes, medication or everything else. To perform the fourth step of the model, Intensive Therapy, this step will almost always include referring the client to a concentrated therapy.

The second experimental group attended the group sexual counseling by the researcher (EA) under supervision of a clinical psychologist in Sousan Alimoradian Healthcare Center in Zanjan. Five groups of seven to eight women were formed. The number of sessions for each group was 4-5 and each session lasted about 60 to 90 minutes, once or twice a week. In the first session, the group members were introduced to each other and the aim of the study and sexual issues in pregnancy were explained. Moreover, different approaches to dealing with issues and suggested solutions were discussed. In addition, a short review of the anatomy and physiology of female reproductive organs and their changes at different stages of pregnancy, common sexual misconceptions and attitudes toward sexual activity during pregnancy, the sexual response cycle and its changes during pregnancy was done and some homework based on the member's problems were defined. The contents were prepared from books, journals, scientific research and a compact disc of sexual training, which was approved by the Iranian Ministry of Health and medical education. The researcher assessed the members' feedback about management of problems in each session and assessed their comments in the last session. The control group received routine care.

About data gathering, the tool was consists of three parts. The socio-demographic characteristics included age spouse's age, educational level, occupational status, monthly income, and obstetric data, including gravidity, parity, abortion, gestational age, and the pregnancy complications such as threatened abortion, early

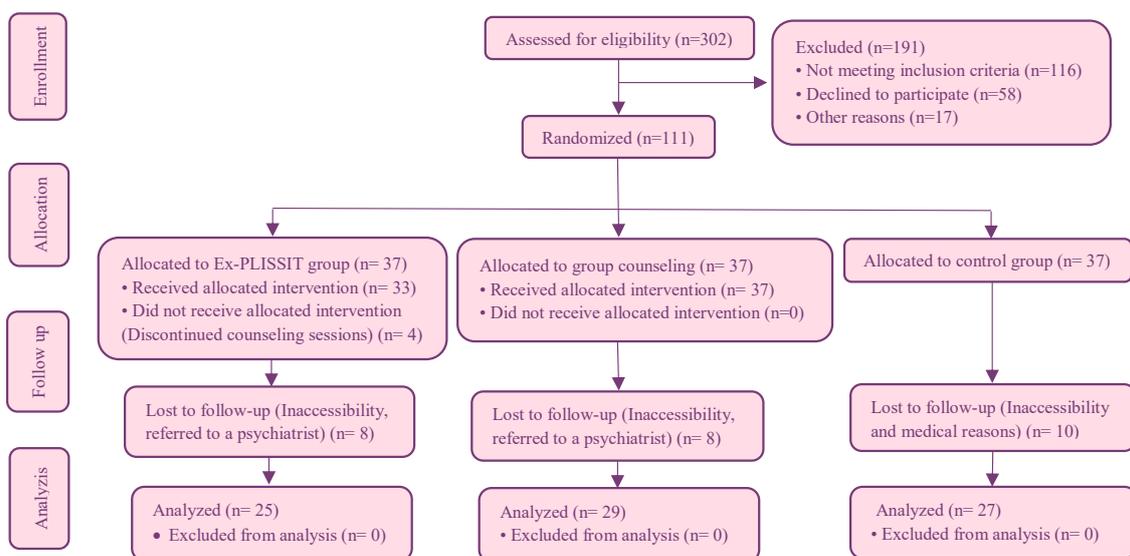


Figure 1. Flowchart of the study.

membrane rupture, and preterm labor.

The Persian version of Female Sexual Function Index (FSFI) designed by Rosen et al, was used.<sup>23</sup> FSFI has 19 questions with 6-point Likert scores (from 0 to 5) and assess various sexual domains including desire, arousal, lubrication, orgasm, satisfaction, and pain. The scores for each domain are obtained from the sum of scores obtained from each question. Then, it is multiplied by the coefficients of each domain. The coefficient for the sexual desire domain is 0.6, arousal 0.3, lubrication 0.3, orgasm 0.4, satisfaction 0.4, and pain 0.4. The total score of the questionnaire is obtained from scoring 6 domains. The total-score may range from 2 to 36; the higher score shows better performance of the sex. The cut-point for this tool is reported to be 28. The reliability of the FSFI has been approved by Rosen et al<sup>23</sup> in the original community (Cronbach's alpha of 0.82 or above) and Fakhri et al, in Tehran, Iran (Cronbach's alpha of 0.70 or above in sexually active women).<sup>24</sup>

A shorter version of "Hudson Sexual Satisfaction Index" in Persian was used for assessing sexual satisfaction. This scale was developed by Hudson et al.<sup>25</sup> The scale has 25 five-point Likert items (from 1 to 5). The total score of the scale is obtained from the sum of scores from each question (25 to 125). The internal consistency of this questionnaire has been reported by Cronbach's alpha coefficient of 0.92 in the original community.<sup>26</sup> The tool has two cut-points. The first cut-point ( $30 \pm 5$ ) indicates that there is no clinical problem, above that indicates a probability of a problem, and scores above 70 represent a tense experience and evidence of violence.<sup>27</sup> The coefficient of reliability in Iran is reported to be above 0.7.<sup>26</sup> Both questionnaires are widely used and have been well-validated. The tool was completed by both intervention and control groups at the baseline and four weeks after the last counseling session. The tool was completed under supervision of a clinic staff other than the researcher.

Statistical analysis was carried out, using statistical package for the social sciences version 13. The chi-square test was used for comparing qualitative and categorical variables between the three groups. Normality of quantitative variables was investigated through Kolmogorov's Smirnov test. The Kruskal-Wallis test was used for non-normal variables and the one-way ANOVA and ANCOVA test was used for normally distributed variables. The outcome variables such as sexual function as well as sexual satisfaction and their sub-scales had a non-normal distribution. Therefore, Kruskal-Wallis test was used to compare those variables between the three groups and Wilcoxon test to compare those at 4-weeks versus baseline. Mann-Whitney U test was used to determine differences between the Ex-PLISSIT group and group counseling in terms of sexual function. The analysis was performed on 81 women who completed the final questionnaire. The characteristics of those who lost during study compared to those who stayed in the study.

Differences were considered statistically significant at  $P < 0.05$ .

## Results

Normal distributed variables included age, spouse's age and sexual satisfaction before and after the intervention. Sexual function and its domains had non-normal distribution before and after the intervention.

In the sample under study, 82 (73.8%) were in the second trimester of pregnancy and 29 (26.2%) were in the first trimester of pregnancy. The mean (SD) of the age of the participants in the Ex-PLISSIT group was 25.5 (4.4), in the group counseling was 25.5 (4.8) and in the control group was 25.3 (4.9). Husband's age in the Ex-PLISSIT group was 29.6 (4.2), in the group counseling was 29.9 (4.3) and in the control group was 29.6 (2.9).

There were no significant differences between the three groups with respect to age, husband's age, and other participants' demographic and reproductive variables (Table 1).

The characteristics (age, husband's age, education, husband's education, economic status, and sexual function and sexual satisfaction in the baseline) of those excluded from the study were not different from those who stayed in the study.

At the baseline, 81(73%) of participants had sexual dysfunction based on FSFI cut point of 28; median (interquartile range, IQR) of the baseline FSFI score in the Ex-PLISSIT group was 25.9 (4), in the group counseling was 26 (5.5), and in the control group 25.8 (4.8). At the four weeks follow up, this score changed to 28.9 (5.4) in the Ex- PLISSIT group, to 27.9 (5.1) in the group counseling, and to 25.2 (4.3) in the control group. Kruskal-Wallis test did not show any significant differences between the three study groups in FSFI and its six-domain scores at the baseline stage. At the 4-weeks follow up, the total FSFI score and domains of sexual desire and sexual arousal were found to vary significantly across the three groups of the study (Table 2).

Mann Whitney-U tests showed that there were no significant differences between the Ex-PLISSIT and group counseling in the terms of the total sexual function and its domains.

Wilcoxon test showed that in the Ex-PLISSIT group, the total FSFI score and its six domains were changed significantly at 4-weeks follow up versus baseline. In the group counseling, the total FSFI score, arousal, and orgasm domains had a significant change at 4-weeks follow up versus baseline. In the control group, in the two phases of the study, there was no significant change in total scores of desire, arousal, lubrication, orgasm, and pain domains, and only satisfaction domain changed significantly (Table 3).

Mann-Whitney U test showed no significant differences between the Ex-PLISSIT group and group counseling with respect to total sexual function score.

**Table 1.** The socio-demographic characteristics of the participants at the baseline

Variables	No. (%)			P value
	Ex-PLISSIT <sup>a</sup> (n=37)	Counseling group (n=37)	Control group (n=37)	
Education <sup>b</sup>				
<12 years	22 (59.5)	17 (45.9)	18 (48.6)	0.25 <sup>c</sup>
12-14 years	2 (5.4)	2 (5.4)	6 (16.2)	
16 years	13 (35.1)	17 (45.9)	10 (27)	
>16 years	0 (0)	0 (0)	1 (2.7)	
Missed data	0 (0)	1 (2.7)	2 (5.4)	
Husband's education <sup>b</sup>				
<12 years	28 (75.7)	18 (48.6)	19 (51.4)	0.29 <sup>c</sup>
12-14 years	3 (8.1)	6 (16.2)	4 (10.8)	
16 years	6 (16.2)	10 (27)	11 (29.7)	
>16 years	0 (0)	2 (5.4)	1 (2.7)	
Missed data	0 (0)	1 (2.7)	2 (5.4)	
Job				
Housewife	31 (83.8)	33 (89.2)	32 (86.5)	0.79 <sup>c</sup>
Employed	6 (16.2)	4 (10.8)	5 (13.5)	
Husband's job				
Self-employed	30 (81.1)	25 (67.9)	27 (73)	0.49 <sup>c</sup>
Employed	7 (18.9)	11 (29.7)	10 (27)	
Unemployed	0 (0)	1 (2.7)	0 (0)	

<sup>a</sup> Extended permission, limited information, specific suggestion, intensive therapy;

<sup>b</sup> There were missed data in education and husband's education ; <sup>c</sup> Chi-square test.

**Table 2.** Comparison of the median (interquartile range) for sexual function (FSFI scores) between three study groups

Variables	Median (IQR)			P value <sup>b</sup>
	Ex-PLISSIT <sup>a</sup> (n=25)	Counseling group (n=29)	Control group (n=27)	
Baseline				
Desire	4.2 (1.2)	4.2 (1.2)	3.6 (0.9)	0.07
Arousal	4.2 (1.2)	4.2 (1.0)	4.2 (0.9)	0.62
Lubrication	4.8 (1.6)	4.5 (1.5)	4.5 (0.9)	0.29
Orgasm	4.8 (1.6)	4.4 (1.4)	4.4 (2)	0.90
Satisfaction	4 (2.2)	3.6 (2.6)	4.8 (1.4)	0.05
Pain	4.8 (2)	5.2 (1.2)	4.8 (1.6)	0.12
Total score	25.9 (4)	26 (5.5)	25.8 (4.8)	0.81
4 Weeks after counseling				
Desire	4.8 (0.6)	4.8 (0.6)	3.6 (1.2)	0.001 <sup>*</sup>
Arousal	4.8 (1.3)	4.8 (1.2)	4.2 (0.7)	0.01 <sup>*</sup>
Lubrication	5.1 (1.2)	4.8 (0.9)	4.8 (0.4)	0.11
Orgasm	4.8 (1.4)	4.8 (1.6)	4.4 (1.2)	0.27
Satisfaction	4.8 (2.2)	4.4 (3.2)	4.8 (1.2)	0.71
Pain	5.2 (1.4)	6 (1.2)	4.8 (1.6)	0.44
Total score	28.9 (5.4)	27.9 (5.1)	25.2 (4.3)	0.01 <sup>*</sup>

<sup>a</sup> Extended permission, limited information, specific suggestion, intensive therapy; <sup>b</sup> Kruskal-Wallis test; <sup>\*</sup> Statistically significant.

The mean (SD) of the Hudson's satisfaction score in the Ex-PLISSIT, group counseling and control groups was 100/5 (9.3), 103.6 (9.6), and 103.2 (11.1), respectively.

There was a significant difference in the mean sexual satisfaction scores at the follow up period [ $F(2/77) = 7.66$ ,  $P = 0.001$ ] between the three groups, whilst adjusting for the scores at the baseline. The partial Eta Squared value was 0.166 which indicated small effect size based on Cohen's guidelines (0.2 – small effect, 0.5 – moderate effect, 0.8 – large effect)<sup>27</sup> (Table 4). In pairwise comparisons the difference between the Ex-PLISSIT group and group counseling was not significant but these two groups had

significant differences with the control group.

## Discussion

The study showed that more than half of the participants in all groups had sexual dysfunction. Moreover, both Ex-PLISSIT model and group counseling were effective on the sexual function and satisfaction of pregnant women.

At the baseline the median score of FSFI in the intervention and control groups was less than the suggested cut-point, and a considerable number of the participants had sexual dysfunction. Sexual dysfunction during pregnancy has been reported in several studies. Leite et al, in Alagoas showed that the prevalence of sexual dysfunction in the first trimester of pregnancy is 46.6%.<sup>28</sup> Alsibiani in Jeddah, Saudi Arabia, showed that sexual dysfunction during pregnancy is observed in more than 70% of women.<sup>4</sup> Moreover, Aydin et al,<sup>2</sup> in Turkey and Jamali and Mosalanejad,<sup>29</sup> in Iran reported it to be more than 91% and 79%, respectively. It should be noted that in some studies different cut-points has been considered for the FSFI; which may account for the apparent different prevalence of sexual dysfunction.<sup>30</sup>

After 4-weeks of the interventions, the FSFI score in the Ex-PLISSIT group was changed to above the cut-point and in the group counseling was changed to near the cut-point. There was a statistically significant difference between the groups in the follow up phase. However, only desire and arousal domains of the FSFI increased significantly and there was no significant increase in other domains. Consistent with the results of this study, Rostamkhani et al showed that the PLISSIT model was effective on women's sexual function in another study in Iran.<sup>14</sup> Also, Farnam et al confirmed the efficacy of the sexual health models in improving women sexual function and its comparable efficacy with PLISSIT model in an Iranian population.<sup>31</sup> However, Ayaz and Kubilay did not show significant changes after intervention with Ex-PLISSIT model in sexual dysfunction of Turkish women.<sup>32</sup> This could be attributed to cultural differences. According to Rosen et al, the most positive correlation exists between the desire and arousal domains of the FSFI.<sup>23</sup> Basson believes that "sexual desire and arousal are areas of sexual function that are interconnected and occur simultaneously." Sexual desire is experienced when sexual stimuli have triggered sexual arousal.<sup>1</sup> It seems that these domains are affected with each other under the Ex-PLISSIT and group counseling interventions.

**Table 3.** Comparison of the median (interquartile range) for sexual function (FSFI scores) between baseline and 4 weeks after intervention

Variables	Median (IQR) <sup>b</sup>		P value <sup>c</sup>
	Baseline	4 weeks after counseling	
<b>Ex-PLISSIT<sup>a</sup></b>			
Desire	4.2 (1.2)	4.8 (0.6)	0.002*
Arousal	4.2 (1.2)	4.8 (1.3)	0.001*
Lubrication	4.8 (1.6)	5.1 (1.2)	0.01*
Orgasm	4.8 (1.6)	4.8 (1.4)	0.006*
Satisfaction	4 (2.2)	4.8 (2.2)	0.003*
Pain	4.8 (2)	5.2 (1.4)	0.005*
Total FSFI score	25.9 (4)	28.9 (5.4)	<0.001*
<b>Group counseling</b>			
Desire	4.2 (1.2)	4.8 (0.6)	0.07*
Arousal	4.2 (1.0)	4.8 (1.2)	0.02*
Lubrication	4.5 (1.5)	4.8 (0.9)	0.05*
Orgasm	4.4 (1.4)	4.8 (1.6)	0.01*
Satisfaction	3.6 (2.6)	4.4 (3.2)	0.40*
Pain	5.2 (1.2)	6 (1.2)	0.14*
Total FSFI score	26 (5.5)	27.9 (5.1)	0.001*
<b>Control group</b>			
Desire	3.6 (0.9)	3.6 (1.2)	0.52*
Arousal	4.2 (0.9)	4.2 (0.7)	0.35*
Lubrication	4.5 (0.9)	4.8 (0.4)	0.30*
Orgasm	4.4 (2)	4.4 (1.2)	0.83*
Satisfaction	4.8 (1.4)	4.8 (1.2)	0.03*
Pain	4.8 (1.6)	4.8 (1.6)	0.05*
Total FSFI score	25.8 (4.8)	25.2 (4.3)	0.73*

<sup>a</sup> Extended permission, limited information, specific suggestion, intensive therapy; <sup>b</sup> interquartile range; <sup>c</sup> Wilcoxon test; \*Statistically significant.

**Table 4.** Comparison of the mean (SD) for sexual satisfaction between three study groups

Variables	Mean (SD)			P value	Eta
	Ex-PLISSIT <sup>a</sup> (n=25)	Counseling group (n=29)	Control group (n=27)		
<b>Baseline</b>					
Sexual satisfaction	100.5 (9.3)	103.6 (9.6)	103.2 (11.1)	0.001*	0.16
<b>4 Weeks after counseling</b>					
Sexual satisfaction	106 (10.3)	108.4 (8.8)	102.9 (10.5)		

<sup>a</sup> ANCOVA test; \*Statistically significant.

After the intervention, sexual satisfaction based on Hudson questionnaire was improved among the participants in the intervention groups. It seems that through improving sexual function in intervention groups, satisfaction scores improved, too. There are strong correlations between sexual function and sexual satisfaction.<sup>33</sup> Consistent with the results of this study, Ziaei et al showed that individual counseling based on self-awareness skills improved sexual satisfaction of women in reproductive age.<sup>34</sup> Other factors may be that, the Ex-PLISSIT and group counseling may motivate women's sexual behaviors; which may in turn lead to higher sexual satisfaction. Jodouin et al showed that women's self-directed sexual approach motives are associated with their higher sexual satisfaction.<sup>35</sup>

This randomized clinical trial demonstrated that both the Ex-PLISSIT and group counseling were associated with improvement in sexual function and satisfaction in pregnant women. Sexual function and sexual satisfaction did not have any differences between the Ex-PLISSIT group and group counseling at follow up period, which showed that the two models had equally improved the outcomes. Consistent with this study, Farnam et al compared the PLISSIT method with an educational method and showed that both methods were effective in improving sexual function.<sup>31</sup> According to the findings of Kargar et al, both solution-focused group counseling and PLISSIT model had a significant effect on sexual satisfaction of women with high body mass index.<sup>36</sup> Both approaches need very limited time to conduct, health care professional could easily learn them, and they can be done in health care centers.

The strong points of the study were the sampling which was conducted in a clinic where admitted pregnant women were from different socioeconomic areas of Zanjan, both interventions implemented by one researcher, and reliable and standard tools used for assessing the outcomes of the study. The current study had a number of limitations that should be considered. First, there were considerable attrition in the follow up period. However, there weren't any differences between the characteristics of those who were lost during the study and those who stayed. The authors suggest more studies in this area. Self-report being of the study tool was the second limitation of the study which was managed by available being of a researcher to

provide additional information in all groups.

## Conclusion

According to the results of this study, the Ex-PLISSIT model and group counseling were equally effective on the sexual performance and satisfaction of pregnant women. Easy interventions conducted in this study can be carried out by community educated midwives as part of a prenatal care. However, more studies are suggested for comparing the effects of other approaches on sexual outcomes. Adding psychological approaches to individual and group counselling methods may lead to more effective interventions and health promoting of pregnant women and their families.

## Acknowledgments

The present study was supported by Shahroud University of Medical Sciences. We hereby acknowledge the research deputy for grant No 9537. We also thank from Fariba Najafi for her supervision of group counseling sessions.

## Authors' Contributions

TZ, AK: Have been involved in concept design, study supervision, manuscript editing and manuscript reviewing; RKH: Has been involved in data analysis, manuscript preparation and editing; AH: Has been involved in literature review and manuscript review; EA: Has been involved in study design, data collection, drafting and reviewing of the manuscript.

## Ethical Issues

All participants gave informed consent and signed the form before entering to the study. The protocol of the research was approved and funded by research committee of Shahroud University of Medical Sciences (IR.SHMU.REC.1395.80).

## Conflicts of Interest

The authors declared no conflict of interest. The study was funded by Shahroud University of Medical Sciences.

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## Research Highlights

### What is the current knowledge?

PLISSIT model is effective on the sexual function and satisfaction of pregnant women.

### What is new here?

Ex-PLISSIT and group counseling are equally effective on the sexual function and satisfaction of pregnant women.

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