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Effectiveness of the PLISSIT Model-based Counseling on the Sexual Function of Couples during Pregnancy

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Abstract

Aim: The aim of this study was to evaluate the impact of the PLISSIT model-based counseling on the sexual function of couples during pregnancy.

Methods: This quasi-experimental study was carried out in Tehran (Najmieh Hospital) on 88 couples who were randomly assigned to the control (44 couples) and intervention (44 couples) groups. The intervention group received sexual counseling based on a PLISSIT model by a trained midwife, and the control group received only routine services in prenatal care. Sexual functions of the couples were assessed by the Female Sexual Function Index (FSFI) and International Index Erectile Function (IIEF) questionnaires before counseling, 4 weeks after counseling, and at the end of the second trimester of pregnancy. Independent t-test and repeated measures analysis of variance (ANOVA) test were used for comparison of the scores within the groups.

Findings: No significant differences were found in the demographic variables of the subjects. The mean total scores of FSFI and IIEF were not different at baseline in the two groups. Repeated measure analysis showed significant differences between the two groups in the mean total scores of FSFI and IIEF after the intervention. Post intervention, the mean of the total score of sexual function of the couples was significantly higher in the intervention group compared with the control group ($P<0.05$).

Conclusion: Based on the results of this study, sex education for prenatal care would be effective, and we can claim that sexual function of couples during pregnancy may be enhanced by using the PLISSIT model.

Keywords: Sex counseling, Couple, Pregnancy, Sexual function; PLISSIT model

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Introduction

Sexual function of couples may fluctuate due to physical and psychological changes during pregnancy [1-4]. During passage from the role of a spouse to that of a parent, the relationship between a couple changes [5].

Various studies estimate sexual dysfunction prevalence of about 30–46% among non-pregnant women, which increases to 57–75% during pregnancy [6, 7]. The prevalence of sexual dysfunction during pregnancy has been reported in females and males in the first trimester as 46.6% and 21.3%, second trimester as 34.4% and19.3%, and third trimester as 73.3% and 28.3%, respectively [8-10]. Most sexual dysfunctions that occur during pregnancy are resulted by a lack of an adequate and proper understanding of the physical and emotional changes at this time [11, 12]. Solberg and Kenny reported a decrease in sexual interest and coital activity throughout pregnancy [13,14]. Some studies have reported the occurrence of extramarital relationships of men during their wife's pregnancy [15-17]. Many studies have revealed that most couples do not have adequate information about sexual relationship during pregnancy; therefore, the importance of sex education and counseling during pregnancy has always been proposed [13, 14].

Sexual knowledge may decrease couples' anxiety by improving the quality of sexual relationship during pregnancy and decrease the occurrence of sexual problems [18]. Couples do not know how to manage their sexual life during pregnancy [2, 19-21] because midwives and obstetricians do not educate them about their sexual health [22,23]. One of the methods for assessment of sexual problems is the PLISSIT model. This model provides a specific framework for planning a complete care about the sexual disorder. It allows the providers to start a conversation regarding sexual issues with individuals, and during the next steps of the model, useful information and suggestions are incorporated in the care plan [24]. Many studies have shown the efficacy of PLISSIT model for improving the couples' sexual function [25-27].

Since the establishment of Primary Health Care Network in Iran in 1984 with the objective of securing equal and fair access of all Iranians to primary health care services, sexual and reproductive health programs have been integrated, and certified midwives in rural and urban health care centers provide these services. This integration has led to the improvement of Iranians' health status [28-30]. Also many studies reported the results of cross-sectional or retrospective studies rather than prospective ones, and only a rare of interventional studies based on PLISSIT model have been reported [31].

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Aim

The aim of this study was to evaluate the impact of the PLISSIT model-based counseling on the sexual function of couples' during pregnancy. The study was conducted over a 12-month period in 2016 in Tehran, Iran. Ethics Committee of Tarbiat Modares University approved the trial.

Participants

The participants of this quasi-experimental study included 83 nulliparous pregnant women and their spouses referred to a public health center in Tehran, Iran. The inclusion criteria were: prim-gravid women being in the 10-12th week of pregnancy, living permanently with a spouse, having single pregnancy, no history of medical diseases in couples, no consumption of medication contraindicating with sexual function, and signing a written consent form by the couples to attend the study. Exclusion criterion included miscarriage and premature labor.

Allocation

The participants were assigned into two groups: Intervention group (44 couples), in which the pregnant women and their spouses received sex education sessions in addition to the routine prenatal care, and Control group (44 couples) where the pregnant women received only routine prenatal care and no sex education. According to the lottery, the couples who had inclusion criteria were attributed to the intervention and control groups. The intervention was performed by the first researcher (PhD candidate), who is a trained midwife (MH). Upon signing a consent letter, each participant answered the pre-test using self-completion method. Then the address and contact details were recorded for the follow ups. The couples in both groups completed the questionnaires of sexual function (Female Sexual Function Index & International Index of Erectile Function), at pretest (10-12 weeks before the education), four weeks after education and at the end of the second trimester (26-28 weeks).

Intervention

The intervention group got two sessions of counseling for 90 minutes using the first two steps of PLISSIT model by the same trained midwife. The PLISSIT model was applied to discussing sexuality in details and to detect the difficulties. It includes a four-step approach to the sexual problems of the individuals. These steps are as follows:

- P (Permission): Give the patient permission to initiate sexual discussion.
- LI (Limited Information): Limited information is given about the participant's sexuality mentioned in the permission stage.
- SS (Specific Suggestions): This stage

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applies a problem-solving method to define an individual's particular problem, and provide necessary knowledge and skill.

- IT (Intensive Treatment): Intensive Therapy involves referral for specialist care.

Considering these steps, the intervention was planned by the researcher [32].

The intervention group received the sex education in two sessions once a week for two consecutive weeks in the health centers, and the couples were trained together in one private room. The education contents were developed based on the results of relevant previous studies and needs assessments of sex education for pregnant women in Iran and other countries [17, 31], as well as the information available in the written literature and interviews with specialists of sexology. Each session lasted 90 minutes with one week interval plus some extra time to answer the questions.

In the first session, genital anatomy and sexual physiology with the orientation of erotic organs, understanding sexual responses' cycle, and impact of pregnancy on sexual responses' cycle were discussed. In the second session, the impact of pregnancy on sexual behavior, sexual intercourse techniques, safe position's during pregnancy, sexual skills, and answering questions about common concerns related to sex such as the risk of miscarriage and premature rupture of membrane as a result of coitus during pregnancy were taught.

At the end of the first session, a written educational booklet was handed out to the pregnant women (in the intervention group). Then they were asked to study the contents together with their spouses and ask their probable questions in the next session. The educator's contact number was given to them in order to answer their questions. Four weeks after the last educational session and at the end of the second-trimester (26-28 weeks of pregnancy), all participants were contacted and asked to complete the post-test questionnaire at the health care centers.

Questionnaires

Data collection tool consisted of questions about demographic data such as the participant's age, educational level, job and income. Other questionnaires included the Female Sexual Function Index (FSFI), and International Index of Erectile Function (IIEF). The FSFI is a valid and reliable questionnaire for evaluating the sexual function of women during the past four weeks. This questionnaire consists of 19 questions covering the six different domains of sexual function. The questions are grouped and scored for the domains of desire (two questions), arousal (four questions), lubrication (four questions), orgasm (three questions), satisfaction (three questions), and pain (three questions). The

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sexual desire score ranges from 1.2 to 6, and the rest of the domains score is determined by the sum of the six domains, and can vary from 2 to 36. Higher scores show better sexual function. The reliability of the FSFI has been approved by Mohammadi et al. [32] in Tehran, Iran, and Rosen et al. in other countries [33].

The IIEF is a multi-dimensional scale for assessment of erectile dysfunction [34]. A structured interview standardized and validated 15-item self-evaluation scale provides evaluations of erectile function, orgasmic function, sexual desire, satisfaction in sexual intercourse, and general satisfaction [35].

Data analysis

The sample size was calculated by using the PS (Power & Sample) size calculation (version 3.1.2, 2014) [36] regarding M_1=22.6, M_2= 26.6, SD_1= 7.9 and SD_2= 8.4 based on the total score of the sexual function index from a study conducted in Tehran, Iran, [31] with type I error rate of 0.05 and statistical power of 90%. Assuming 10% loss to follow-up, 44 couples were assigned to each study group.

The quantitative and qualitative variables were described as mean (standard deviation) and frequency (percent), respectively. Kolmogorov Smirnov' test was applied to check the normality of the data. An independent t-test was used for comparison of the mean scores between the two groups of intervention and control. Chi-square test was used to assess the relationship between the qualitative variables. The repeated measures ANOVA test was used to compare the FSFI and IIEF mean total scores during the study period in the two groups. Statistical significance was considered at $P < 0.05$ for all the statistical analyses. All analyses were done using the SPSS[19.0] (SPSS IBM, New York, USA), and P-values less than 0.05 were considered statistically significant.

Ethical consideration:

This study was approved by the Ethics Committee of Tarbiat Modares University (IR.TMU.REC.2015.39). A written consent letter was obtained from all participants.

This trial is registered on www.Irct.IR (IRCT2016101930388N1).

Results

A total of 88 eligible pregnant women and their husbands were included in the study. They were allocated to one of the two groups: intervention group including 44 couples, and control group including 44 couples. Five couples were excluded from the study due to miscarriage (at the end of the first trimester), two from the intervention group and three from the control group (Figure 1).

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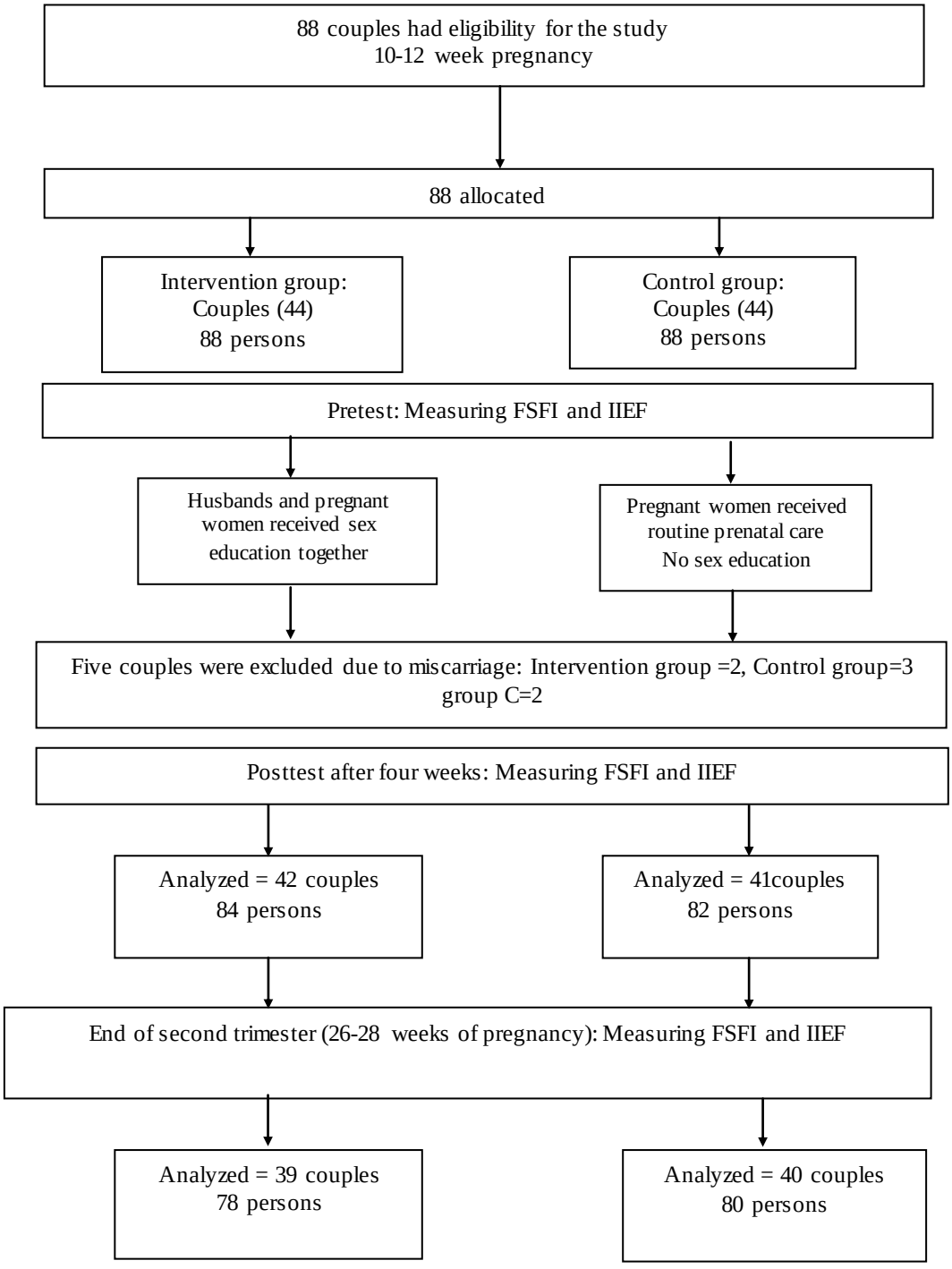


Figure 1: Flow diagram of the participants' selection process.

The mean age of pregnant women and their husbands was 25.72±3.61 and 29.34±3.53

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years, respectively. There were no significant differences in the demographic characteristics in the two groups at the base (Table 1).

Table 1: Baseline characteristics of the participants by the study groups

Characteristic	Intervention group (n=42)	Control group (n=41)	P
Pregnant women's age (year)			
≤20	5 (11.9)	2 (4.9)	†0.375
21-30	35 (83.3)	36 (87.8)	
31-40	2 (4.8)	3 (7.3)	
Mean ±SD	25.71 (3.57)	25.73 (3.57)	
Husband's age (year)			
21-30	27 (64.3)	31 (75.6)	†0.171
31-40	15 (35.7)	10 (24.4)	
Mean ±SD	29.38 (3.88)	29.31 (3.38)	
Duration of marriage (year)			
Mean ±SD	2.52 (1.77)	2.17 (1.59)	†0.722
Pregnant women's educational level			
High school diploma	11 (26.2)	12 (29.3)	‡0.473
University graduated	31 (73.8)	29 (70.7)	
Husband's educational level			
High school diploma	14 (33.3)	8 (19.5)	‡0.119
University graduated	28 (66.6)	33 (80.5)	
Pregnant women's employment status			
Unemployed	32 (76)	33 (80.5)	‡0.367
Employed	10 (24)	8 (19.5)	
Husband's employment status			
Employed	30 (71.4)	33 (80.5)	‡0.240
Self-employed	12 (28.6)	8 (19.5)	
Income			
Low	4 (9.5)	7 (17.1)	‡0.16
Medium	31 (73.6)	32 (78)	
High	7 (16.7)	2 (4.9)	

*No (%); †From Independent-T test; ‡From Chi-square test

Independent T-test results showed no significant difference between the two groups in terms of FSFI (P>0.077) and IIEF (P>0.092) mean scores before training (Tables 2 & 3).

Table 2 shows the descriptive statistics and the results of repeated measures ANOVA test for comparing the mean FSFI total scores during the study period in the two groups. Also the p-values show that the effects of time (p=0.001), group (p=0.001) and interaction between time and group (p=0.001) were statistically significant. These results imply significant differences between the two groups in mean FSFI total scores during the study period. As displayed in Figure 2, the highest difference could be observed in the four weeks after the intervention (a mean difference of eight scores between the intervention and control groups), while the minimum mean difference was related to the second trimester.

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Table 3 shows the descriptive statistics and the results of repeated measures ANOVA test for comparing the mean IIEF total scores during the study period in the two groups. Also the p-values show that the effects of time (p=0.001), group (p=0.177) and interaction between time and group (p=0.049) were statistically significant. These results suggest significant differences between the two groups in mean IIEF total scores during the study period. As displayed in Figure 3, the highest difference could be observed in the time period of four weeks after the intervention (a mean difference of seven scores between the intervention and control groups), while the minimum mean difference was related to the second trimester.

In this study, we found high sexual dysfunction scores in the control group women compared with the intervention group women during pregnancy (Table 4). Prevalence of sexual dysfunction in four weeks after education was rated as 55% among the pregnant women in the intervention group and 85.4% in the control group women. The same dysfunction was rated (52.5% and 82.9%), respectively in the second trimester.

Table 2: Mean and standard deviation scores of female sexual function index (FSFI) before and after education by the study groups

FSFI	Groups	First trimester (10-12 weeks)	our weeks after intervention	Second trimester (26-28 weeks)
Total	Intervention group	22.70 (9.04)*	27.78 (3.91)	26.84 (5.32)
	Control group	20.23 (8.58)	19.30 (8.39)	24.42 (6.86)
	P†	0.577	0.001	0.035

Possible score range of the total function was 2-36. *M (SD); †From Independent-T test
Effects of time (p=0.001), group (p=0.001) and interaction between time and group (p=0.001) were statistically significant.

Table 3: Mean and standard deviation scores of male sexual function (IIEF) before and after education by study groups

Groups	First trimester (10-12 weeks)	Four weeks after intervention	Second trimester (26-28 weeks)
Intervention group	N=42 55.64 (11.11)	N=42 61.45 (7.83)	N=42 61.38 (7.71)
Control group	N=41 55.10 (16.29)	N=41 54.83 (16.27)	N=41 55.62 (12.17)
†P	0.092	0.001	0.009

*M (SD), †From Independent-T test
Effects of time (p=0.001), group (p=0.177) and interaction between time and group (p=0.049) were statistically significant.

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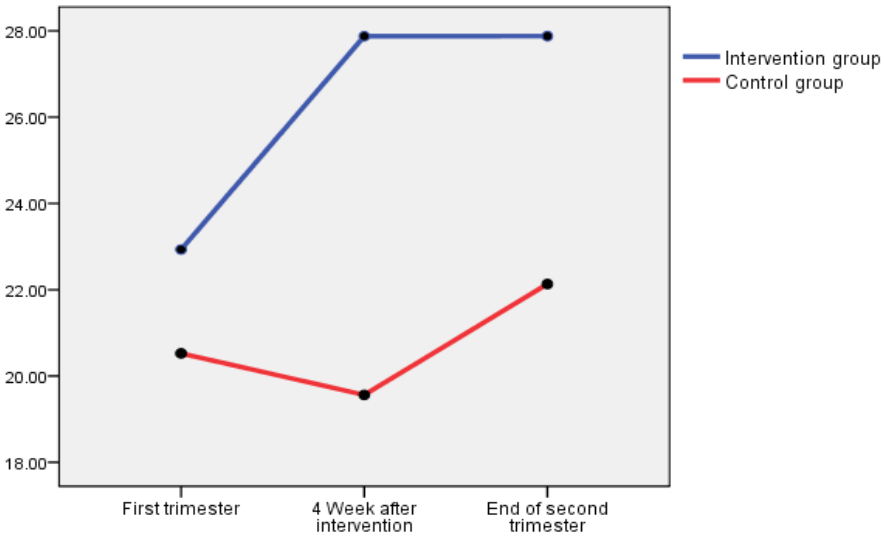


Figure 2: Trend of mean FSFI scores during the study period in the two groups

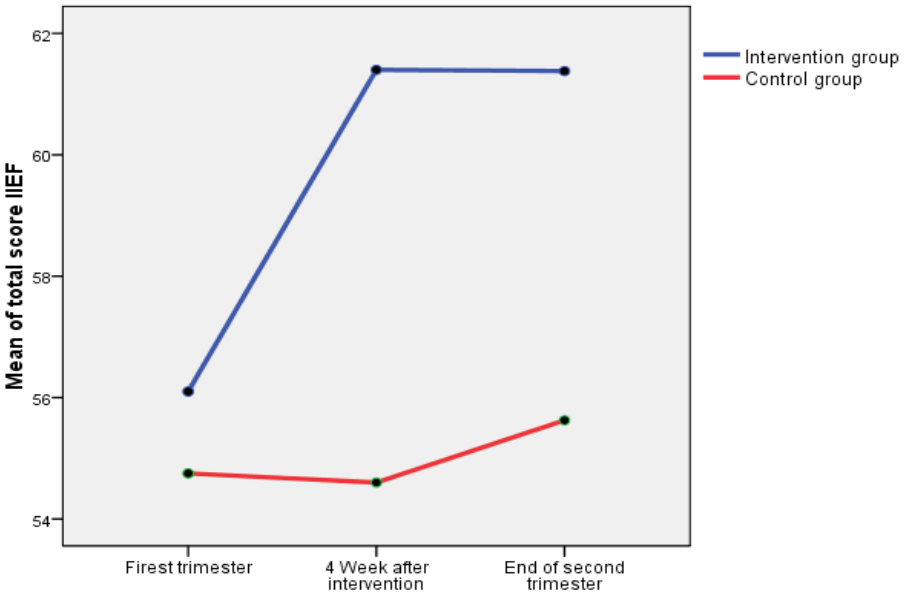


Figure 3: Trend of mean IIEF scores during the study period in the two groups

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Table 4: Sexual dysfunction percentage for pregnant women according to the intervention and control groups

Domains of FSFI	Groups	First trimester (10-12 weeks)	four weeks after intervention	Second trimester (26-28 weeks)
Desire	Intervention group	*21 (52.5)	9 (22.5)	12 (30)
	Control group	24 (58.5)	25 (61)	15 (36.6)
Arousal	Intervention group	32 (55)	9 (22.5)	12 (30)
	Control group	27 (65.9)	26 (63.4)	16 (39)
Lubrication	Intervention group	15 (37.5)	4 (10)	5 (12.5)
	Control group	18 (43.9)	19 (46.3)	13 (31.7)
Orgasm	Intervention group	15 (37.5)	5 (12.5)	8 (20)
	Control group	23 (56.1)	26 (63.4)	15 (36.6)
Satisfaction	Intervention group	12 (30)	4 (10)	6 (15)
	Control group	16 (39)	20 (48.8)	10 (24.4)
Pain	Intervention group	16 (40)	18 (45)	11 (27.5)
	Control group	16 (39)	19 (46.3)	8 (19.5)
Total	Intervention group	26 (65)	22 (55)	21 (52.5)
	Control group	27 (65.9)	35 (85.4)	34 (82.9)

*Number (%)

Discussion

The research results indicated that the sexual function of couples in the intervention group was significantly improved compared with the control group. The couples' sexual function demonstrated positive changes in the total score of sexual function in four weeks after education and in the second trimester in the intervention group compared with the control group. This finding has been supported by some previous researches, which indicated improvements after sexual education [31, 37-42].

The PLISSIT model makes possible to begin discussions about sexual problems and develop confident and comfortable conditions between client and health counselors to discuss about sexual issues. In this study, first, the educator midwife was trained about PLISSIT model in a 9-day workshop, and then she run the counseling sessions during the research period. The PLISSIT model helps primary care providers to increase their participation to sexual health care. It gives capabilities to the health care providers in a primary health care setting for discussing about sexual health, asking questions, increasing awareness and recognizing the potential to refer.

Therefore, sex education programs based on PLISSIT model have equal effects on the improvement of couples' sexual function during pregnancy, which is supported by the results of Mohammadi et al. [43] and Blorchi et al. [44] concerning the effect of educational methods.

However, interventional studies that evaluate sexual function of couples are rare and limited. Furthermore, no study about the sexual education based on PLISSIT model during pregnancy was found in the medical literature

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by the authors.

In this study, the prevalence of sexual dysfunction in the control and intervention groups in the first trimester was 65.9% and 65%, four weeks after education 85.4% and 55%, and in the second trimester 82.9% and 85.4%, respectively. These results reassert the influence of pregnancy on women's sexual function and activity as observed in other studies [1, 8, and 21].

Sexual dysfunction difference in terms of the six domains' scores of FSFI in the two groups between pre-test and post-test was significant. The significance of the improvements seen in this study in some of the subscales of sexual female function is also supported [31].

In the present study, in control group, changes were found in all FSFI domains during pregnancy with a slight decrease of the sexual function in the first trimester. There were, however, better indicators in the second trimester. In Masters and Johnsons' studies, sexual response patterns were defined during pregnancy, which were very similar to those in our study [15]. Von Sydow showed that, during pregnancy, sexuality is likely to slightly decrease in the first trimester. In the second trimester, there was a variable pattern [45] confirming the results of our study.

In the intervention group despite of the first and second trimesters problems as a result of the sex education, which resulted in the increase on sexual information and improvement in the sexual skills, sexual function of the couples increased significantly.

In this study, only a few couples (21%) had received information about sexual issues from the health providers. Based on the results of the studies by Uwapusitanon and Choobun [46], and Fok et al. [21], 22% and 20% of the pregnant women, respectively had received information about sexual relations in pregnancy period from their midwife.

Since sexual relationship is the most private marital issue and also due to the cultural and religious restrictions in our society, it seems that people are not able to talk easily about sexual issues; therefore, it is recommended that sex education and counseling based on PLISSIT model be a part of the prenatal care in Iran.

Sexologist and midwife training should be in time, and health providers should try to provide suitable prenatal care to the couples. De Pierrepont emphasizes that inter-disciplinary health care teams are suitable models of health care. In this model, the sexologist has an important role, in particular in perinatal health care in which sex education is a central component of health. Furthermore, sexo-perinatal interventions should be a part of holistic perinatal health care to increase the intimacy in relationships to have an ideal sexual relation [22, 47].

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Strengths & Limitations

Counseling based on PLISSIT model and being private in a suitable place, as well as intervention group with spouses' participation may facilitate to measure the effect of sex education. Self-report method of completing questionnaire could cause over-or under-estimation of the results, and limit the results of the study. Because of the nature of the study and intervention, the experimental and control groups and midwives were not blinded to the study.

Conclusion

Our study demonstrated that PLISSIT model can meet the sexual health needs of clients in a primary health care setting, and can be used easily by the health workers in this setting for improvement of the couples' sexual functions. With regard to the nature of talking about such a sensitive issue like sexual function, which most of the couples feel shy and prefer to not talk about, the problem changes to unmet needs and bears lot of awful socio-health problems for couples, which could be easily solve if a suitable method like PLISSIT would be applied.

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Conflict of interest

The authors declare no conflict of interest in this study.

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