Comparison of Sexual Functions in Pregnant and Non-Pregnant Women

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Purpose: The physiology and anatomy of pregnant women change during pregnancy. Pregnancy is an anatomically and physiologically amended process experienced by women and as a result of these changes, sexual life of pregnant women alters during pregnancy. We aimed to compare sexual functions of pregnant and non-pregnant women.

Materials and Methods: Sexually active 246 pregnant women were included into this cross-sectional controlled study. A total of 210 non-pregnant women were served as control. Both groups were compared in terms of age, gestational age, presence of urinary incontinence, body mass index, and obstetrical history. Sexual functions of the women were evaluated with Female Sexual Function Index (FSFI). Data were analyzed using chi-square, Mann-Whitney *U*, Fisher's Exact, Shapiro Wilk, Kruskal Wallis and Dunnett's tests where appropriate. The *P* values < .05 were considered statistically significant.

Results: Mean age in both groups were comparable ($P = .053$). Median total FSFI scores in the pregnant women were significantly lower than those non-pregnant (18.9 vs. 22.7; $P < .05$). Additionally, the subgroup analyses of the FSFI scores were found that, total FSFI score is significantly lower in the pregnant group compared to non-pregnant group ($P < .05$). Furthermore, rate of sexual dysfunction in pregnant women was significantly higher than those non-pregnant women (91.08% vs. 67.61%, $P = .0001$). However, in pregnant women, no meaningful difference in rate of sexual dysfunction was found according to the trimesters ($P = .632$). Moreover, gravidity and parity exhibited negative impacts on the sexual functions. But number of abortions did not affect sexual function.

Conclusion: These data demonstrate that pregnancy significantly diminishes sexual function in women. We believe that, couples need to be counseled regarding the impact of pregnancy on sexual functions.

Keywords: prospective studies; sexual behavior; female; physiology; psychology; sexuality.

INTRODUCTION

Sexuality is defined as "although not vital, a necessity and a basic instinct needed to survive and to continue human species". Female sexual dysfunction (FSD) is a common health problem affecting 20% to 50% of population and prevalence of this condition correlates with age.[1,2] Pregnancy is an anatomically and physiologically amended process experienced by women. As a result of these changes, sexual life of pregnant women alters during pregnancy.[3] Although 86%-100% of couples have been reported to be sexually active during pregnancy period, majority of pregnant women showed decrease in sexual intercourse and sexual desire.[4-6]
Sexual health plays an important role for the quality of life. Decrease in sexual function affects a woman's mood of well-being and social relations with others. In parallel with this effect, sexual dysfunction often leads to emotional stress. Studies indicate a strong correlation between sexual dysfunction and physical and emotional status.[7] Physicians generally do not give sufficient attention on this subject when interviewing with couples. Sexuality arises as a problem during a distressing pregnancy, and pregnancy can be a cause of temporary discontinuation of sexual life. In present study, we aimed to evaluate sexual function in pregnant and non-pregnant women.

MATERIALS AND METHODS

Study Population

Between April 2012 and December 2013, we designed a non-interventional, observational, prospective, cross-sectional, and single-center study in 246 pregnant women and in 210 age-matched healthy non-pregnant women. The hospital's ethics committee approved the study and all the participants provided written informed verbal consent. A total of 246 sexually active pregnant women, who had normal sexual function before pregnancy and had been sexually active in the last 4 weeks, and 210 sexually active non-pregnant and healthy women in reproductive age recruited from contraceptive clinic included in this study.

Evaluations

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Table 1. Demographic characteristics of pregnant and non-pregnant groups.

Variables	Pregnant Women (n = 246)	Non-pregnant Women (n = 210)	*P* Value
Age, year (range)	29.74 ± 11.6 (16-49)	32.03 ± 13.6 (18-51)	.0529
BMI, kg/m^2 (range)	24.39 ± 10.12 (15-42)	23.1 ± 9.85 (11-41)	.17
Percentage of patients with urinary incontinence	48.37	51.42	.237
Educational level, no.			
Elementary or none educated	131	122	
Secondary school	69	51	.559
High or above	46	37	
Percentage of employed women	33.7	48.57	.0013
Monthly income > 1000 TL, (%)	53.7	64.6	.016

Abbreviations: BMI, Body Mass Index; TL, Turkish Lira.

Detailed medical history and basic socio-demographic information were collected from all participants including: age, educational level, occupational status, monthly income, urinary continence status, and obstetric data (gravidity, parity, abortion, gestational week) and the complications faced like abortus imminens, preeclampsia, HELLP syndrome ["HELLP" is an abbreviation of the three main features of the syndrome, Hemolysis, Elevated Liver enzymes, Low Platelet count] early membrane rupture and preterm birth. Women with hypertension, hyperlipidemia, liver failure, endocrinologic disorders such as thyroid dysfunction and diabetes mellitus, chronic renal insufficiency, gynecological malignancies, primary ovarian failure, hypothalamic amenorrhea, psychiatric disorders such as depression and anxiety and women taking hormone replacement therapy were excluded from the study.

Questionnaire

The sexual function of women were assessed using Turkish version of Female Sexual Function Index (FSFI), which has been previously validated in Turkish language by Turkish Society of Andrology,[8,9] in six domains including: 1. Desire (questions 1 and 2); 2. Arousal (questions 3,4,5 and 6); 3. Lubrication (questions 7,8,9 and 10); 4. Orgasm (questions 11,12 and 13); 5. Satisfaction (questions 14,15 and 16); 6. Pain (questions 17,18 and 19). We scored Turkish version of FSFI as follows: the items 1 to 16 had five Likert-type answers from "never" (score 1) to "very much" (score 5) and the items 16 to 18 were leveled from "very much" (score 1) to "never" (score 5). Adding the score of individual items that comprise the domain and multiplying the sum by domain factor obtained individual domain score. Factors were 0.6 for desire, 0.3 for arousal and lubrication, and 0.4 for orgasm, pain, and satisfaction. The total-scale score range was from 2 to 36. Cutoff value was 26.55; equal or below this point, was assumed as sexual dysfunction.[8] A cutoff total score of ≤ 26.55 on the FSFI is the current standard for diagnosing sexual dysfunction in women across a wide range of ages (18-74 years) and lifestyles.[10] We used the same cutoff value for FSFI to diagnose FSD in this study. According to a previous report,[11] to estimate the presence or sexual difficulty in each domain, a score of 40% or less of the maximum value of the desire domain (≤ 2.4) and a score of less than 60% of the maximum value of the other five domains (< 3.6) were selected as the cutoff, respectively.

Outcome Measures

The primary outcome of this study was to evaluate the female sexual function of pregnant women and compare sexual function in pregnant and non-pregnant-women. On the basis of previous studies,[3,4,6,12-16] we calculated that 100 patients per group would be required to detect a 20% difference in proportions with a power of 90% at a 0.05 level of significance. In anticipation of case fail-

Table 2. Female Sexual Function Index scores in pregnant and non-pregnant groups.

Pregnant Women			Non-pregnant Women		
Domains	**No.**	**Median (min-max)**	**No.**	**Median (min-max)**	***P* Value**
Sexual desire	246	3 (1.2-6)	210	3.6 (1.2-6)	< .05
Sexual arousal	246	3 (1.2-6)	210	3.6 (1.2-6)	< .05
Lubrication	246	3.3 (1.2-6)	210	3.9 (1.2-6)	< .05
Orgasm	246	3.2 (1.2-6)	210	4 (1.2-6)	< .05
Satisfaction	246	3.2 (1.2-6)	210	4 (1.2-6)	< .05
Pain	246	3.2 (1.2-6)	210	3.6 (1.2-6)	< .05
Total score	246	18.9 (7.2-36)	210	22.7 (7.2-36)	< .05

Table 3. Sexual dysfunction in pregnant women regarding to trimester, gravidity, parity, and abortion.

Presence of FSD		**Absence of FSD**		***P* Value**
Characteristics	no (%)	no (%)	Total, no (%)	
Trimester				
1st Trimester	51 (89.47)	6 (10.52)	57 (100)	
2nd Trimester	64 (90.14)	7 (9.86)	71 (100)	.632
3rd Trimester	110 (93.2)	8 (6.8)	118 (100)	
Gravidity				
1	39 (78)	11 (22)	50 (100)	
≥ 2	178 (90.81)	18 (9.19)	196 (100)	.013
Parity				
Primiparous	42 (79.24)	11 (20.76)	53 (100)	
Multiparous	181 (93.78)	12 (6.22)	193 (100)	.001
Abortion				
0	112 (89.6)	13 (10.4)	125 (100)	
≥ 1	113 (93.4)	8 (6.6)	121 (100)	.287

Abbreviation: FSD, Female Sexual Dysfunction.

Table 4. Sexual dysfunction in pregnant women according to age, BMI, urinary incontinence, educational level, and occupational status.

Variables	**Presence of FSD**	**Absence of FSD**	**Values**	
Characteristics	no (%)	no (%)	Total, no (%)	*P* Value
Age (years)				
16-30	144 (92.3)	12 (7.7)	156 (100)	
31-45	66 (85.71)	11 (14.29)	77 (100)	
≥46	11 (84.61)	2 (15.39)	13 (100)	.238
BMI (Kg/m^2)				
Underweight	57 (91.9)	5 (8.1)	62 (100)	
Normal	65 (97.01)	2 (2.99)	67 (100)	
Overweight or obese	104 (88.8)	13 (11.2)	117 (100)	.152
Urinary incontinence				
Yes	157 (89.2)	19 (10.8)	176 (100)	
No	61 (87.1)	9 (12.9)	70 (100)	.645
Educational level				
Elementary or none educated	112 (85.5)	19 (14.5)	131 (100)	
Secondary school	56 (81.1)	13 (18.9)	69 (100)	
High or above	34 (73.9)	12 (26.1)	46 (100)	.304
Occupational status				
Employed	157 (95.15)	8 (4.85)	165 (100)	
Unemployed	70 (86.4)	11 (13.6)	81 (100)	.016
Monthly income				
< 1000 TL	98 (93.3)	7 (6.7)	105 (100)	
≥ 1000 TL	119 (84.4)	22 (15.6)	141 (100)	.032

Abbreviations: FSD, Female Sexual Dysfunction; BMI, Body Mass Index; TL, Turkish Lira.

Table 5. Parameters influencing female sexual dysfunction in non-pregnant women.

Presence of FSD		**Absence of FSD**		
Variables	no (%)	no (%)	Total, no (%)	*P* Value
Age (years)				
16-30	62 (68.8)	28 (31.2)	90 (100)	
31-45	72 (69.9)	31 (30.1)	103 (100)	
≥46	15 (88.2)	2 (11.8)	17 (100)	.258
BMI (kg/m^2)				
Underweight	52 (74.3)	18 (25.7)	70 (100)	
Normal	39 (61.9)	24 (38.1)	63 (100)	
Overweight or obese	52 (67.5)	25 (32.5)	77 (100)	.307
Urinary incontinence				
Yes	48 (76.2)	15 (23.8)	63 (100)	
No	97 (66)	50 (34)	147 (100)	.142
Educational level				
Elementary or none educated	83 (68)	39 (32)	122 (100)	
Secondary	34 (66.6)	17 (33.4)	51 (100)	
High or above	22 (59.5)	15 (40.5)	37	.546
Occupational status				
Employed	77 (74.8)	26 (25.2)	103 (100)	
Unemployed	66 (61.7)	41 (38.3)	107 (100)	.041
Monthly income				
< TL 1000	55 (76.4)	17 (23.6)	72 (100)	
≥ TL 1000	91 (65.9)	47 (34.1)	138 (100)	.373

Abbreviations: FSD, Female Sexual Dysfunction; BMI, Body Mass Index; TL, Turkish lira.

ure, we included approximately 200 admitted patients in each group.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Science (SPSS Inc, Chicago, Illinois, USA) version 19.0. The data were analyzed using chi-square, Mann-Whitney *U*, Fisher Exact, Shapiro Wilk, Kruskal Wallis, Dunnett'stests, and student *t*-test. Results were expressed as median (minimum-maximum) and a *P* value < .05 was considered as statistically significant.

RESULTS

The demographic characteristics of study groups are presented in **Table 1**. Mean age was 29.74 ± 11.6 years in pregnant and 32.03 ± 13.6 years in non-pregnant group, no statistical significance between two groups was noted (*P* = .0529). Besides, no statistical significance was noted in comparison of body mass index (BMI) between pregnant and non-pregnant groups (*P* = .17). The median total FSFI score of pregnant women-was lower than non-pregnant women [18.9 (range, 7.2-36) vs. 22.7 (range, 7.2-36), *P* < .05] (**Table 2**). Pregnant women had lower scores than non-pregnant women in all FSFI domains (sexual desire, sexual arousal, lubrication, orgasm, satisfaction, pain) (*P* < .05).

Using the established cutoff score of 26.55, 91.08% of pregnant women were classified as having FSD. However, the prevalence rate of FSD in non-pregnant women was 67.61%. Sexual dysfunction in pregnant women was greater than non-pregnant women (*P* < .0001). Sexual functions were similar during pregnancy in women. The number of pregnant women with sexual dysfunction was not statistically different among trimesters (*P* = .632). Gravidity and parity were different between pregnant women with and without FSD, but the number of abortion were not different between pregnant women with and without FSD. Higher gravidity and parity were associated with sexual dysfunction (**Table 3**). Variability of domains according to trimesters revealed no statistically significant differences between subscales.

Age, BMI, and educational level were not different between pregnant and non-pregnant women with FSD and without FSD. The pregnant and non-pregnant women with and without urinary incontinence had similar sexual function. However, employed pregnant and non-pregnant women and pregnant women with higher monthly income expressed lesser sexual dysfunction (**Tables 4 and 5**). Patients with lower BMI showed significantly poorer lubrication than normal weighted and obese women (*P* < .05). In non-pregnant women, lubrication seemed significantly better in age group between16-30 years old than age group ≥ 46 years old (*P* = .001).

However, no statistically significant difference was determined between 16-30 years old and 31-45 years old age groups (P = .258).

DISCUSSION

This study demonstrated sexual dysfunction in 91.08% of pregnant women, and 67.61% of control subjects. In our study, we examined the relation between the status of sexual function during pregnancy in terms of FSFI total score and FSFI subscales (**Table 2**). We found higher sexual dysfunction rates for both pregnant and non-pregnant women considering some other studies. Oksuz and colleagues revealed 48.3% sexual dysfunction in non-pregnant women and Bartellas and colleagues found 49% sexual dysfunction in pregnant women.[4,17] In another study from Turkey by Güleroğlu and Beşer, the median FSFI score of pregnant women was 21.1, and 63.4% of them had sexual dysfunction.[18] In a population based study Lauman and colleagues indicated that sexual dysfunction was very prevalent in both sexes which ranged between 10%-52% in men and 25%-63% in women.[7] Our somewhat higher rates may indicate Turkish women's attitude to stay away from sexuality issues in their entire life due to general tendency taught by parents.

We analyzed various parameters influencing sexual function in pregnant and non-pregnant women. Trimester, gravidity, parity, and abortion seemed to influence sexual function in different ways. Physiological and psychological alterations experienced a woman during pregnancy period has impact on sexual life. On the first trimester, sexuality is to be influenced due to the many symptoms that often accompany the beginning of pregnancy such as fatigue, breast tenderness, nausea and vomiting along with pregnancy and adaptation efforts by couples to somewhat a new period. Gökyildiz and colleagues demonstrated that sexual desire increased from the first to the second trimester, and then decreased again.[3] However, some authors suggested that sexual desire and satisfaction reduced in pregnant women.[19] On the second trimester, pregnancy is generally accepted and sexual life is better than first trimester.[15,20] Khamis and colleagues and Ryding demonstrated that nearly half of women had better sexual satisfaction during the second trimester of pregnancy due to reduction of the early symptoms of pregnancy such as fatigue, nausea, and vomiting.[20,21] However, on the third trimester sexual function deteriorates due to advancing pregnancy period and fetus. Pregnant women fear for abortion and pre-term birth due to sexual act, and therefore, are reluctant for sexual activity.[12,14] Moreover, other causes of reduction of sexual desire during pregnancy are discomfort like breathlessness, fatigue, increased size of fetus, and downward pressure as the baby settles into the pelvis.[4,21,22] We found no statistically significant difference between trimesters considering sexual dysfunction and a significant decline in sexual function for all trimesters was noted. However, in the study by Yildiz, the percentage of participants experiencing sexual dysfunction before pregnancy, according to the FSFI cutoff values, was 25.4%, whereas this figure increased significantly during pregnancy, beginning in the first trimester and reaching a peak in the third trimester.[23]

We found that, gravida and parity influenced sexual function, but, the number of abortion did not. Similarly, Eryilmaz and colleagues revealed that, the number of previously abortion and curettage had no effect on sexual activity, but, increased numbers of pregnancy and births affected negatively coital frequency in pregnancy period.[15] Besides, Eryilmaz and colleagues found out that, the more educational level of pregnant women the more decline in coital frequency in pregnancy period as a result of awareness of pregnant women about possible risks.[15] In a study from Iran 52.9% of the pregnant women believed that intercourse during pregnancy results in abortion and 52.9% considered it as the reason for fetal infections.[16] However, we found no clear effect of educational level on sexual function. Planned or not, couples carry some concerns about pregnancy as to whether it poses economic burden and about how to cope with this newly situation. In a non-planned pregnancy, couples may show a trend to accuse themselves and may experience difficulties in their sexual life arising from pooreconomic conditions.[13] We found that, employment status and monthly income affected sexual function, a notably finding differently from the study by Eryilmaz and colleagues.[15]

We also investigated the different domains of FSFI and how these domains were changed according to age, BMI, and urinary incontinence in both pregnant and non-pregnant women. Kolotkin and colleagues found that, obesity affected negatively sexual functions in pregnant women, just as decline in sexual desire and performance.[24] However, we did not find any effect of age and BMI on sexual function in pregnant and non-pregnant women (**Tables 4 and 5**). We found that, lubrication was significantly increased in obese pregnant women with BMI ≥ 25 kg/m^2 and better than pregnant women with BMI ≤ 18 kg/m^2. The percentage of urinary incontinence for pregnant and non-pregnant women was 48.37% and 51.42%, respectively (P = .237). In the literature, it was indicated that urinary incontinence affects between 42% and 71% of women.[25] However, we did not find any impact of urinary incontinence on female sexual function of pregnant and non-pregnant women (**Table 4**).

CONCLUSIONS

Sexual functions are affected considerably in pregnancy period and a significant, more serious sexual dysfunction in an increased manner may appear. Sexual function decreases through out pregnancy, getting worse as thepregnancy progresses. Therefore, it is important to inform women that sex is safe during pregnancy from the first day to the last day if they have no medical risk.

CONFLICT OF INTEREST

None declared.

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