

## Original Article

## The Relationship between Sexual Function, Body Image and Body Mass Index among Pregnant Women

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### Abstract

**Background:** Body image dissatisfaction during pregnancy may negatively impact a woman's psychological and physical well-being as well as her sexual life.

**Aim:** The aim of the cross-sectional study was to investigate the relationship between sexual function, body image, and the body mass index (BMI) in pregnant women.

**Methods:** The sample of this descriptive and cross-sectional study were included 179 pregnant women. The data was collected via a questionnaire form and Turkish version of Female Sexual Function Index (FSFI) and Body Image Scale (BIS). FSFI score  $\leq 26.55$  is classified as sexual dysfunction.

**Results:** According to FSFI score, 88.8% of pregnant women had sexual dysfunction. Incidence of sexual dysfunction according to trimesters of pregnant women were 81.8%, 85.7, and 91.9%, respectively. Incidence of good level body image of pregnant women according to trimesters were 78.8%, 65.7% and 66.7%, respectively. FSFI total and its arousal, lubrication, orgasm, satisfaction, pain subscales did not correlate with BIS, while desire did positively. Overweight and obese based on BMI among pregnant women had a negative effect on them sexual function. Duration of pregnancy, number of pregnancies, restricted sexual intercourse, and husband's changed sexual attitude were predictors affecting the experience of sexual function in pregnancy.

**Conclusions:** The predictors related to the body image in pregnancy: being primary and secondary school, unplanned pregnancy and negative body image in pregnancy, desire, lubrication and pain subscales scores of FSFI.

**Key words:** Body image; body mass index; pregnant women; sexual function; FSFI.

### Introduction

Sexuality, which is one of the most important indicators of the quality of life, is not an obligation for the continuity of individual life but it is an activity that is necessary for sustainability (Henson, 2002). Although recent studies do not recommend restricting sexual intercourse during uncomplicated pregnancies, pregnant women may avoid sexual intercourse due to the changes and discomforts they experience, or they may find that their sexual life has changed in ways they may not have expected (Tosun-Guleroğlu & Gördeles-Başer, 2014). In previous studies found that sexual activity decreased as the pregnancy progressed (Aslan et al., 2005, Taşdemir et al., 2017), and the prevalences of sexual dysfunction of pregnant women was between 61% and 76.1 (Leite et al., 2009; Naldoni et al., 2011; Taşdemir et al., 2017).

Body image that encompasses the beliefs and emotions that a person has about one's own body (Alsibiani, 2014) is associated with the comfort and frequency of sexual behavior and sexual satisfaction among women (Accard, Kearney-Cook, & Peterson, 2000; Pujols, Meston, & Seal, 2010). One previous study revealed that a positive body image had a positive effect on women's sexual function; overweight and obese women based on BMI had a negative body image, but they experienced no effect on sexual function (Erbil, 2011). When a woman becomes pregnant, physiological and psychological changes are triggered that affect nearly every system in a woman's body (Alsibiani, 2014). Thus it is only natural that her body image is also affected. Some recent evidence shown that body image satisfaction in early pregnancy is a strong determinant of body image satisfaction in later pregnancy (Skouteris, Carr, Wertheim, Paxton &

Duncome, 2005; Symons Downs, DiNallo, Kirner, 2008; Clark et al., 2009). Body image dissatisfaction during pregnancy may negatively impact a woman's psychological and physical well-being as well as her sexual life (Pauls, Occhino, & Dryfhout, 2008). In previous studies have shown that negative body image is associated with poor maternal-fetal attachment during the third trimester of pregnancy (Huang, Wang, & Chen, 2004), and with longer and more difficult labor (McCarthy, 1998). A higher BMI was associated with greater impairment in sexual quality of life of women (Kolotkin et al., 2006). Women's body appreciation scores were modestly negatively correlated with BMI, while BMI was not related sexual function scores (Satinsky et al., 2012). Low sexual function results which were associated with negative body image during early pregnancy (Pauls et al., 2008). In the second trimester, mean total FSFI scores were similar in overweight women compared to normal weight women (Riberio et al., 2016). In the third trimester, overweight women had significantly lower total FSFI scores than normal weight women. In the third trimester, overweight women also had significantly lower mean scores in desire, arousal, lubrication, orgasm and dyspareunia domains, and there was an inverse correlation between pre-pregnancy BMI and mean third trimester total FSFI scores, desire, and orgasm (Riberio et al., 2016).

There are few studies about the relationship between sexual function, body image, and the BMI with validated instruments in Turkish pregnant women. The purpose of this study was to investigate the relationship between sexual function and body image and body mass index in pregnant women and assesment of their determinants.

### **Materials and Methods**

The cross-sectional study was conducted a convenience sample of 179 pregnant women who admitted to the antenatal policlinics of public hospital in a northern city of Turkey. Volunteer healthy pregnant women who were sexually active, living with their husband were included in this study. The exclusion criteria included chronic illnesses such as hypertension, diabetes mellitus, therapy for infertility, past or present psychological diseases, medical or obstetric conditions in which the sexual relationship is not recommended as threatened preterm labor,

placenta previa and illiteracy. Gestational age was determined according to the last date of the menstrual cycle and confirmed by ultrasonography. Informed verbal consent was obtained after explaining the objective of the research to every woman who agreed to take part in this study. Women who had first 12-weeks pregnancy were accepted in the first trimester, between 12 and 24 weeks as in second trimester and over 24 weeks as in third trimester.

### **Measures**

The data was collected via a questionnaire form and Turkish version of Female Sexual Function Index (FSFI) and Body Image Scale (BIS). The questionnaire form, the FSFI and the BIS were filled out by pregnant woman in a quiet room in the outpatient clinic.

### **Questionnaire form**

The questionnaire form included questions such as woman's age, education level, occupation, perception of income, husband's age and education level, prepregnancy weight, current weight, height, number of child, number of pregnancy, duration of pregnancy, first pregnancy age, whether having abortion, whether planned pregnancy, woman's thoughts about sexual intercourse during pregnancy, husband's the attitude to sexual intercourse during pregnancy, restriction of sexual intercourse during pregnancy and affecting of thoughts about her body during pregnancy.

### **Female Sexual Function Index**

Female sexual function index was developed Rosen et al.(2000) assesses sexual function for the previous four weeks with a five-point scale. There are six domains including desire, arousal, lubrication, orgasm, satisfaction and pain of the FSFI with 19- item scale. Items were rated from 0 to 5, with "0" corresponding to "no sexual activity". The domains factors were as follow: 0.6 for the desire, 0.3 for the arousal, and lubrication, and 0.4 for the orgasm, satisfaction, and pain subscales (Rosen et al., 2000). The maximum score after multiplication of the domain scores with factor loads was 36, and minimum score was 2. Higher scores all of the subscales and total FSFI indicate better sexual functioning. The Cronbach Alpha value of FSFI in Rosen's study was 0.82 (Rosen et al., 2000). FSFI score  $\leq 26.55$  is defined as sexual dysfunction (Wiegel, Meston, & Rosen, 2005). The validity, reliability, and adaptation to

Turkish of FSFI were done by Aygin and Eti Aslan, and Cronbach Alpha was revealed as 0.98 (Aygin & Aslan, 2005). Cronbach's alpha for the present study was 0.96.

### **Body Image Scale**

Body Image Scale (BIS) consists of 40 items, which was developed by Secord and Jourard and had been adapted to Turkish by Hovardaoğlu (Secord & Jourard, 1953; Hovardaoğlu, 1993). Items of scale is associated a function ora part of the body. Each item has five possible choices as “I disagree strongly”, “I disagree”, “I am not sure”, “I agree” and “I agree strongly”. BIS item scores are from 1 to 5, total score varies between 40 and 200. A score of 135 and below from BIS is calculated as the body image is low (Tercan, 2009). Cronbach's alpha for the present study was 0.92

### **Body Mass Index**

Pregnant women recruited to this study reported their height (cms) and weight (kgs), and BMI of pregnant women was calculated for the sample by the researcher. The pregnant women's height ranged from 145 to 178 cms, with the mean height of 161.85 (SD=6.20). The prepregnancy mean weight of participants ranged from 35 to 106, with the mean weight prepregnancy 59.73 (SD= 12.22). Current weight of pregnant women ranged from 45 to 107.

### **Statistical Analysis**

In data analysis was used descriptive statistics including mean, standard deviation, frequency, percentage. In analysis of parametric variables with two categories was used *t*-test. In analysis of parametric variables with three categories were used One Way ANOVA, and correlations between continuous variables was evaluated Pearson correlation test. A chi-square test was used to test differences in the frequency of sexual dysfunction and body image according to trimesters of pregnancy. Multiple linear regression analysis was used to asses the correlation between dependent and independent variables. The level of significance used was  $p < 0.05$ .

### **Ethical Considerations**

The written permission was obtained from the institution to be investigated before the research data was collected. The pregnant women who

participated in the research were informed about the research and their written permission was obtained. This study was carried out in accordance with the principles of the Helsinki Declaration.

### **Results**

A total of 179 pregnant women mean age 26.73 years (SD 5.32, range 18-42) were studied. Pregnant women's husband's mean age 31.50 (SD 6.99, range 21-70). Mean of number of living child was 1.49 (SD, 0.65, range 0-2 children). Mean of number of pregnancy was 1.79 (SD, 0.82, range 1-3). Duration of pregnancy was 6.75 (SD 2.58, range 1-9). Pregnant women's first pregnancy mean age was 23.03 (SD 4.49, range 15-41 years). Participants' FSFI mean score 15.67 (SD 9.14, range 2.60-32), BIS score mean was 141.55 (SD 19.87, range 79-198), BMI before pregnancy was 22.77 (SD 4.37, range 15.57-42.46) and current BMI was 26.70 (SD 4.75, range 16.94-43.29).

It was determined that 56.4% of pregnant women were primary and secondary school graduate, husbands' education level of 51.4% of them was high school and university. It was found that 74.9% of them were housewife and 55.9% of them had “middle” income perception, 25.7% of them had the lowest a abortion, 54.7% of them were primiparous and 72.6% of them planned their pregnancy. It was determined that 18.4% of them was in first trimester, 19.6% of them was in second trimester, and 62% of pregnant women was in third trimester of pregnancy (*see Table 1*).

In this study found that 60.3% of pregnant women walked regularly, 22.9% of them were negatively affected thoughts about their body image during pregnancy, 37.4% of them changed eating habit because the body image was negatively affected during pregnancy, 46.9% of them received knowledge about sexual intercourse in pregnancy, 83.2% of them hesitated to get informed about sexual intercourse, 59.2% of the participants thought that sexual intercourse were objectionable in pregnancy. It was found that 82.7% of them restricted sexual intercourse in pregnancy, 39.7% of them changed attitudes of their husbands towards sexual intercourse in pregnancy, 97.2% of them were supported by their husbands in pregnancy (*see Table 2*).

**Table 1. Pregnant women's descriptive characteristics (n=179)**

| <b>Descriptive characteristics</b>  | <b>n</b>       | <b>%</b>  |              |
|-------------------------------------|----------------|-----------|--------------|
| <b>Education level</b>              |                |           |              |
| Primary and secondary school        | 101            | 56.4      |              |
| High school and university          | 78             | 43.6      |              |
| <b>Occupation</b>                   |                |           |              |
| Housewife                           | 134            | 74.9      |              |
| Employed                            | 45             | 25.1      |              |
| <b>Husband's education</b>          |                |           |              |
| Primary and secondary school        | 118            | 34.1      |              |
| High school and university          | 61             | 65.9      |              |
| <b>Husband's occupation</b>         |                |           |              |
| Civil servant                       | 153            | 85.5      |              |
| Self-employment                     | 36             | 14.9      |              |
| <b>Perceived income level</b>       |                |           |              |
| Low level                           | 11             | 6.1       |              |
| Middle and high level               | 168            | 93.9      |              |
| <b>Family type</b>                  |                |           |              |
| Nuclear family                      | 131            | 73.2      |              |
| Extended family                     | 48             | 26.8      |              |
| <b>Residence</b>                    |                |           |              |
| Village                             | 45             | 25.1      |              |
| Country and city                    | 134            | 74.9      |              |
| <b>Abortion</b>                     |                |           |              |
| Yes                                 | 46             | 74.3      |              |
| No                                  | 133            | 25.7      |              |
| <b>Curettage</b>                    |                |           |              |
| Yes                                 | 13             | 7.3       |              |
| No                                  | 166            | 92.7      |              |
| <b>Pregnancy</b>                    |                |           |              |
| Planned pregnancy                   | 130            | 72.6      |              |
| Unplanned pregnancy                 | 49             | 27.4      |              |
| <b>Trimester</b>                    |                |           |              |
| First trimester                     | 33             | 18.4      |              |
| Second trimester                    | 35             | 19.6      |              |
| Third trimester                     | 111            | 62.0      |              |
|                                     | <b>Mean±SD</b> | <b>SD</b> | <b>Range</b> |
| Age (year)                          | 26.73          | 5.32      | 18-42        |
| Husband age (year)                  | 31.50          | 6.99      | 21-70        |
| Height (cms)                        | 161.85         | 6.20      | 145-178      |
| Weight before pregnancy (kgs)       | 59.73          | 12.22     | 35-106       |
| Current weight (kgs)                | 69.96          | 13.00     | 45-107       |
| Number of child (n=81)              | 1.49           | 0.65      | 0-2          |
| Number of pregnancy                 | 1.79           | 0.82      | 1-3          |
| Duration of pregnancy (months)      | 6.75           | 2.58      | 1-9          |
| First sexual intercourse age (year) | 21.77          | 4.20      | 14-37        |
| First pregnancy age (year)          | 23.03          | 4.49      | 15-41        |
| FSFI                                | 15.67          | 9.14      | 2.60-32      |
| BIS                                 | 141.55         | 19.87     | 79-198       |
| Prepregnancy BMI                    | 22.77          | 4.37      | 15.57-42.46  |
| Current BMI                         | 26.70          | 4.75      | 16.94-43.29  |

**Table 2. Pregnant women's obstetric and body image characteristics (n=179)**

| Sexuality and body image characteristics                                      | n   | %    |
|---|-----|------|
| <b>Walking exercise during pregnancy</b>                                      |     |      |
| Yes   | 108 | 60.3 |
| No  | 71  | 39.7 |
| <b>Body image during pregnancy</b>  |     |      |
| Positively affected   | 138 | 77.1 |
| Negatively affected   | 41  | 22.9 |
| <b>Change in nutrition with thinking affected body image during pregnancy</b> |     |      |
| Yes   | 112 | 37.4 |
| No  | 67  | 62.6 |
| <b>Receiving knowledge about sexual intercourse in pregnancy</b>              |     |      |
| Yes   | 84  | 46.9 |
| No  | 95  | 53.1 |
| <b>Hesitating to get informed about sexual intercourse</b>                    |     |      |
| Yes   | 149 | 83.2 |
| No  | 30  | 16.8 |
| <b>Sexual intercourse in pregnancy</b>  |     |      |
| Objectionable   | 106 | 59.2 |
| Not objectionable   | 73  | 40.8 |
| <b>Restriction to sexual intercourse in pregnancy</b>                         |     |      |
| Yes   | 148 | 82.7 |
| No  | 31  | 17.3 |
| <b>Husband's sexual attitude during pregnancy</b>                             |     |      |
| Changed   | 71  | 60.3 |
| Not changed   | 108 | 39.7 |
| <b>Husband's support during pregnancy</b>                                     |     |      |
| Yes   | 174 | 97.2 |
| No  | 5   | 2.8  |

**Table 3. Comparisons with FSFI and its subscales scores of pregnant women according to trimesters (n=179)**

|                   | Female Sexual Function Index |                   |                   |                                 |                                 |                   |                                 |
|-------------------|------------------------------|-------------------|-------------------|---------------------------------|---------------------------------|-------------------|---------------------------------|
|                   | Desire                       | Arousal           | Lubrication       | Orgasm                          | Satisfactio                     | Pain              | FSFI total                      |
|                   | n                            |                   |                   |                                 |                                 |                   |                                 |
| First Trimester   | 2.92 ±1.16                   | 2.68±1.82         | 3.30±2.08         | 3.04±2.06                       | 3.64±1.62                       | 2.50±2.52         | 18.11±9.00                      |
| Second Trimester  | 2.86±29.0                    | 2.58±1.71         | 2.95±1.97         | 2.98±1.94                       | 3.77±1.74                       | 2.52±1.58         | 17.68±9.08                      |
| Third Trimester   | 2.49±1.03                    | 2.07±2.28         | 2.48±2.07         | 2.15±2.00                       | 3.05±1.61                       | 2.05±1.92         | 14.31±9.02                      |
| <b>Total</b>      | 2.64±1.08                    | 2.28±1.71         | 2.72±2.07         | 2.48±2.03                       | 3.30±1.66                       | 2.22±1.82         | 15.67±9.14                      |
| <b>Test and P</b> | F=2.894<br>P=.058            | F=2.331<br>P=.100 | F=2.338<br>P=.099 | <b>F=3.828</b><br><b>P=.024</b> | <b>F=3.369</b><br><b>P=.037</b> | F=1.394<br>P=.251 | <b>F=3.332</b><br><b>P=.038</b> |

**Table 4. Comparisons and BIS scores, prepregnancy BMI, current BMI of pregnant women according to trimesters of pregnancy (n=179)**

| Trimester of pregnancy        | n   | %     | BIS mean±SD       | Prepregnancy BMI±SD | Current BMI±SD             |
|-------------------------------|-----|-------|-------------------|---------------------|----------------------------|
| First Trimester <sup>a</sup>  | 33  | 18.4  | 146.09±18.88      | 23.25±3.68          | 24.12±3.91                 |
| Second Trimester <sup>b</sup> | 35  | 19.6  | 41.51±23.08       | 23.02±5.56          | 25.50±5.24                 |
| Third trimester <sup>c</sup>  | 111 | 62.0  | 140.21±19.05      | 22.55±4.15          | 27.84±4.45                 |
| <b>Total</b>                  | 179 | 100.0 | 141.55±19.87      | 22.77±4.37          | 26.70±4.75                 |
| <b>Test ve P</b>              |     |       | F=1.112<br>p=.331 | F=.387<br>p=.680    | F=10.056<br><b>p=.000*</b> |

\*Significant difference a-c

**Table 5. Comparison of FSFI scores and BIS scores according to BMI groups of women (n = 179)**

| BMI (kg/m <sup>2</sup> )groups*        | n   | %     | FSFI mean±SD           | BIS mean±SD    |
|--|-----|-------|------------------------|----------------|
| Underweight and normal weight ≤ 24.9   | 77  | 43.0  | 17.83±8.90             | 141.87±21.08   |
| Overweight and obese ≥ 25.0 and higher | 102 | 57.0  | 14.04±9.03             | 141.31±19.02   |
| Total                                  | 179 | 100.0 | 15.67±9.14             | 141.55±19.87   |
| <b>Test and p</b>                      |     |       | t=2.794, <b>p=.006</b> | t=.185, p=.854 |

\*BMI groups were conducted according to standard WHO classification.

**Table 6. Factors related to sexual function in pregnancy in multiple regression analysis**

| Factors   | Standardised coefficients |        |              | 95% confidence interval for B |             |
|---|---------------------------|--------|--------------|-------------------------------|-------------|
|   | Beta                      | t      | p-value      | Lower bound                   | Upper bound |
| (Constant)  |                           |        |              | 12.715                        | 43.351      |
| Husband's primary and secondary school                    | 0.123                     | 1.655  | 0.100        | -0.457                        | 5.192       |
| Unplanned pregnancy                                       | 0.085                     | 1.128  | 0.261        | -1.306                        | 4.783       |
| Receiving knowledge about sexual intercourse in pregnancy | -0.101                    | -1.418 | 0.158        | -4.419                        | 0.725       |
| Objectionable sexual intercourse in pregnancy             | -0.109                    | -1.403 | 0.163        | -4.868                        | 0.824       |
| Restricted sexual intercourse in pregnancy                | -0.204                    | -2.662 | <b>0.009</b> | -8.588                        | -1.273      |
| Husband's changed sexual attitude in pregnancy            | -0.148                    | -2.013 | <b>0.046</b> | -5.484                        | -0.053      |
| BIS score   | 0.109                     | 1.519  | 0.131        | -0.015                        | 0.115       |

|                       |        |        |              |        |        |
|-----------------------|--------|--------|--------------|--------|--------|
| BMI in prepregnancy   | -0.129 | -0.896 | 0.372        | -0.868 | 0.326  |
| BMI in pregnancy      | 0.086  | 0.566  | 0.572        | -0.410 | 0.739  |
| Duration of pregnancy | -0.239 | -2.570 | <b>0.011</b> | -1.499 | -0.196 |
| Age                   | -0.073 | -0.811 | 0.418        | -0.431 | 0.180  |
| Number of pregnancies | -0.368 | -2.371 | <b>0.019</b> | -7.476 | -0.682 |
| Number of children    | 0.283  | 1.869  | 0.063        | -0.188 | 6.812  |
| Number of curretage   | 0.134  | 1.805  | 0.073        | -0.444 | 9.856  |
| Number of abortions   | 0.143  | 1.624  | 0.106        | -0.647 | 6.634  |
| Occupation            | 0.051  | 0.629  | 0.530        | -2.317 | 4.482  |

**Table 7. Factors related to body image in pregnancy in multiple regression analysis**

| Factors                            | Standardised coefficients |  | <i>t</i> | <i>p-value</i> | 95% confidence interval for <i>B</i> |             |
|------------------------------------|---------------------------|--|----------|----------------|--------------------------------------|-------------|
|                                    | Beta                      |  |          |                | Lower bound                          | Upper bound |
| (Constant)                         |                           |  |          |                | 122.290                              | 166.577     |
| Being primary and secondary school | 0.226                     |  | 3.041    | <b>0.003</b>   | 3.165                                | 14.879      |
| Unplanned pregnancy                | -0.218                    |  | -3.055   | <b>0.003</b>   | -15.983                              | -3.434      |
| Negative body image in pregnancy   | -0.156                    |  | -2.169   | <b>0.032</b>   | -14.060                              | -0.660      |
| BMI in prepregnancy                | -0.019                    |  | -0.163   | 0.871          | -1.103                               | 0.935       |
| BMI in pregnancy                   | -0.101                    |  | -0.866   | 0.388          | -1.381                               | 0.539       |
| Desire score                       | 0.191                     |  | 2.096    | <b>0.038</b>   | 0.202                                | 6.787       |
| Arousal score                      | -0.262                    |  | -1.592   | 0.113          | -6.783                               | 0.728       |
| Lubrication score                  | 0.434                     |  | 2.404    | <b>0.017</b>   | 0.744                                | 7.589       |
| Orgasm score                       | 0.165                     |  | 0.797    | 0.427          | -2.386                               | 5.614       |
| Satisfaction score                 | -0.127                    |  | -0.916   | 0.361          | -4.795                               | 1.755       |

|  |        |        |              |        |        |
|--|--------|--------|--------------|--------|--------|
| Pain score                                     | -0.257 | -2.052 | <b>0.042</b> | -5.508 | -0.105 |
| Objectionable sexual intercourse in pregnancy  | 0.096  | 1.250  | 0.213        | -2.258 | 10.041 |
| Restriction to sexual intercourse in pregnancy | 0.000  | -0.001 | 0.999        | -8.320 | 8.314  |
| Husband's changed sexual attitude in pregnancy | 0.050  | 0.679  | 0.498        | -3.888 | 7.962  |

According to FSFI score  $\leq 26.55$  is defined as sexual dysfunction; 88.8% of participants had sexual dysfunction. Prevalences of sexual dysfunction according to trimesters of pregnant women were 81.8%, 85.7, and 91.9%, respectively. The rate of sexual dysfunction was highest in the third trimester, and in general, it was found that the rate of sexual dysfunction was high in pregnant women in all trimester and there was no significant relationship between sexual dysfunction and trimester of pregnant woman ( $X^2 = 3.026, p = 0.220$ ). In this study, it was found that body image of 68.7% of pregnant women was in "good level", and BIS mean score of pregnant women with "good level body image" was  $149.40 \pm 16.87$ ; BIS mean score of pregnant women with "low level body image" was  $140.56 \pm 20.05$ . Prevalences of "good level body image" of pregnant women according to trimesters were 78.8%, 65.7% and 66.7%, respectively. The trimester was the first trimester of pregnant woman's body image being the best. However, there was no significant relationship between body image level and trimester of pregnant woman ( $X^2 = 1.921, p = 0.383$ ).

According to the trimester of pregnancy, the pregnant woman's FSFI and subscales scores were compared. The FSFI and its subscales domains scores was highest in the first trimester, and was lowest in third trimester. Generally, the mean of the total FSFI score was  $15.67 (SD 9.14, \text{range } 2.60-32.80)$ . Total FSFI mean score in the first trimester was  $18.11 (SD 9.00)$ , in the second trimester was  $17.68, 9.08$ ; in the third trimester was  $14.31 (SD 9.02)$ . According to trimester of pregnant women, statistically significant differences were found orgasm ( $p = 0.024$ ), satisfaction ( $p = 0.037$ ) domains and FSFI total ( $p = 0.038$ ), (see Table 3).

Comparisons and BIS scores, prepregnancy BMI, current BMI of pregnant women according to trimesters of pregnancy were shown Table 4. Totally, the mean of the BIS score was  $141.55 (SD 19.87)$ . The mean of the BMI in prepregnancy  $22.77 (SD 4.37)$ . Totally, current BMI of them  $26.70 (SD 4.75)$ , according to trimesters, current BMI's of pregnant women was  $24.14 (SD 3.91)$ ,  $25.50 (SD 5.24)$ ,  $26.70 (SD 4.75)$ , respectively, and difference between the groups was statistically significant ( $p = 0.000$ ), the difference was found to be due to the difference between first trimester and third trimester. According to the trimester, pregnant women had no significant difference in BIS scores ( $p = 0.331$ ) and BMI scores before pregnancy ( $p = 0.680$ ), (see Table 4) The FSFI total score of the underweight and normal BMI group ( $17.83 \pm 8.90$ ) was higher than the FSFI total score of the women in the overweight and obese BMI group ( $14.04 \pm 9.03$ ); and difference between the groups was statistically significant ( $p = 0.006$ ). According to BMI groups, BIS scores were not significant difference ( $p = 0.854$ ), (see Table 5)

Correlations between BIS scores, BMI measurements and FSFI and subscales scores of pregnant women were: the arousal, lubrication, orgasm, satisfaction, pain subscales and FSFI total did not correlate with BIS, while desire did ( $r = 0.214, p = 0.004$ ). Orgasm ( $r = -0.189, p = 0.011$ ), satisfaction ( $r = -0.240, p = 0.001$ ), pain ( $r = -0.184, p = 0.014$ ) from its subscales and total FSFI ( $r = -0.179, p = 0.016$ ) correlated with BMI in pregnancy. The correlation between dependent and independent variables was investigated using multiple linear regression analysis. Two models were formed: one related FSFI score and the other to the body image score. Factor that can lead to sexual dysfunction and negative body

image in pregnancy were analysed using multiple linear regression analysis. In both models, the error term analysis showed that the hypotheses of data normality, linearity and constant variance were supported. In addition, no auto correlation was seen between the data (in the sexual function model Durbin-Watson=1,887 and in the body image model Durbin Watson= 2.103).

The multiple linear regression analysis that was used to determine factors that affect the experience of sexual function in pregnancy showed four predictors that were statistically significant and increased the explanatory strength. Duration of pregnancy, number of pregnancies, restricted sexual intercourse in pregnancy and husband's changed sexual attitude during pregnancy were strongest predictors that affect the experience of sexual function in pregnancy. The explanatory strength of this model was determined to be  $R^2=0.240$ , (see Table 6) The multiple linear regression analysis model related to the body image in pregnancy showed six predictors that were statistically significant and increased the explanatory strength. The strongest predictors in the model were as follows: Being primary and secondary school, unplanned pregnancy and negative body image in pregnancy, desire, lubrication and pain subscales scores of FSFI. The descriptive strength of this model was determined to be  $R^2=0.232$ , (see Table 7).

## Discussion

Sexual interest was reported to be unchanged or slightly decreased in the first trimester of pregnancy, variable in the second trimester and decreased at the end of the third trimester (Aslan et al., 2005). In the present study found that 88.8% of pregnant women had sexual dysfunction, and according to trimesters the sexual dysfunction ratios were 81.8%, 85.7%, and 91.9%, respectively. In other words, the sexual function of women during pregnancy was adversely affected during each trimester, but it was more adversely affected in the third trimester in this study. It was found that the total FSFI mean score of pregnant women was significantly highest in the first trimester (18.11) and lowest in the third trimester (14.31). Furthermore, the FSFI and its subscales scores of pregnant women were compared to each trimester of pregnancy, and there was no significant difference in the desire, arousal, lubrication and pain subscale scores. Compared with early pregnancy, the scores of

orgasm ( $p=0.024$ ), satisfaction ( $p=0.037$ ) and total FSFI scores ( $p=0.038$ ) showed a significant decrease during late pregnancy (see Table 3). In similarly, Kuçukdurmaz and colleagues (2016) found that the prevalence of sexual dysfunction in pregnant women was higher (87%) in the first and third (92.6%) trimesters when compared to the second (80.6%) trimester. On previous study revealed that when the domains scores of FSFI were compared according to each trimester of pregnancy, significant differences were found in all domains of the FSFI except for desire, arousal, lubrication and orgasm, which were not significantly different between the first and second trimesters of pregnancy. In a prospective study found that the total FSFI score of pregnant women was 28.37 in the first trimester, and this same score declined significantly to 23.52 in the third trimester (Pauls et al., 2008).

Also, in the present study was found that duration of pregnancy, number of pregnancies, restricted sexual intercourse in pregnancy and husband's changed sexual attitude during pregnancy were strongest predictors of the experience of sexual function in pregnancy (see Table 6). In similarly, after controlling for unplanned pregnancy, partner education, and sexual satisfaction, the best predictor of intercourse frequency was fear of injuring the fetus. In the same study was found that half of the women had various fears regarding a negative impact of sexual activity on fetal health, the most prominent fears were that intercourse might harm the fetus, cause infection of the fetus, cause preterm delivery (Radoš, Vraneš, & Šunjić, 2014). Other studies have also reported quite high proportions (up to 50% ) of women who fear that intercourse might harm the fetus (von Sydow, 1999; Bartellas et al., 2000; Naim & Bhutto, 2000).

The changes in lifestyle and body image occurring during pregnancy can cause low self-esteem and feelings of unattractiveness and can affect women's sexuality negatively (Hofmeyr et al., 1990; Fox & Yamaguchi, 1997; Gökyıldız & Beji, 2005; Skouteris et al., 2005). This present study revealed that 68.7% of pregnant women had a positive body image, when the rate of the positive body image among pregnant women was evaluated according to the trimesters, BIS scores were found to be 78.8%, 65.7%, and 66.7%, respectively, and the BIS mean score revealed no significant difference in the trimesters of pregnancy. In the current study, the six sexual function parameters of arousal, lubrication,

orgasm, satisfaction, pain and FSFI total did not correlate with BIS, while desire did ( $r=0.214$   $p=0.004$ ). In addition to, the strongest predictors related to the body image in pregnant women were as follows: graduated primary and secondary school, unplanned pregnancy and negative body image in pregnancy, desire subscales, lubrication subscales and pain subscales scores of FSFI (see Table 7).

Changes in body image can be perceived in different ways by pregnant women. In qualitative study of pregnant women's body images, there are two major themes, which are in conflict (Chang, Chao, & Kenney, 2006). One stems from a feminine perspective and concerns women's reactions to changes in shape and body image, as well as their influence on the relationship with their partners. The second theme is a conception that gaining weight is good for the healthy development of the baby (Chang et al., 2006).

Medical and social pressures for ideal body image might be reduced in pregnancy (Rados et al., 2014). The expression of sexuality during pregnancy depends a lot on the self-perceptions of each woman. Low body image may impact on quality of life and lead to negative effects on subsequent physical activity or sexual function (Cash, Maikkula, & Yamamiya, 2004). Some studies have revealed that there is no negative change in body image satisfaction during pregnancy (Pauls et al., 2008), and that body image satisfaction for pregnant women who engage in exercise may be even higher in the second trimester (Boscaglia et al., 2003). One study found that women's body image did not change during pregnancy, however, maternal weight and body mass index both significantly increased by the third trimester, and the total FSFI scores correlated with body image in the first trimester (Pauls et al., 2008). Other study revealed that women's satisfaction increased significantly during late pregnancy compared with early pregnancy, and there was no change in sexual desire throughout the pregnancy (Chang et al., 2011). Findings of this study is similar some literature.

A previous study have found that half of pregnant women in the third trimester of pregnancy experienced decreased sexual desire and satisfaction when compared to pre-pregnancy (Rados et al., 2014). In addition, the majority of women reported that sexual satisfaction was

influenced more by relationship satisfaction than by body image self-consciousness (Rados et al., 2014), and the effect of body image during pregnancy on sexual function was strongly intertwined with those of background characteristics, obstetrical history, and context (Chang et al., 2011). The results of the study are consistent with previous studies (Rados et al., 2014; Chang et al., 2011).

This study revealed that orgasm ( $p=0.011$ ), satisfaction ( $p= 0.001$ ), and pain ( $p=0.014$ ) subscales and total FSFI scores ( $p=0.016$ ) were positively correlated with the BMI scores of pregnant women. Also, this study found that total FSFI scores of pregnant women who were overweight and obese (17.83) were higher than pregnant women who were underweight and normal weight (14.04). There was a significant difference in FSFI scores ( $p=.006$ ) according to the BMI groups of pregnant women but no difference in the BIS scores ( $p > 0.05$ ), (see Table 5). Women who were overweight before pregnancy were more likely to have had a positive change in body image when they were at more than 30 weeks' gestation. Also, women who were normal weight before pregnancy were more likely to have had a negative change (Fox & Yamaguchi, 1997). Despite overweight women's positive changes, their body shape concerns were more negative than those of normal weight women (Fox & Yamaguchi, 1997). In other study, women who gained more gestational weight were more likely to express negative pregnancy weight gain attitudes (Dipietro et al., 2003).

In a previous study was found pregnant women with high exercise levels pre-gestation had higher body image scale scores than pregnant women with low-levels of exercise between 15 and 22 weeks of gestation (Boscaglia et al. 2003). Other in a study indicated that pregnant women's gestational age, urinary incontinence, and excess weight gain during the current pregnancy affected their sexual function (Naldoni et al., 2011). Results of this study is consistent with literature (Fox & Yamaguchi, 1997; Naldoni et al., 2011).

In conclusion, the rate of sexual dysfunction for pregnant women was found high during all three trimesters, however, the rate of sexual dysfunction was highest in the third trimester. Approximately seven out of every ten pregnant women had a positive body image which was

highest in the first trimester, however the body image score according to trimesters of pregnant women revealed no statistically significant differences. The FSFI and its subscale domain scores of pregnant women were determined highest in the first trimester and lowest in the third trimester. Depending upon the trimester being assessed, statistically significant differences were found in the orgasm, satisfaction domains, and FSFI total scores. The arousal, lubrication, orgasm, satisfaction, pain subscales and FSFI total did not correlate with the BIS, while desire did correlate. Orgasm, satisfaction, pain from its subscales and the total FSFI correlated with the BMI scores of pregnant women. The FSFI total score of the underweight and normal BMI group was significantly higher than the FSFI total score of the women in the overweight and obese BMI group, but BIS scores according to BMI groups did not show a significant difference.

There are some the limitations of this study. Firstly, this study was carried out with pregnant women who agreed to participate. The results of this study are thus limited to these pregnant women. The results cannot be generalized to all pregnant women. Secondly, data for this study were collected via self-reported questionnaire, FSFI and BIS. It may lead to bias. Thirdly, this was not a prospective one, was a cross-sectional study, so comparison with trimester was done on different pregnant women, not on the same pregnant women. Finally, the husbands of the women were not asked directly. Instead, they were asked about the attitudes of their husbands through women.

The findings of this study may be helpful to health care providers to raise awareness about the sexual problems of pregnant women and to provide information to couples on this important issue. In fact, future studies should continue to focus even more thoroughly on sexual function, body image, BMI, and risk factors affecting pregnant women. Furthermore, since health personnel are responsible for advising women and their partners regarding potential changes during pregnancy, appropriate training and education to be able to evaluate the sexual difficulties that couples may face should be part of health providers' ongoing education.

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