Female Sexual Dysfunction in the Late Postpartum Period Among Women with Previous Gestational Diabetes Mellitus

Mehmet Akif Sargin1, Murat Yassa1, Bilge Dogan Taymur1, Bulent Taymur2, Gizem Akca1 and Niyazi Tug1

ABSTRACT

Objective: To compare the status of female sexual dysfunction (FSD) between women with a history of previous gestational diabetes mellitus (GDM) and those with follow-up of a healthy pregnancy, using the female sexual function index (FSFI) questionnaire.

Study Design: Cross-sectional study.

Place and Duration of Study: Department of Obstetrics and Gynecology, Fatih Sultan Mehmet Training and Research Hospital, Istanbul, Turkey, from September to December 2015.

Methodology: Healthy sexually active adult parous females were included. Participants were asked to complete the validated Turkish versions of the FSFI and Hospital Anxiety and Depression Scale (HADS) questionnaires. Student's t-test was used for two-group comparisons of normally distributed variables and quantitative data. Mann-Whitney U-test was used for two-group comparisons of non-normally distributed variables. Pearson's chi-squared test, the Fisher-Freeman-Halton test, Fisher's exact test, and Yates' continuity correction test were used for comparison of qualitative data.

Results: The mean FSFI scores of the 179 participants was 23.50 ±3.94. FSFI scores and scores of desire, arousal, lubrication, orgasm, satisfaction, and pain were not statistically significantly different (p>0.05), according to a history of GDM and types of FSD (none, mild, severe). HADS scores and anxiety and depression types did not statistically significantly differ according to the history of GDM (p>0.05).

Conclusion: An association could not be found in FSFI scores between participants with both the history of previous GDM and with healthy pregnancy; subclinical sexual dysfunction may be observed in the late postpartum period among women with a history of previous GDM. This may adversely affect their sexual health.

Key Words: Sexual health. Gestational diabetes. Anxiety. Depression.

INTRODUCTION

According to the World Health Organization International Classification of Diseases-10 (ICD-10), the definition of female sexual dysfunction (FSD) includes the various ways in which an individual is unable to participate in a sexual relationship as he or she would wish.1 The prevalence of FSD ranges from 43% to 63% in the USA.2 However, the true global prevalence is not known, because social attitudes regarding this subject remain taboo in some countries, particularly those with a majority Muslim population. For the same reason, there is a lack of application for medical help, as the women affected are unable to clearly express their complaints; they primarily tend to conceal their sexual problems, and do not share easily. Therefore, it is recommended that the sexual health of women is assessed in a liberal manner, using questionnaires in order to identify FSD and guide the affected women toward appropriate medical help.

It has been suggested that FSD may be an early symptom of underlying diseases, such as cardiovascular disease, dyslipidemia, or diabetes mellitus.3,4 However, it may also be observed in healthy pregnant women, as a result of various biopsychosocial factors, cultural factors, a low level of education, unwanted pregnancy, advanced maternal age, long-term marriage, myths and taboos regarding sexual behavior during pregnancy.5,6 Gestational diabetes mellitus (GDM) is the most common metabolic disorder in pregnancy, and is caused by carbohydrate tolerance dysfunction. Its incidence varies between 2% and 14%, depending on the population and selected diagnosis criteria.7 The development of diabetes mellitus (DM), metabolic syndrome, and cardiovascular diseases in the postpartum period have been widely studied in women with a history of GDM.8,9 Such women carry a 9.34-fold higher risk of developing type 2 DM than a woman without such a history.10 Although several studies have shown that FSD occurs in women with DM, as a result of peripheral neuropathy and vasculitis caused by chronic hyperglycemia and subclinical inflammatory events,3,11 other studies have reported that DM has no effect on female sexual activity.2,12
A limited number of studies have investigated the relationship between FSD and GDM, and the results of these investigations are also debatable.13-15 Patients with a history of GDM may encounter various changes in their health and undiagnosed pathological conditions that are the result of probable subclinical inflammatory processes. We did not find any previously published study that had assessed FSD in the late postpartum period. Therefore, the aim of this study was to compare the status of FSD between women with a history of GDM and those with follow-up of a healthy pregnancy, using the female sexual function index (FSFI) questionnaire.

METHODOLOGY

This study was conducted on 179 participants at the Department of Obstetrics and Gynecology of Fatih Sultan Mehmet Training and Research Hospital, Istanbul, Turkey, between September and December 2015. The protocol was reviewed and approved by the Human Ethics Committee of the Hospital (Approval number: FSM EAH-KAEK 2015/145), and written informed consent was obtained from all participants, who had been selected from the patients who attended the gynecology outpatient clinic for regular checkups.

The inclusion criteria were ladies aged between 18 - 50 years, normal gynecologic examination, being married or in a stable partner relationship, sexually active for at least the last 4 weeks, having menstruation, a history of pregnancy that had been complicated with GDM (for the study population) or an uncomplicated, healthy pregnancy (for the control group).

Exclusion criteria were ladies currently diagnosed with type 1 or type 2 DM, being pregnant, gynecologic diseases (premature ovarian failure, surgical menopause, known to have polycystic ovary syndrome or endometriosis, uterine fibroids), any history of psychiatric or systemic, chronic, debilitating diseases (such as usage of selective serotonin receptor inhibitors, ischemic or congestive cardiac failure, current malignancy, or end-stage renal disease), pelvic trauma, urinary tract symptoms, urinary incontinence, or pelvic organ prolapse on examination.

All participants were asked to voluntarily complete the validated Turkish version of both the FSFI and the Hospital Anxiety and Depression Scale (HADS) questionnaires. A brief description of how to complete the questionnaire was provided to women who agreed to participate in the study. Socio-demographic characteristics, obstetric history, and clinical data relating to the patients, including age, educational status, body mass index (BMI), gravidity, parity, miscarriage, nature of menstrual cycle, type of previous delivery, duration since last delivery, history of GDM, type of contraceptive methods (if used), alcohol abuse, and smoking were recorded in a separate questionnaire.

The FSFI is a multiple-trait scoring, self-report document used to assess female SF during the previous 4 weeks. It consists of 19 items that encompass six separate domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. The maximum score is 36 points and the minimum score is 2 points. After completion of the questionnaire, the total SF score was calculated as follows: no sexual dysfunction (SD) (≥ 30 points), mild SD (between <29 and > 23 points), and severe SD (≤ 22 points).

The HADS is a brief self-report screening scale that focuses on the anxiety and depression status of patients at general medical outpatient clinics. HADS contains 14 items, each of which is rated on a four-point scale (range, 0-3 points). The patients rate how they have felt over the last week. The scale contains two subscales for anxiety and depression, and each consists of seven items (range, 0-21). After the participants had completed the questionnaire, their emotional distress was calculated as normal 0-7, mild 8-10, moderate 11-14, and severe 15-21.

RESULTS

The mean age, BMI, number of gravidity, parity, and miscarriage rates of the women were 34.98 ±5.68 years (range 21-49 years), 26.48 ±4.04 kg/m² (range 18-42 kg/m²), 2.60 ±0.87 (range 1-6), 1.93 ±0.87 (range 1-5), and 0.42 ±0.70 (range 0-4), respectively. The educational status attained was primary in 38.5% (n=69), secondary in 36.3% (n=65), and higher in 25.1% (n=45) of the participants. The demographic and descriptive features of all participants, according to a history of GDM, are shown in Table I.

The mean FSFI scores of all participants was 23.50 ±3.94 (range 12.4-30.8). FSFI scores and scores of desire, arousal, lubrication, orgasm, satisfaction, and pain were not statistically significantly different (p>0.05, Table II), according to a history of GDM and types of FSD (none, mild, severe).

HADS scores, and anxiety and depression types did not statistically significantly differ, according to the presence of GDM (p>0.05, Table III).
DISCUSSION

The present findings demonstrated that there was no significant difference in FSD in the late postpartum period, when comparing women with a history of GDM and women with a healthy pregnancy. To the best of authors' knowledge, this is the first study that has evaluated FSD in the late postpartum period with regard to history of previous GDM.

FSD is common in the prepartum and postpartum periods, even in healthy pregnant women, due to physiological and physical changes. Abouzari-Gazafroodi et al. evaluated the sexual life, satisfaction, worries, desire, excitement, enjoyment, fetal injury concern, and dyspareunia among 518 healthy pregnant women in different trimesters, and found that those with older age, longer duration of marriage, lower educational
level, unwanted pregnancy, and being at earlier stage of pregnancy were more likely to report disturbed SF.5

In a prospective study, Leite et al. followed 271 healthy adult and teenage pregnant females from the first trimester, using the FSFI questionnaire and excluding complications that may affect SF.16 Significant changes were observed in all FSFI domains during pregnancy, with a slight decrease of SF in the first trimester. In addition, better indicators in the second trimester, a strong decrease in the third trimester, and lower FSFI scores in the third trimester were found among adult pregnant women.

Chang et al. found that sexual desire did not change throughout the course of pregnancy; however, overall SF and sexual intercourse/activity were observed as being lowest during the last stage of pregnancy.6 BMI, body image, history of infertility, spontaneous first trimester miscarriage, educational level, and urinary incontinence had a significant effect on SF.

All previously conducted studies included healthy pregnant women. It has been primarily believed that if any complications of pregnancy (such as threatened miscarriage, hyperemesis gravidarum, threatened preterm labour, vaginal bleeding, placenta previa, preeclampsia) develop, sexual intercourse becomes contraindicated, and SF decreases as a result of fear and anxiety.

Some reports have assessed SF with questionnaires in

Table II: FSFI scores regarding presence of history of previous GDM.

<table>
<thead>
<tr>
<th>History of previous GDM</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No (n=128)</td>
<td>Yes (n=51)</td>
</tr>
<tr>
<td>Desire</td>
<td>1.2-6 (3.9)</td>
</tr>
<tr>
<td>Arousal</td>
<td>1.2-6 (3.9)</td>
</tr>
<tr>
<td>Lubrication</td>
<td>1.8-4.8 (3.6)</td>
</tr>
<tr>
<td>Orgasm</td>
<td>1.2-6 (4)</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>1.2-6 (4.8)</td>
</tr>
<tr>
<td>Pain</td>
<td>1.2-6 (4.2)</td>
</tr>
<tr>
<td>FSFI Score</td>
<td>12.4-30.8 (24.2)</td>
</tr>
<tr>
<td>FSD (n, %)</td>
<td>9 (7%)</td>
</tr>
<tr>
<td>No</td>
<td>9 (7%)</td>
</tr>
<tr>
<td>Mild</td>
<td>83 (64.8%)</td>
</tr>
<tr>
<td>Severe</td>
<td>36 (28.1%)</td>
</tr>
</tbody>
</table>

Table III: Anxiety, depression and HADS scores regarding presence of history of previous GDM.

<table>
<thead>
<tr>
<th>History of previous GDM</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No (n=128)</td>
<td>Yes (n=51)</td>
</tr>
<tr>
<td>Anxiety score</td>
<td>0-20 (9)</td>
</tr>
<tr>
<td>Anxiety (n, %)</td>
<td>49 (38.3%)</td>
</tr>
<tr>
<td>Normal</td>
<td>49 (38.3%)</td>
</tr>
<tr>
<td>Mild</td>
<td>29 (22.7%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>42 (32.8%)</td>
</tr>
<tr>
<td>Severe</td>
<td>8 (6.2%)</td>
</tr>
<tr>
<td>Depression score</td>
<td>1-18 (7)</td>
</tr>
<tr>
<td>Depression (n, %)</td>
<td>69 (53.9%)</td>
</tr>
<tr>
<td>Normal</td>
<td>69 (53.9%)</td>
</tr>
<tr>
<td>Mild</td>
<td>17 (13.3%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>33 (25.8%)</td>
</tr>
<tr>
<td>Severe</td>
<td>9 (7%)</td>
</tr>
<tr>
<td>HADS score</td>
<td>2-34 (15)</td>
</tr>
</tbody>
</table>

References

1 Mann-Whitney U-test; 2 Fisher-Freeman-Halton test; **p<0.01; *p<0.05
only pregnancies complicated by GDM. Souza et al. compared the sexual life of pregnant women with GDM and low-risk pregnant women,\textsuperscript{14} and found no significant difference between the groups regarding the domains of sexual desire, excitement, lubrication, and pain. The orgasm and satisfaction domain scores were significantly decreased in pregnant women with GDM. However, those with GDM in the second trimester showed a higher prevalence of FSD than low-risk pregnant women in the same gestational period.

Ribeiro et al. compared healthy pregnant women with pregnant women with GDM. They observed SF; however, the total scores and domains of the FSFI did not significantly differ between the two groups.\textsuperscript{13} In another study, these authors questioned the sexual health of 143 women with GDM, and classified patients into two groups: normal and overweight.\textsuperscript{15} In contrast with Chang et al., they stated that BMI affects SF.\textsuperscript{6} Overweight pregnant women demonstrated decreased FSFI scores in all domains, comparing to those of normal weight, particularly in the third trimester. All mean FSFI scores were similar to those observed in previous studies, with regard to healthy pregnant women and those with GDM.\textsuperscript{13-16} In this study, there was no significant difference in BMI values between the groups.

Pauls et al. assessed the sexual health of pregnant women during the first, second, and third trimester, and the 6th month postpartum.\textsuperscript{17} They observed that decreased SF with pregnancy had not improved 6 months postpartum, and stated that poor scores may have been attributable to low body image and urinary complaints. Increased BMI may be a cause of FSD, due to poor body image. McDonald et al. observed that 41% of patients had vaginal sex at week 6 postpartum, and 68% did so at week 8, and this rate increased to 94% at week 6 postpartum in their multi-center, prospective study.\textsuperscript{18} Lurie et al. compared women for whom birth was with normal spontaneous vaginal delivery, elective cesarean section, emergency cesarean section, and with episiotomy, using the FSFI at the weeks 6, 12, and 24 postpartum.\textsuperscript{19} They emphasized that elective cesarean section has no protective effect on recovering SF, and that elective cesarean was not superior to other groups. The cesarean birth rate was significantly higher in those patients in our study with history of previous GDM. However, we believe that a high cesarean rate has no effect on FSD, because the FSFI scores were similar between the groups.

Chang et al. prospectively compared 351 vaginal and cesarean births for 1 year postpartum.\textsuperscript{20} They observed increased depression in both the groups, increased FSD at 4-6 weeks postpartum in the cesarean group and no difference between the groups beyond 6 weeks postpartum. In the present study, the anxiety and depression scores did not significantly differ between the study and control groups.

Advanced maternal age, long-term marriage, low educational level, high parity, high BMI, and depression have been indicated as causes of FSD in previous studies.\textsuperscript{5,16,21} With the exception of high BMI and high parity, these risk factors were already present in the current control group, and the FSFI scores were higher in this group, although the difference was not statistically significant.

Loss of libido, decreased lubrication due to increased vaginal infections, increased vaginal discomfort, and diminished clitoral sensitivity due to peripheral neuropathy were thought to be the causes of FSD in patients with DM.\textsuperscript{22} In this study, it was found that levels of desire, arousal, lubrication, orgasm, satisfaction, and pain domains were lower in patients with a history of previous GDM compared to the control group, although there was not a statistically significant difference.

It is possible that FSD may become apparent as an effect of subclinical inflammation. Sexuality is directly related to health problems and depression, which is a determinant of sexual disorders in diabetic women.\textsuperscript{5,12,16} Dimitropoulos et al. compared uncomplicated premenopausal type 1 DM patients with healthy premenopausal women using the FSFI, The female sexual distress scale (FSDS) and the general health questionnaire-28.\textsuperscript{24} Total FSFI scores, particularly the desire, arousal, and satisfaction domains, were statistically significantly lower in the diabetes group. The combined pathological FSFI and FSDS scores showed that higher FSD was observed in patients with type 1 DM. The authors stated that FSD was related to anxiety, depression, and low educational level; and that it was not related to the complications of DM. In the present study, there was no significant difference between anxiety and depression scores among the participants.

Mazzilli et al. compared women with type 1 DM, women with type 2 DM, and healthy women using the FSFI.\textsuperscript{25} They found significantly lower FSFI scores among patients with type 1 DM. Abu Ali et al. observed low desire, low arousal, impaired lubrication, and low orgasm rate among a mixed population of women with type 1 and 2 diabetes.\textsuperscript{22} Veronelli et al. found arousal, lubrication, pain, and orgasm disorders among a similar population.\textsuperscript{3} The present study had some limitations, such as being a single-center study and having a low number of patients in the study group.

CONCLUSION

Subclinical sexual dysfunction may be observed in the late postpartum period among women with a history of previous GDM, and this may adversely affect their sexual health. Screening for FSD should be conducted in this population in particular. Impaired SF may indicate
subclinical inflammation, and may also be an early sign of further metabolic diseases, such as DM.

REFERENCES


