DİABETES MELLİTUSLU KADINLARDA CİNSEL FONKSİYONLARIN BELİRLENMESİ

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ÖZ

Diabetes mellitus kadınlarda cinsel fonksiyon bozukluğuna neden olan kronik bir hastalıktır. Bu tanımlayıcı çalışmanın amacı diyabetli kadınlarda cinsel fonksiyon bozukluğu sıklığının ve etkileyen faktörlerin belirlenmesidir. Araştırmanın örneklemini 18-55 yaş arası 255 kadın oluşturmuştur. Araştırmaya klimakterik dönemde olmayan, cinsel yönden aktif ve üreme sistemi cerrahisi geçirmemiş kadınlar dahil edilmiştir Araştrmanın verileri veri toplama formu ve Kadın Cinsel İşlev Ölçeği kullanılarak toplanmıştır. Diyabetli kadınların cinsel fonksiyon bozukluğu sıklığı % 69,0 olarak bulunmuştur. Diyabetli kadınlarda başka sağlık sorunlarına sahip olmanın cinsel fonksiyon bozukluğu riskini 2,47 kat arttırdığı (*95% CI=1.087–5.609, p=0,031*) belirlenmiştir. Kadınların diyabet tanısı alma süresinin artması durumunda cinsel uyarılma bozukluğu riski 1,19 kat artmaktadır (*95% CI=1.073–1.339, p=0,001*). Diyabetli kadınlarda evlilik yılının artması durumunda da orgazm bozukluğu riski 0,95 kat arttığı bulunmuştur (*95% CI=0.909–0.993, p=0,024*). Ancak, kadınların yaş, evlilik süresi, diyabet süresi ve HbA1c değerleri ile cinsel istek, kayganlaşma, cinsel memnuniyet ve cinsel ağrı alt boyutları arasında anlamlı bir ilişki bulunamamıştır (*p>0,*05). Kadınların çoğunda cinsel fonksiyon bozukluğu olduğu belirlenmiştir. Kadınların çoğunun cinsel istek, uyarılma ve ağrı bozukluğu yaşadığı belirlenmiştir. Ayrıca, diyabet tanısı alma süresinin artmasıyla uyarılma bozukluğu riski, evlilik süresinin artmasıyla ile orgazm bozukluğu riskinin de arttığı bulunmuştur. Kadınların diabetes mellitus dışında bir sağlık sorunu olmasının cinsel işlev bozukluğu riskini artırdığı tespit edilmiştir.
Anahtar kelimeler: Cinsellik, Diabetes Mellitus, Kadın.

DETERMINATION OF SEXUAL FUNCTION IN WOMEN WITH DIABETES MELLITUS

ABSTRACT

Diabetes mellitus is a chronic disease that causes sexual dysfunction. The aim of this descriptive study is to determine the frequency and factors affecting of sexual function in women with diabetes. The study sample was comprised of 255 women between the ages of 18 to 55. The participants were not climacteric, were sexually active and had not had a surgery involving the reproductive system. The data were collected using a data collection form and the Female Sexual Function Index. The frequency of sexual dysfunction was 69.0% in women. It was determined that having other health problems (95% CI=1.087–5.609, p=0.031) increased 2.47 times the risk of sexual dysfunction in women with diabetes. When the duration of diabetes increased, the arousal dysfunction risk of women also increased 1.19 times (95% CI=1.073–1.339, p=0.001). In addition, when duration of marriage increased, orgasmic dysfunction risk also increased 0.95 times (95% CI=0.909–0.993, p=0.024). However, there was no relation between age, duration of marriage, duration of diabetes, and HbA1c values of women and sexual desire, lubrication, satisfaction and pain domains (p>0.05). The most of the women have sexual dysfunction. When the domains of Female Sexual Function Index are examined, most of the women experience sexual dysfunction in the desire, arousal and pain domains. In addition, with increased duration of diabetes mellitus, arousal dysfunction risk increases, as does orgasm dysfunction risk with increased marriage duration. Having a health problem other than diabetes mellitus increase sexual dysfunction risk.
Key words: Sexuality, Diabetes Mellitus, Female.

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INTRODUCTION

Diabetes mellitus (DM) is a chronic disease that is increasing in prevalence in the world. According to the data of International Diabetes Federation (IDF), 463 million people had DM in the world in 2019 and it is predicted that this number will reach to 700 million in 2045 (1). DM causes complications such as chronic renal disease, peripheral neuropathy, retinopathy, and cardiovascular disorders in the long term, (2). Sexual dysfunction may affect due to vascular, psychogenic, and neurogenic disorders caused by DM (3). SD is such a commonly reported health problem in women with diabetes that there are studies reporting that it varies between 29.0 and 94.0% in different societies (4-9). In the literature, there are study results showing that DM causes sexual dysfunction (SD) in the areas of desire, arousal, orgasm, satisfaction and pain in women (4, 8, 10-12). In Ezeani et al.'s study, which investigated sexual function (SF) in women with Type 2 DM, 40.0% of women experienced a decrease in sexual arousal, 36.4% had lubrication difficulty, 32.7% had orgasmic difficulty and 29.1% had pain difficulty (4). In an another study reported that among women with diabetes mellitus, frequency of sexual desire disorder was the most common sexual dysfunction (46.5%), followed by desire (interest) dysfunction (36.6%) (6). Bak et al. (2017) found that women with type 2 diabetes had sexual dysfunciton in all six domains (sexual desire (70.2%), sexual arousal (54.4%), lubrication (33.3%), orgasm (32.5%), sexual satisfaction (35.1%), and dyspareunia (32.5%)) of SF (7).

Although there are a limited number of studies conducted with women with SF, the rate of detected SD is quite high in Turkey (3, 5, 8, 13-17). Yenice et al. (2020) found their study that 46.7% of women with DM had SD (5). In Çelik et al.'s (2015) study, 85.6% of women with Type 2 DM experienced SD (8). In the same study, 60.5% of women expressed a decrease in sexual desire and 61.7% their frequency of sexual intercourse reduced after the diagnosis of the disease (8).

DM is increasing in prevalence all over the world and is one of the most important health problems in women, with the potential to negatively affect quality of life, leading to SD. Therefore, it is important to treat women with DM with a holistic approach, evaluating their SF status, in addition to providing medical treatment, as a way to protect and promote women's health. There are a limited number of studies for evaluating sexual health in women with DM in countries where sexuality is taboo in Turkey. Therefore, the aim of this descriptive study is to determine the frequency and factors affecting of sexual function in women with diabetes.

METHODS

Setting

This descriptive study has been performed to investigate the occurrence of SF in women with DM in the Obesity–Diabetes Polyclinic of a university hospital in Ankara in Turkey.

Participants

The population of the study consisted of women who applied to the Obesity-Diabetes Polyclinic of the university hospital and were diagnosed with diabetes mellitus. The sample calculation method of unknown universe was used to determine the sample size of the study. The sample size was calculated based on the assumptions of 95% confidence level, 5% margin of error and a 79% (18) proportion of sexual dysfunction. Accordingly, the sample consisted of 255 volunteer women between the ages of 18 and 55 who were

diagnosed with DM. The participants were not climacteric, have no communication problems, were sexually active and had not had a surgery involving the reproductive system.

Instruments

The data for this study were collected using a data collection form (DCF) and Female Sexual Function Index (FSFI).

The DCF is composed of two parts. In the first part, the questions (15 questions) identify the women's sociodemographic features, such as age, training, and working status; in the second part, the questions (eight questions) identify the viewpoints related to DM and its effect on sexual life.

The FSFI is a Likert-type scale consisting of 19 items that evaluate SD in women and was described by Rosen et al. (19). The questionnaire assessed the sexual functioning or problems occurring during the past four weeks. According to the FSFI, SF domains consisted of sexual desire, arousal, lubrication, orgasm, satisfaction and pain during sexual intercourse. For each of the six domains, a score was calculated and the total score was obtained by adding the six domain scores. The total score range was 2 to 36. A total score of more than 25 was considered normal female SF and a total score of less than 25 was considered SD. The Cronbach's alpha coefficient of the scale was 0.82, and the test–retest reliability was 0.79–0.86 (19). Öksüz and Malhan (20) conducted the Turkish validity and reliability analysis. The Cronbach's alpha coefficient of the scale, adapted to Turkey, is 0.95, and the test–retest reliability is 0.75–0.95 (20). In this study, the Cronbach's alpha value of the FSFI was found to be 0.89.

Data Collection

Women were provided to fill in the "DCF" and "FSFI" individually in a room reserved for this procedure in the obesity-diabetes polyclinic of the university hospital.

Ethical Considerations

This study was approved by Clinical Trial Ethics Committee of Gazi University (01.04.2014/25901600-1413). Before the data collection process, written permission was received from the authorities of the institutions where the study was to be carried out, in addition to receiving both written and verbal informed consent from the participants.

Data Analyses

The data obtained from this study were analyzed using SPSS Version 20.0 (IBM Corp. Armonk, NY: USA. Released 2011). In the evaluation of data, a logistics regression analysis was used, and in the evaluation of quantitative variables, mean and standard deviation were used. To evaluate qualitative variables, frequency and percentage values were used. Level of significance was defined as $p \leq 0.05$ in this study.

RESULTS

A total of 33.7% of the women in the study belonged to the 42–49 age group, with a mean age of 40.99±7.66. In our study, 31.8% of the women graduated from high school, 51.8% are employed, and 89.8% had a nuclear family. For the women in this study, 34.1% of their husbands belonged to the 34–41 age group, with a mean age of 42.95±7.91. In addition, 38.0% of the husbands are high school graduates and 85.5% anywhere are employed. In our sample, 51.4% of the women had an arranged marriage, and the duration of

marriage of 28.6% of participants is 21 years or longer, with a mean duration of marriage 15.64±8.54 years. Additionally, 51.0% of the women stated that they have good relationships with their husbands. A total of 40.4% of the women have only one child and the mean total number of pregnancies is 1.85±1.11. The majority (91.0%) of the women use a contraception method. Intrauterine devices (30.6%) and condoms (27.4%) are the most commonly used forms of contraception.

Table 1. Some characteristics of women related to diabetes mellitus (n=255)

Characteristics	n	%
Type of DM		
Type 2	242	94.9
Type 1	13	5.1
Level of HbA1c[a]		
HgA1C < % 7	219	85.9
HgA1C ≥ % 7	36	14.1
Duration of DM (Mean±SD)	4.88 ± 3.95	
Duration of DM (Year)		
1- 5	194	76.1
6 -10	39	15.3
11-15	14	5.5
16-20[b]	8	3.1
DM Treatment		
Yes	252	98.8
No	3	1.2
Type of DM Treatment (n=252)		
Oral Antidiabetics	204	81.0
Insulin	32	12.7
Both	16	6.3
Duration of DM Treatment (Year) (n=252)		
1-5	198	79.1
6-10	38	15.1
11-15	10	4.0
16–20[b]	6	1.8
The Mean Duration of DM Treatment (Year) (n=252)	4.66±4.02	
Complications Related to DM		
No	229	89.8
Yes	26	10.2
Type of Complications Related to DM (n=26)		
Retinopathy	13	50.0
Neuropathy	7	26.9
Nephropathy	6	23.1

a Values of HbA1C classified for non-pregnant adults with diabetes according to the ADA criteria (30).
b One person who is 21 years and over is included in this group.

In our sample, 94.9% of the women had Type 2 DM, and 76.1% had been DM patients for one to five years. The mean DM duration was 4.88±3.95 years. A total of 85.9% of the women's HbA1c values were under seven. The mean HbA1c value of the women with Type 1 DM was 8.58±0.51. The mean HbA1c value for Type 2 DM was 5.91±0.84. Almost all (98.8%) of the women received some type of treatment related to DM; 81.0% of those receiving treatment use oral anti-diabetics and 79.1% of them have received drug treatment for between one and five years. In our sample, 10.2% of the women have experienced complications related to DM. The most frequent complication is (50.0%) retinopathy (Table 1). A total of 67.5% of the women stated that DM does not affect their sexual life; 94.9% of them reported not having any knowledge about the sexual effects of DM, whereas 52.5% of them stated that they want to have knowledge about the effect of DM on sexuality.

Table 2. The total FSFI and FSFI domain score means (n=255)

FSFI and its domains	Sexual Dysfunction				Mean ± SD	Min.-Max.
	YES		NO			
	n	%	n	%		
Desire	212	83.1	43	16.9	3.45±1.06	1.2-6.0
Arousal	226	88.6	29	11.4	3.79±1.01	1.5-6.0
Lubrication	6	2.32	249	97.7	3.98±0.96	1.2-6.0
Orgasm	47	18.4	208	81.6	4.23±0.94	1.2-6.0
Satisfacition	100	39.2	155	60.8	4.45±0.99	1.2-6.0
Pain	109	42.7	146	57.3	3.56±1.03	1.2-6.0
Total FSFI	176	69.0	79	31.0	23.48±5.16	8.5-35.2

The FSFI total score mean was 23.48±5.16. In addition, 69.0% of women had SD. When the domains of FSFI are evaluated, it was determined that 83.1% desire dysfunction (3.45±1.06), 88.6% arousal dysfunction (3.79±1.01), 2.32% lubrication dysfunction

(3.98±0.96), 18.4% orgasm dysfunction (4.23±0.94), 39.2% satisfaction dysfunction (4.45±0.99), and 42.7% pain dysfunction (3.56±1.03) (Table 2).

SD risk was 2.47 times more in the women who experienced health problems other than DM (95% CI=1.087–5.609, *p=0.031*) compared to those who have not (Table 3). However, there was no significant relation between the duration of DM, type of DM treatment, duration of DM treatment, and type of complications related to DM and sexual dysfunction (*p>0.05*).

There is a significant relation between arousal dysfunction and duration of DM. In addition, there is a significant relation between orgasm dysfunction and duration of marriage. In cases where the duration of DM increased, arousal dysfunction risk increased 1.19 times more (95% CI=1.073–1.339, *p=0.001*). In addition, in cases where duration of marriage increased, orgasm dysfunction risk increased 0.95 times more (95% CI=0.909–0993, *p=0.024*). However, there was no significant relation between desire, lubrication, satisfaction, pain domains of FSFI and women's age, duration of marriage, duration of DM and HbA1C values (*p>0.05*) (Table 4).

Table 3. The women's sexual function status according to some of their features (n=255)

Characteristics	Sexual Dysfunction YES		Sexual Dysfunction NO		TOTAL		Wald	Odds Ratio (OR)	95% Confidence Interval	p
	n	%	n	%	n	%				
Duration of DM (Year) (n=255)										
1- 5	138	71.0	56	29.0	194	100	2.272	1	-	0.689
6 -10	23	59.0	16	41.0	39	100	0.047	0.746	0.230-4.325	0.705
11-15	10	71.4	4	28.6	14	100	0.136	1.377	0.342-7.410	0.841
16 -20[a]	5	62.5	3	37.5	8	100	0.044	0.914	0.344-6.144	0.892
Type of DM Treatment (n=252)										
Oral Antidiabetic	142	69.6	62	30.4	204	100	0.452	1	-	0.798
Insulin	23	71.9	9	28.1	32	100	0.349	0.728	0.253-2.090	0.555
Insulin+Antidiabetic	10	62.5	6	37.5	16	100	0.434	0.652	0.183-2.327	0.510
Duration of DM Treatment (Year) (n=252)										
1- 5	140	70.8	58	29.2	198	100	0.961	1	-	0.327
6 -10	23	60.5	15	39.5	38	100	0.067	0.826	0.200-3.425	0.795
11-15	7	70.0	3	30.0	10	100	0.116	1.304	0.282-6.030	0.734
16 -20[a]	3	50.0	3	50.0	6	100	0.024	0.857	0.124-5.944	0.876
Type of Complications Related to DM (n=26)										
Retinopathy	7	53.9	6	46.1	13	100	0.000	1	-	1
Neuropathy	4	57.1	3	42.9	7	100	0.037	1	0.104-9.614	1
Nephropathy	3	50.0	3	50.0	6	100	0.024	0.857	0.124-5.944	0.876
Health Problems Other Than DM (n=255)										
No	154	69.7	67	30.3	221	100	38.399	1	-	**0.000**
Yes	22	64.7	12	35.3	34	100	4.667	**2.470**	1.087-5.609	**0.031***

a One person who is 21 years and over is included in this group.
* Significance level was accepted as p< 0.05.

Table 4. The relation between FSFI domains and some variables (n=255)

Variables	β	S.E.	Wald	Odds Ratio (OR)	95% Confidence Interval	p
Model 1-Desire Domain						
Age	-0.012	0.026	0.217	0.998	0.940-1.039	0.641
Duration of marriage	-0.017	0.023	0.552	0.983	0.939-1.029	0.457
Duration of DM	0.048	0.049	0.968	1.050	0.953-1.156	0.325
HbA1c	0.003	0.202	0.000	1.003	0.676-1.490	0.987
Model 2-Arousal Domain						
Age	0.001	0.033	0.000	1.001	0.939-1.067	0.984
Duration of marriage	-0.003	0.029	0.012	0.997	0.943-1.054	0.914
Duration of DM	**0.181**	**0.057**	**10.22**	**1.198**	**1.073-1.339**	**0.001***
HbA1c	-0.383	0.249	2.357	0.682	0.418-1.112	0.125
Model 3-Lubrication Domain						
Age	-0.003	0.059	0.003	0.997	0.889-1.119	0.960
Duration of marriage	-0.110	0.058	3.594	0.896	0.799-1.003	0.058
Duration of DM	0.468	0.265	3.108	1.596	0.949-2.684	0.078
HbA1c	-0.144	0.522	0.076	0.866	0.311-2.410	0.783
Model 4-Orgasm Domain						
Age	-0.003	0.025	0.013	0.997	0.949-1.048	0.908
Duration of marriage	**-0.051**	**0.023**	**5.068**	**0.950**	**0.908-0.993**	**0.024***
Duration of DM	0.002	0.053	0.002	1.002	0.903-1.112	0.968
HbA1c	0.180	0.198	0.830	1.197	0.813-1.765	0.362
Model 5-Satisfaction Domain						
Age	-0.016	0.020	0.641	0.984	0.947-1.023	0.423
Duration of marriage	-0.008	0.018	0.229	0.992	0.958-1.026	0.632
Duration of DM	0.028	0.040	0.492	1.028	0.951-1.112	0.483
HbA1c	-0.111	0.153	0.524	0.895	0.664-1.208	0.469
Model 6-Pain Domain						
Age	-0.013	0.019	0.429	0.987	0.951-1.025	0.513
Duration of marriage	-0.007	0.017	0.160	0.993	0.960-1.027	0.689
Duration of DM	0.040	0.039	1.007	1.040	0.963-1.124	0.316
HbA1c	-0.169	0.152	1.234	0.845	0.627-1.138	0.267
Model 7- Total FSFI						
Age	-0.019	0.021	0.825	0.981	0.942-1.022	0.364
Duration of marriage	0.015	0.019	0.615	1.015	0.978-1.053	0.433
Duration of DM	0.052	0.041	1.631	1.054	0.972-1.142	0.203
HbA1c	-0.076	0.163	0.219	0.927	0.674-1.275	0.640

DISCUSSION

Sexual function is dynamic process and is affected by many factors. Diabetes mellitus is an important chronic disease that affects this function. This disease is increasing in prevalence and causes SD due to lifestyle variables and complications it causes (3-9). Therefore, this study was conducted to determine the factors affecting sexual function and their frequency in women with diabetes.

In the limited number of studies with DM have a high SD prevalence (29.0%–94.0%) (4-9). As a result of our study, almost two thirds of the women (69.0%) were found to have SD. In the study of Ammar et al., it was determined that 50% of women with Type 2 diabetes had sexual dysfunction (21). Shadman et al. reported that the frequency of sexual dysfunction in women with type 2 diabetes was 94.4% (9). Similarly, prevalence of sexual dysfunction was found to be high in the studies of Aşefa et al. and Elyasi et al (6,10). Our result is similar to the results of other studies in the literature.

There are six domains of sexual function in the FSFI scale: desire, arousal, lubrication, orgasm, satisfaction and pain (19, 20). A large number of women had dysfunctions in the arousal (88.6%), desire (83.1%), pain (42.7%) and satisfaction (39.2%) domains of sexual function in our study. In Ezeani et al.'s study, 40.0% of women experienced a decrease in sexual arousal, 36.4% had lubrication difficulty, 32.7% had orgasmic difficulty and 29.1% had pain difficulty (4). Çelik et al. found that 60.5% of women with DM have a decrease in sexual desire, and in Aşefa et al.'s study, 40.5% of the women with DM experience a decrease in sexual desire, 19.0% have arousal dysfunction and 26.1% have orgasmic dysfunction (6,8). Similarly, Elyasi et al. reported that 58% of women had lubrication dysfunction, 50% had decreased sexual desire, 50% had arousal problems, 47.3% had dyspareunia, 32.7% had orgasmic dysfunction. The results of the study reveal that sexual dysfunction is an important health problem in women with DM in traditional societies like ours.

DM is a chronic disease, and any other health problems the individual may have can make control of DM complicated and can negatively affect the person's bodily and spiritual health. In our study, the women with health problems other than DM

had an increased SD risk of 2.47 times. Similarly, Vafaeimanesh et al. found that there is significant correlation between the presence of albuminuria in women with DM and SD (22). In addition, Esposito et al. found that depression along with DM in women increases SD risk 1.86 times (23). Abu Ali et al. found that coronary artery disease along with DM in women significantly negatively affects SF (24). It can be said that our results are in accordance with the literature regarding other health problems in addition to DM increasing the risk of SD in women.

In our study, duration of DM increases dysfunction in the arousal domain. Supporting our study, Fatemi et al. found that there is a negative correlation between the duration of DM and all domains of SF (25). However, Esposito et al. identified that there is no correlation between duration of DM and SD (23). Similarly, Erten et al. found that there is no correlation between the duration of DM of women and arousal status (13). The reason that study results are different from each other can result from the fact that most of the women comprising the sample in our study are patients with Type 2 DM who had a controlled disease course since the study was performed in a DM polyclinic at a university hospital.

In our study, the duration of marriage increases orgasm dysfunction risk 0.95 times. Similarly, Asefa et al. found that marital status it was determined that being married or divorced increased the risk of sexual dysfunction in women with diabetes 5.28 times (6). On the other hand, İsmail et al. found no correlation between duration of marriage and the orgasm domain of women's SF (26). The differences between the results of the study can be interpreted as SF being a dynamic process that can be affected by several factors.

CONCLUSIONS

Our study shows that most of the women that participated and were diagnosed with DM have SD. When the domains of FSFI are examined, most of the women experience SD in the desire, arousal and pain domains. In addition, with increased duration of DM, arousal dysfunction risk increases, as does orgasm dysfunction risk with increased marriage duration. Having a health problem other than DM increase SD risk. Therefore, it is suggested that DM nurses and all health employees providing service for women with DM give service and consultancy that covers sexual health matters using an integrated viewpoint. In order to make generalization possible, the study can be repeated with a wide sample group.

Limitations

The sample of the study mainly consisted of women with Type 2 diabetes mellitus and the characteristics of women with Type 1 diabetes mellitus could not be adequately examined. Although the sample consists of women aged 18-55, the number of women in the age group 42-49 is high.

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