

Sweet blood with bitter consequences : Sexual dysfunction in diabetic women

Original Article

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ABSTRACT

Background: Prevalence of diabetes mellitus (DM) is on the rise. Its effect on different body systems is well known. Sexual dysfunctions (SD) in men and women may be related to DM. However, SD is more difficult to diagnose and treat in women than in men because of the intricacy of the female sexual response. Also, the literature is limited addressing female sexual dysfunction in DM, and this aspect of female health, is often ignored in clinical practice in women with DM.

Objective: : To determine the frequency and types of SD and its causative factors among the diabetic women.

Patients and methods: This cross sectional study used a self-report questionnaire taken from the FSFI with addition of questions suiting the purpose of the study. Participants of this study were 407 married women with regular sexual activity who attended the outpatient clinics at the National Institute of Diabetes Mellitus in Cairo during the period from September to December 2018.

Results: The commonest age group of women was 40-49 years, most of them were obese and most of them can only read and write. Most participants (42%) suffered from diabetes for more than 10 years and 70.7% were of type II diabetes. Diabetic complications included peripheral neuropathy, hypertension and coronary artery disease. At least one SD was present in 66.3% of participants including dyspareunia followed by sexual dissatisfaction followed by low libido. Duration and control of diabetes, BMI, age and diabetic complications were determining factors for the occurrence of SD.

Conclusion: SD are common in diabetic women. The most commonly encountered SD are dyspareunia, sexual dissatisfaction and low libido.

Key Words: Diabetes, dysfunction, sexual, women

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INTRODUCTION

Rates of diabetes mellitus are growing worldwide. In 2013, 382 million adults were identified with diabetes worldwide. This number may raise to 592 million in 2030^[1]. A 2017 report from Centers for Disease Control and Prevention (CDC), estimated that in the United States, as of 2015, 30.3 million persons of all ages, or 9.4% of the population, had diabetes^[2].

In Egypt, the average prevalence of diabetes mellitus is round 15.56% among adults between twenty and seventy nine years of age. It is alarming that diabetes occurrence in Egypt has accelerated hastily within an extraordinarily brief period from about 4.4 million in 2007 to 7.5 million in 2013. It is predicted this number will bounce up to 13.1 million with the end of 2030^[2]. This high prevalence continues to amplify as a result of elevated prevalence of central type of obesity, change in feeding habits, sedentary lifestyle, accelerated incidence of hepatitis C virus

infection, and may be the elevated use of uncontrolled pesticides^[3].

There is disagreement about the existence of sexual dysfunction in females having diabetes, with the documented occurrence ranges between 25% and 71%^[4]. It is feasible that this wide variation in prevalence displays the distinctive populations evaluated and the different inclusion criteria used, such as the age regarded (childbearing age or postmenopausal), body mass index (BMI), endocrine system disorders, and different drugs used by studied females^[5].

A Turkish study^[6] on 200 diabetic females discovered that the most affected sexual domains were generally arousal disorder which rate for (20.5%), orgasm (19.5%), lubrication (18.8%) and satisfaction disorder (17.5%). According to the findings of this Turkish study, SD used to be seen greater amongst women who had Type 1 diabetes, had diabetes for more than 10 years, developed

diabetic complications and did not use her medications as prescribed. Also, it was noticed that females diagnosed with depression suffered from sexual dysfunction more than other women.

The present study was conducted to evaluate the frequency of SD and the effects of diabetes mellitus on female sexuality in a sample of Egyptian diabetic women.

PATIENTS AND METHODS

This is a cross sectional study that started out after taking the approval of both, Benha Ethical Committee and Dermatology and Andrology Department, Faculty of medicine in Benha University.

The study constructed depending on data collected from a self-report questionnaire which was designed in accordance to Female Sexual Function Index (FSFI)^[7] and the validated Arabic translation^[8]. Some questions were added to the questionnaire like, age of onset, duration, level of control and drugs used to control diabetes. The goals, the method and the details of the questionnaire have been explained and defined to the ladies before taking their informed consent. Privacy and confidentiality had been assured. Participants of this study had been 407 diabetic females recruited from those attending the Diabetes and Endocrinology outpatient clinics at the National Institute of Diabetes Mellitus. All have been married females with ordinary sexual relation. Divorced, severely ill, widowed pregnant or lactating females had been excluded from the study.

Statistical analysis

FSFI total score of ≤ 26.55 used to be viewed diagnostic of Female Sexual Dysfunction (FSD). Desire rating of ≤ 2.4 was regarded diagnostic of desire dysfunction, arousal rating of ≤ 4.5 was once regarded diagnostic of arousal dysfunction, lubrication rating of ≤ 3.3 was once considered diagnostic of lubrication dysfunction, orgasm score of ≤ 4.8 was considered diagnostic of orgasm dysfunction, satisfaction score of ≤ 5.2 was regarded diagnostic of satisfaction dysfunction, pain rating of ≤ 2 was once viewed diagnostic of dyspareunia.

Data have been analyzed the use of IBM SPSS software bundle model 20.0. (Armonk, NY: IBM Corp). Qualitative information have been described using number and percent. Significance of the results was judged at the level of $p > 0.05$.

RESULTS

Demographic data

The age range of women participating in this study was 20 to 54. The most common age group was 40-49 years

(48.6%). Most of them (69%) were obese (BMI of 25 or more), and most of them either finished their secondary school (12.2%), or can only read and write (85.7%).

Diabetes data

Table 1 indicates that most participants (42%) suffered from diabetes for more than 10 years and that 70.7% of the cases were of type II diabetes. Insulin was the treatment received by 51.5% of cases, however, only 30% had controlled diabetes. Regarding complications, 89.4% of participants were suffering from peripheral neuropathy, 27.5% were suffering from hypertension and 3.9% had coronary artery disease. Among hypertensive patients 58% received ACE inhibitors and 41.9% were treated with beta blockers.

Sexual dysfunctions in participants

More than two thirds of participants (66.3%) suffered from at least one sexual dysfunction (SD). The commonest SD was pain during intromission (71.3%) followed by sexual dissatisfaction (59.7%) followed by low libido (58.2%) (Table 2).

Determinants of sexual dysfunction in diabetic women

1. Duration of diabetes: SD was found to increase significantly with increase in duration of diabetes. The most common SD in this respect was dyspareunia (95% with duration < 10 years) (Table 3).

2. Control of diabetes: Uncontrolled subjects significantly suffered more from SD than controlled ones. Pain domain was the most significantly affected (78.2%) (Table 4).

3. Body mass index: Obese women significantly suffered from SD more than non-obese women. Dissatisfaction was the most common SD (74.7%) in obese women (Table 5).

4. Age: incidence of SD significantly increased with advance in age. All women in age group 50+ suffered from low sexual desire (Table 6).

5. Diabetic complications: patients suffering from hypertension, coronary artery disease and peripheral neuropathy had significantly more SD than patients not suffering from diabetic complications. Hypertensive women significantly suffered from low desire (89.2%), while all women with coronary artery disease significantly suffered from low desire and dyspareunia. Dyspareunia was the commonest SD (73.6%) in patients with peripheral neuropathy (Table 7).

NB: Type I and Type II diabetic patients showed no difference in incidence of SD.

Table 1: Data of diabetes mellitus

	All cases (n = 407)	
	n	%
Type of diabetes		
Type I	119	
Type II	288	
Duration of diabetes (years)		
< 1 year	64	15.7
1 – 5 years	62	15.2
6 – 10 years	110	27
>10 years	171	42
Diabetes medication		
Oral hypoglycemic drugs	197	48
Insulin	210	51.5
Diabetes control		
Uncontrolled	285	70.0
Controlled	122	30.0
Diabetes complications		
Hypertension	112	27.5
Coronary artery disease	16	3.9
Peripheral neuropathy	264	89.4
Hypertension treatment		
ACE inhibitors	65	58
Capoten	15	19.0
Sinopril	50	37.9
Beta blockers	47	41.9
Concor5	41	39.7
Atenol	6	3.4

Table 2: Dysfunction of different sexual domains.

Dysfunction	n	%
Total FSD	270	66.3
Low desire	237	58.2
Arousal disorder	228	56
Lubrication disorder	217	53.3
Orgasm disorder	228	56
Satisfaction disorder	243	59.7
Pain disorder	290	71.3

Table 3: Sexual dysfunction in relation to duration of diabetes (years).

	Duration of diabetes (years)								Test of sig.	P
	<1 (n= 64)		1-5 (n= 62)		6-10 (n= 110)		>10 (n= 171)			
	n	%	n	%	n	%	n	%		
Total FSD	6	9	15	24	90	81.8	159	92.9	$\chi^2=40.533^*$	$p < 0.001^*$
Low desire	7	10.9	19	30	60	54	151	88	$\chi^2=38.977^*$	$p < 0.001^*$
Arousal disorder	6	9	14	22.5	58	52.7	150	87.7	$\chi^2=25.553^*$	$p < 0.001^*$
Lubrication disorder	8	12.5	10	16	64	58	135	78.9	$\chi^2=34.5.5^*$	$p < 0.001^*$
Orgasm disorder	10	15.6	10	16	58	52.7	150	87.7	$\chi^2=25.011^*$	$p < 0.001^*$
Satisfaction disorder	8	12.5	26	41.9	64	58	145	84.7	$\chi^2=25.635^*$	$p < 0.001^*$
Pain disorder	4	6	30	48.3	97	88.8	159	95	$\chi^2=50.469^*$	$p < 0.001^*$

Table 4: Sexual dysfunction in relation to disease control.

	Uncontrolled (n = 285)		Controlled (n = 122)		Test of sig.	P
	n	%	n	%		
Total FSD	199	69.8	71	58	$\chi^2=0.224^*$	$< 0.001^*$
Low desire	162	56.8	75	61.5	$\chi^2=0.754$	0.385
Arousal disorder	150	58	67	54.9	$\chi^2=0.465$	0.495
Lubrication disorder	153	53.7	64	52.5	$\chi^2=0.052$	0.820
Orgasm disorder	153	53.7	64	52.5	$\chi^2=0.052$	0.820
Satisfaction disorder	172	60.4	71	58.2	$\chi^2=0.165$	0.685
Pain disorder	223	78.2	67	54.9	$\chi^2=22.696^*$	$< 0.001^*$

Table 5: Sexual dysfunction relation to body mass index (BMI).

	All cases (n=407)			
	Obese (n= 281)		Non obese (n= 126)	
	n	%	n	%
Total FSD	190	71	80	63
$\chi^2(p)$				54.773*(<0.001*)
Desire dysfunction	195	69	42	33
$\chi^2(p)$				49.991*(<0.001)
Arousal dysfunction	190	67.6	38	30
$\chi^2(p)$				40.686*(<0.001*)
Lubrication dysfunction	200	71	17	13
$\chi^2(p)$				54.773*(<0.001*)
Orgasm dysfunction	196	69.7	32	25
$\chi^2(p)$				64.681*(<0.001*)
Satisfaction dysfunction	210	74.7	33	26
$\chi^2(p)$				36.418*(<0.001*)
Pain dysfunction	210	74	80	63
$\chi^2(p)$				26.635*(<0.001*)

Table 6: Sexual dysfunction in relation to age.

	Age(years)								Test of sig.	P
	<30 (n= 10)		30 – 39 (n= 22)		40 – 50 (n= 198)		>50 (n= 177)			
	n	%	n	%	n	%	n	%		
Total FSD	1	10	5	22.7	99	50	161	90.9	$\chi^2=40.533^*$	$p < 0.001^*$
Low desire	2	20	4	18.1	64	32	177	100	$\chi^2=38.977$	$p < 0.001^*$
Arousal disorder	2	20	5	22.7	71	35.8	171	96.6	$\chi^2=25.553^*$	$p < 0.001^*$
Lubrication disorder	2	20	2	13.6	60	30	166	93.7	$\chi^2=34.505^*$	$p < 0.001^*$
Orgasm disorder	2	20	5	22.7	71	35.8	161	90.9	$\chi^2=25.011^*$	$p < 0.001^*$
Satisfaction disorder	1	10	5	22.7	83	42	163	92	$\chi^2=25.635^*$	$p < 0.001^*$
Pain disorder	6	60	9	40.9	110	55.5	177	100	$\chi^2=50.469^*$	$p < 0.001^*$

Table 7: Sexual dysfunction in relation to diabetes complications.

	Hypertension				Coronary artery disease				Peripheral neuropathy			
	Yes (n= 112)		No (n= 295)		Yes (n= 16)		No (n= 391)		Yes (n= 364)		No (n= 43)	
	n	%	n	%	n	%	n	%	n	%	n	%
Total FSD	104	92.8	166	56	16	100.0	254	64.9	245	67	25	58
$\chi^2(p)$	18.654(<0.001*)				8.036(<0.001*)				64.681(<0.001*)			
Low desire	100	89.2	137	46	16	100.0	221	56.5	213	58.5	21	48.8
$\chi^2(p)$	28.690(<0.001*)				10.939*(0.001*)				10.274*(0.001*)			
Arousal disorder	85	75.8	143	48.4	13	81	215	54.9	208	57	20	46.5
$\chi^2(p)$	10.798*(0.001*)				54.773*<0.001*)				10.798*(0.001*)			
Lubrication disorder	84	75	133	45	12	75	205	52	196	53.8	21	48.8
$\chi^2(p)$	14.405*<0.001*)				18.654(<0.001*)				28.690*<0.001*)			
Orgasm disorder	85	75.8	143	48.4	13	81	215	54.9	208	57	20	46.5
$\chi^2(p)$	10.274*(0.001*)				10.798*(0.001*)				26.635*<0.001*)			
Satisfaction disorder	88	78.5	155	52.5	13	81	230	58.8	222	60.9	21	48.8
$\chi^2(p)$	10.939*(0.001*)				14.405*<0.001*)				28.690*<0.001*)			
Pain disorder	96	85.7	194	65.7	16	100	274	70	268	73.6	22	51
$\chi^2(p)$	18.654(<0.001*)				26.635*<0.001*)				15.701*<0.001*)			

DISCUSSION

The literature raising attention about woman sexual health and dysfunction in diabetes mellitus is limited, and this aspect of female health problems, is frequently disregarded in ordinary medical practice^[9]. The present study revealed that 66.3% of women interviewed have SD with no significant distinction between type I(T1DM) and type II(T2DM) diabetic females. Ahmed *et al.*^[10], in a cross sectional study of diabetic Egyptian ladies observed that occurrence of SD was significantly greater in both T1DM and T2DM organizations (44 and 25%, respectively) than in the control group (9%).

Their lower figures may additionally be attributed to the reality that they exclude postmenopausal women. SD used to be stated via 88.7% of Saudi ladies (of all ages) with T2DM^[11] while it rates for 78.7% in Iranian ladies^[12]. A Turkish research on 93 diabetic females with T2DM determined that SD was defined in 55.9%^[13] and a Nigerian one claim an equal share^[14]. In a report about Dutch men and ladies with T2DM, 70% of Dutch females were diagnosed with some degree of sexual dysfunction^[15] while in an Italian sample^[16], a Jordanian sample^[17] and a Tunisian sample^[18] the prevalence of female SD used to be 53.4% , 59.6% and 50% respectively. After an evaluation and a meta-analysis of 25 studies, Rahmanian *et al.*^[21] concluded that the average occurrence of female SD in women with T2DM was 68.6%. Sexual dysfunction that found in females with DM may also be explained by means of various mechanisms. Hyperglycemia may additionally reduce the vaginal hydration that resulted in reduced lubrication and dyspareunia. Also, increased threat of vaginal infections will increase the threat of vaginal soreness and dyspareunia. Vascular affection, microangiopathy and neuropathy can also leads to diminished genital blood flow, leading to impaired genital arousal response. Psychosocial factors such as adjustment to be a patient with DM, the burden of having chronic lifelong non curable disease like DM, and depression may also impair sexual performance^[20].

In a descending order, our participants suffered from troubles in pain, satisfaction, desire, arousal, orgasm and lubrication. Similar outcomes were addressed by Ogbera *et al.*^[14]. However, the work of Elyasi *et al.*^[12] showed that the most common SD in diabetic females were issues with lubrication then desire then arousal then satisfaction and lastly dyspareunia. Abu Ali *et al.*^[17] found sexual dissatisfaction to be the commonest SD, then the troubles in lubrication and orgasm followed by troubles in desire, arousal and pain.

In Tunisia the order of SD was as follows: Pain then lubrication then orgasm then arousal then satisfaction and coming lastly the desire^[18]. The meta-analysis of

Rahmanian *et al.*^[19] study concluded that in an ascending order the most common SD in diabetic females were problems in orgasm, desire, arousal, pain, lubrication, and satisfaction. Among our female patients 69% of them were overweight or obese (i.e. have a BMI over 25 kg/m²). During the previous few decades, the occurrence of overweight problems have been increasing at a fast pace in each Western societies and the developing world^[21]. Depending on ethnicity, age and gender, 50-90% of type 2 diabetes (T2DM) patients have overweight, while patients with BMI over 35 kg/m² are almost 20 times more liable to develop T2DM^[22]. Duman^[8] showed that there is a positive correlation between body mass index and female SD. The link between obesity and SD is complicated and multivariate, with at least three distinct pathways likely: direct outcomes from excessive adipose tissue; consequences from pathophysiologic comorbidities; and consequences mediated through psychological factors^[23]. Most overweight and fatty females consider themselves to be less attractive, less sexually fascinating and incapable of creating a gratifying romantic relationship, in contrast to females with normal body weight^[24].

In the present study, occurrence of SD was related to duration, control, BMI, age and presence of diabetic complications. These results are in agreement with Abu Ali *et al.*^[8] and Esposito *et al.*^[16] while AlMogbel *et al.*^[11] found that patients' age is related to SD but duration of diabetes was unrelated. Other studies did not find a relation between all these determinants or some of them and occurrence of SD^[12, 18, 25, 26]. However, it is difficult to compare the findings of different studies because of dissimilarities in design and the difficulties in differentiation between some factors (e.g. aging) that may be a consequence of diabetes or a natural process.

CONCLUSION

Sexual dysfunction in diabetic women is common. The most affected aspects of female sexuality were pain, satisfaction, desire, arousal, orgasm and lubrication. The present study found that Occurrence of SD in these women was related to duration, control, BMI, age and presence of diabetic complications.

CONFLICT OF INTEREST

There are no conflicts of interest.

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