

Impact of Long-Standing Diabetes Mellitus on Sexual Function in Upper Egyptian Women

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ABSTRACT

Background: Sexuality is an important part of health, quality of life and general wellbeing. Diabetes has long been considered a major cause of impaired sexual function. Neuropathy, vascular impairment, and psychological complaints have been implicated in the pathogenesis of decreased libido, low arousability, decreased vaginal lubrication, orgasmic dysfunction and dyspareunia among diabetic women.

Objective: To investigate sexual dysfunction in diabetic females living at Sohag Governorate.

Patients and methods: This case-control hospital-based descriptive study was carried out at the Obstetrics and Gynecology Department, Sohag University Hospitals on two groups; the case (Diabetic) group and the control (Non-diabetic) group. Each group included 100 sexually active nonpregnant women between 20 to 40 years of age. Their sexual function was assessed using Female Sexual Function Index Questionnaire.

Results: The rate of feeling sexually aroused, level of sexual aroused, confidence about becoming sexually aroused during sexual life and rate of being satisfied with the arousal during sexual activity were significantly decreased in diabetic group than non-diabetic group. The difficulty of becoming lubricated "wet" during sexual activity and its maintaining until completion of sexual activity were significantly increased in diabetic group than non-diabetic group. The difficulty until reaching orgasm and satisfaction with the ability to reach orgasm were significantly decreased in diabetic group than non-diabetic group. Satisfaction with the amount of emotional closeness, the sexual relationship with the partner and the overall sexual life were significantly decreased in diabetic group than non-diabetic group.

Conclusion: The incidence of sexual dysfunction is higher in diabetic women.

Keywords: Diabetes mellitus, Sexual function, Upper Egyptian women

INTRODUCTION

Sexuality is a significant piece of wellbeing. Female sexual function has become a very important research area, as we gain insight into the importance of sexual function in personal satisfaction and general prosperity. Diabetes has been viewed as a significant reason for debilitated sexual capacity ^(1,2).

Female sexual dysfunction is defined as disorders of libido, arousal, orgasm, and sexual pain that led to personal distress or interpersonal difficulties. It is multifactorial in etiology with psychological and physiological roots ⁽³⁾. Neuropathy, vascular impairment, and mental disorders have been embroiled in the pathogenesis of decreased drive, low arousability, decreased vaginal oil orgasmic brokenness and dyspareunia among diabetic ladies ⁽⁴⁾.

We aimed by this work to investigate sexual dysfunction in diabetic females living at Sohag Governorate.

PATIENTS AND METHODS

A case-control hospital-based descriptive study was carried out at the Obstetrics and Gynecology Department on two groups of 200 participants of sexually active nonpregnant women between 20 to 40 years of age attending the outpatient gynecological clinic of Sohag University Hospital in the period from March 2020 to December 2020.

The case group (Diabetic group) included 100 diabetic women. The control group (Non-diabetic group) included 100 non-diabetic women.

Ethical approval:

An approval of the study was obtained from Sohag University academic and ethical committee. Every patient signed an informed written consent for acceptance of the operation.

Inclusion criteria: Females who are in a stable continuous marriage aging from 20 to 40 years old attending the Outpatient diabetic Clinic of Sohag University Hospitals.

Exclusion criteria:

- Chronic diseases.
- Gynecological problems (by local and genital examination).
- Pregnant, lactating females and those on contraceptive pills.
- Women with chronic medical diseases or psychiatric diseases.
- Women who had given birth in the past 2 months.
- Women who had surgical premature menopause.



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Methods:

Detailed history and full general and local examination were done. General and abdominal examinations were performed by physicians. Pelvic examination was performed to confirm the presence of and the degree of circumcision, as well as to investigate organic causes of dyspareunia.

Data were collected using a structured interview questionnaire that consisted of two parts:

The first part included questions about the participants' personal data of age, age of the husband, years of schooling, duration of marriage, parity, use of any hormonal method of contraception, employment status, frequency of sexual intercourse per week, and whether the participant was premenopausal or postmenopausal.

The second part was designed for assessment of the participant's sexual function using Arabic translation (translated by us) of Female Sexual Function Index (FSFI) Questionnaire designed by **Rosen et al.** ⁽⁵⁾.

The FSFI consists of 19 questions covering six domains distributed as follow: for domains of sexual desire (two questions), arousal (four questions), lubrication (four questions), orgasm, satisfaction, and pain (three questions each).

The full-scale score is obtained by adding the six domain scores. The cut off scores to determine the

presence of difficulties on the six domains of the FSFI were obtained from published sources by **Meston** ⁽⁶⁾ and **Wiegel et al.** ⁽⁷⁾; accordingly scores less than 4.28 on the desire domain, less than 5.08 on the arousal domain, less than 5.45 on the lubrication domain; less than 5.05 on the orgasm domain; less than 5.04 on the satisfaction domain; and less than 5.51 on the pain domain were used to classify participants as having difficulties in that domain.

Statistical analysis

Statistical analysis was done by SPSS v25 (IBM Inc., Chicago, IL, USA). Normality of data was checked with Shapiro-Wilks test. Numerical variables were presented as mean and standard deviation (SD) and range and compared between the two groups utilizing independent Student's t- test. Categorical variables were presented as frequency and percentage (%) and were analysed utilizing the Chi-square test or Fisher's exact test when appropriate. A two tailed P value < 0.05 was considered significant.

RESULTS

The sociodemographic and marital characteristics were insignificantly different between both groups (Table 1).

Table (1): Sociodemographic and marital characteristics in both studied groups

		Diabetic group (n = 100)	Non-diabetic group (n = 100)	P value
Age (years)	Mean ± SD	35.33 ± 3.15	34.41 ± 5.42	0.144
	Range	30-40	23-40	
Education level	Illiterate	13	14	0.911
	≤9 years of schooling	61	58	
	>9 years of schooling	26	28	
Work status	Work status	33	35	0.765
	Unemployed	67	65	
Number of deliveries	Nullipara	11	12	0.795
	Multipara	64	67	
	Grand multipara	25	21	
Age of the husband (years)	Mean ± SD	38.35 ± 3.48	37.64 ± 5.85	0.298
	Range	31-45	24-46	
Duration of marriage (years)	Mean ± SD	9.97 ± 6.09	10.74 ± 5.91	0.365
	Range	1-25	1-22	
The onset of diabetes (years)	Mean ± SD	19.4 ± 5.61	----	----
	Range	10-30	----	

Both the rate of sexual desire and the level of sexual desire were significantly decreased in diabetic group than non-diabetic group (Table 2).

Table (2): Sexual desire in both studied groups

		Diabetic group (n = 100)	Non-diabetic group (n = 100)	P value
Rate of sexual desire	Almost always or always	13 (13%)	43 (43%)	<0.001
	Most times (more than half the time)	0 (0%)	12 (12%)	
	Sometimes (about half the time)	48 (48%)	22 (22%)	
	few times (less than half the time)	0 (0%)	23 (23%)	
	Almost never or never	39 (39%)	0 (0%)	
Level of sexual desire	Very high	13 (13%)	36 (36%)	<0.001
	High	0 (0%)	26 (26%)	
	Moderate	48 (48%)	20 (20%)	
	Low	0 (0%)	8 (8%)	
	Very low or none at all	39 (39%)	10 (10%)	

The rate of feeling sexually aroused, level of sexual aroused, confidence about becoming sexually aroused during sexual life and rate of being satisfied with the arousal during sexual activity were significantly decreased in diabetic group than non-diabetic group (Table 3).

Table (3): Sexual arousal in both studied groups

		Diabetic group (n = 100)	Non-diabetic group (n = 100)	P value
Rate of feeling sexually aroused	No sexual activity	0 (0%)	0 (0%)	<0.001
	Almost always or always	13 (13%)	37 (37%)	
	Most times (more than half the time)	0 (0%)	9 (9%)	
	Sometimes (about half the time)	48 (48%)	27 (27%)	
	few times (less than half the time)	24 (24%)	9 (9%)	
	Almost never or never	15 (15%)	18 (18%)	
Level of sexual arousal	No sexual activity	0 (0%)	0 (0%)	<0.001
	Very high	13 (13%)	17 (17%)	
	High	0 (0%)	26 (26%)	
	Moderate	48 (48%)	41 (41%)	
	Low Very low or none at all	39 (39%)	16 (16%)	
Confidence about becoming sexually aroused during sexual activity	No sexual activity	0 (0%)	0 (0%)	<0.001
	Very high confidence	13 (13%)	17 (17%)	
	High confidence	0 (0%)	59 (59%)	
	Moderate confidence	60 (60%)	8 (8%)	
	Low confidence	12 (12%)	0 (0%)	
	Very low or no confidence	15 (15%)	16 (16%)	
Rate of being satisfied with the arousal during sexual activity	No sexual activity	0 (0%)	0 (0%)	0.002
	Almost always or always	60 (60%)	75 (75%)	
	Most times (more than half the time)	0 (0%)	0 (0%)	
	Sometimes (about half the time)	13 (13%)	9 (9%)	
	few times (less than half the time)	12 (12%)	0 (0%)	
	Almost never or never	15 (15%)	16 (16%)	

The rate of becoming lubricated “wet” during sexual activity and maintain of lubrication “wetness” until completion of sexual activity were significantly decreased in diabetic group than non-diabetic group. The difficulty of becoming lubricated “wet” during sexual activity and its maintaining until completion of sexual activity were significantly increased in diabetic group than non-diabetic group (Table 4).

Table (4): Lubrication (wetness) in both studied groups

		Diabetic group (n = 100)	Non-diabetic group (n = 100)	P value
Rate of becoming lubricated ("wet") during sexual activity	No sexual activity	0 (0%)	0 (0%)	<0.001
	Almost always or always	38 (38%)	75 (75%)	
	Most times (more than half the time)	0 (0%)	0 (0%)	
	Sometimes (about half the time)	23 (23%)	9 (9%)	
	few times (less than half the time)	12 (12%)	0 (0%)	
	Almost never or never	27 (27%)	16 (16%)	
Difficulty of becoming lubricated ("wet") during sexual activity	No sexual activity	0 (0%)	0 (0%)	<0.001
	Extremely difficult or impossible	26 (26%)	0 (0%)	
	Very difficult	0 (0%)	0 (0%)	
	Difficult	0 (0%)	0 (0%)	
	Slightly difficult	24 (24%)	59 (59%)	
	Not difficult	50 (50%)	41 (41%)	
Maintaining of lubrication ("wetness") until completion of sexual activity	No sexual activity	0 (0%)	0 (0%)	<0.001
	Almost always or always	50 (50%)	74 (74%)	
	Most times (more than half the time)	0 (0%)	0 (0%)	
	Sometimes (about half the time)	11 (11%)	18 (18%)	
	few times (less than half the time)	25 (25%)	0 (0%)	
	Almost never or never	14 (14%)	8 (8%)	
Difficulty of maintaining lubrication ("wetness") until completion of sexual activity	No sexual activity	0 (0%)	0 (0%)	<0.001
	Extremely difficult or impossible	26 (26%)	0 (0%)	
	Very difficult	0 (0%)	0 (0%)	
	Difficult	0 (0%)	0 (0%)	
	Slightly difficult	24 (24%)	84 (84%)	
	Not difficult	50 (50%)	16 (16%)	

The rate of reaching orgasm (climax), the difficulty until reaching orgasm (climax), and satisfaction with the ability to reach orgasm were significantly decreased in diabetic group than non-diabetic group (Table 5).

Table (5): Orgasm in both studied groups

		Diabetic group (n = 100)	Non-diabetic group (n = 100)	P value
Rate of reaching orgasm (climax)	No sexual activity	0 (0%)	0 (0%)	<0.001
	Almost always or always	38 (38%)	16 (16%)	
	Most times (more than half the time)	0 (0%)	0 (0%)	
	Sometimes (about half the time)	35 (35%)	9 (9%)	
	few times (less than half the time)	27 (27%)	0 (0%)	
	Almost never or never	0 (0%)	75 (75%)	
Difficulty until reaching orgasm (climax)	No sexual activity	0 (0%)	0 (0%)	<0.001
	Extremely difficult or impossible	0 (0%)	57 (57%)	
	Very difficult	13 (13%)	27 (27%)	
	Difficult	0 (0%)	8 (8%)	
	Slightly difficult	0 (0%)	8 (8%)	
	Not difficult	87 (87%)	0 (0%)	
Satisfaction with the ability to reach orgasm	No sexual activity	0 (0%)	9 (9%)	<0.001
	Very satisfied	26 (26%)	16 (16%)	
	Moderately satisfied	47 (47%)	75 (75%)	
	About equally satisfied and dissatisfied	0 (0%)	0 (0%)	
	Moderately dissatisfied	0 (0%)	0 (0%)	
	Very dissatisfied	27 (27%)	0 (0%)	

Satisfaction with the amount of emotional closeness, with the sexual relationship with the partner and with the overall sexual life were significantly decreased in diabetic group than non-diabetic group (Table 6).

Table (6): Overall sexual relationship in both studied groups

		Diabetic group (n = 100)	Non-diabetic group (n = 100)	P value
Satisfaction with the amount of emotional closeness	No sexual activity	0 (0%)	0 (0%)	<0.001
	Very satisfied	26 (26%)	25 (25%)	
	Moderately satisfied	47 (47%)	75 (75%)	
	About equally satisfied and dissatisfied	0 (0%)	0 (0%)	
	Moderately dissatisfied	0 (0%)	0 (0%)	
	Very dissatisfied	27 (27%)	0 (0%)	
Satisfaction with the sexual relationship with the partner	Very satisfied	26 (26%)	51 (51%)	<0.001
	Moderately satisfied	35 (35%)	32 (32%)	
	About equally satisfied and dissatisfied	12 (12%)	0 (0%)	
	Moderately dissatisfied	0 (0%)	17 (17%)	
	Very dissatisfied	27 (27%)	0 (0%)	
Satisfaction with the overall sexual life	Very satisfied	26 (26%)	51 (51%)	<0.001
	Moderately satisfied	35 (35%)	24 (24%)	
	About equally satisfied and dissatisfied	12 (12%)	16 (16%)	
	Moderately dissatisfied	0 (0%)	9 (9%)	
	Very dissatisfied	27 (27%)	0 (0%)	

DISCUSSION

Sexuality is a complex process that incorporates social and religious beliefs, and is affected by age, health status and personal experience. A breakdown in any of these areas may lead to sexual dysfunction ⁽⁸⁾.

The sexual problems of women who have a chronic illness are often still omitted from the literature. A possible explanation for this is that, in women sexuality is still often viewed as equal to reproduction, which leaves the issue of sexual pleasure unaddressed ⁽⁹⁾. Diabetes has long been considered as a major cause of impaired sexual function. The prevalence of sexual dysfunction (SD) in diabetic women is estimated to be 20-80 % ⁽²⁾.

In our Egyptian society, the attitude towards sex and talking openly about it-especially in females-is reaching the level of taboo. To the best of our knowledge only very few previous studies were done before in our community discussing the issues of female sexual function and dysfunction. Their studies included only healthy Egyptian females. To the best of our knowledge, none (in our country) has studied the issue of SD in diabetic females. So, we aim by this work to address this issue in Egypt and to investigate the sexual dysfunction in diabetic females living at Upper Egypt Governorate.

In the present work, 95% of diabetic females reported sexual dysfunction. The reported figures in literature varied. It was found to be 18.2% by **Kamaralzaman et al.** ⁽¹⁰⁾ and 82.5% by **Ziaei-Rad et al.** ⁽¹¹⁾. The differences between our figures and that

reported by other authors may be due to low number of diabetic females included in our study in addition to differences of selection criteria as age group of selected patient and presence of other diabetic complication and cultures among different communities.

Similar to this study, **Kamaralzaman et al.** ⁽¹⁰⁾ found that low sexual desire was the commonest type of dysfunction among diabetic females as in this study 39% of participants experienced low sexual desire. One may query whether participants who experienced poor sexual drive were due to absent of external stimuli or other factors that influenced marital relationship especially there is significantly negative correlation between the desire and duration of marriage.

Sexual arousal disorder was experienced by 39% of participating females. **Muniyappa et al.** ⁽¹²⁾ found that DM most frequently affects sexual arousal. Circumcision-we think- may also play a role in this regard but unfortunately, we did not include this item in our study.

Disorder of lubrication in this study was found to be the complaint of 39% of females included. It was found to affect 18.2% ⁽¹⁰⁾. This item may be related to the degree of desire and arousal, which are markedly affected in our patients.

Orgasmic disorder was also experienced by 27% of participating females in this study. Reported figures in literature was found to be only 51% ⁽²⁾ and 4.5% ⁽¹⁰⁾. This may be explained by the social differences, lack of sexual health education and the

markedly affected desire, arousal and degree of lubrication.

Sexual pain disorder as well was experienced by 50% of participating females in this study. This figure was as well much higher than that reported by **Kamaralzaman *et al.***⁽¹⁰⁾ (22.7%).

In spite of the higher figures of the different item of sexual dysfunction studied; sexual dissatisfaction was experienced only by 27% of participating females in this study. The potential explanation is that many women may tolerate a certain level of sexual dysfunction before considering it a source of dissatisfaction. Similar figure was also reported by **Kamaralzaman *et al.***⁽¹⁰⁾ (36.4%).

The large differences of all figures in this study from the figures of other studies may be due to small number of our cases, the difference methods and questionnaires used for assessment the different items of female sexual function or differences in social factors. We found that; the desire and arousal are significantly negatively correlated to age. So, diabetes can affect sexual function in female as difference is clear between diabetic and non-diabetic group. This finding is in agreement with **Kamaralzaman *et al.***⁽¹⁰⁾.

CONCLUSION

The incidence of sexual dysfunction is higher in diabetic women. Clearly, there is a need to raise awareness among and competence of physicians in the identification and management of sexual problems in diabetic women, which is prevalent in this locality.

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