

# Sexual Dysfunction in Jordanian Diabetic Women

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**OBJECTIVE** — To estimate the prevalence of female sexual dysfunction (FSD) in diabetic and nondiabetic Jordanian women.

**RESEARCH DESIGN AND METHODS** — Data were collected from 1,137 married women using the Arabic translation of the Female Sexual Function Index questionnaire.

**RESULTS** — Prevalence of sexual dysfunction in diabetic women 50 years of age or older was 59.6 vs. 45.6% in nondiabetic women ( $P = 0.003$ ). Diabetic women had more dysfunction of desire, arousal, lubrication, and orgasm than nondiabetic women. Glycemic control, smoking, dyslipidemia, hypertension, autonomic neuropathy, and peripheral neuropathy did not have a significant effect on FSD. Age, BMI, duration of diabetes, and the presence of coronary artery disease, nephropathy, and retinopathy had negative effects on FSD.

**CONCLUSIONS** — Prevalence of FSD among Jordanian women was found to be significantly higher in diabetic compared with nondiabetic women.

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Female sexual dysfunction (FSD) is a common problem, affecting 30–78% of women (1). The prevalence in diabetic women is estimated to be 20–80% (2). In Arab countries, there has only been one report that addresses this issue (1). Islam, the religion of the vast majority of Arab countries, is a very open religion regarding sexual relations, but tribal and social attitudes toward sex are widely different and sometimes reach the level of taboo. In Jordan, talking about sex openly is not easy. However, when talking about sex in a professional setting, women are very self-aware (3).

FSD is defined as disorders of libido, arousal, orgasm, and sexual pain that lead to personal distress or interpersonal difficulties. It is multifactorial in etiology with physiological and psychological roots (4). In the 1950s, sexual dysfunction in diabetic men caught attention, but sexual dysfunction in women remained entirely neglected until Kolodny's article in 1971 (5).

Diabetic women are prone to experi-

ence decreased sexual desire, dyspareunia, decreased sexual arousal, and inadequate lubrication (8). There are few studies of sexual dysfunction in normal and diabetic women in Arab countries, and Jordan is no exception. The purpose of this study was to address this issue in Jordan.

## RESEARCH DESIGN AND METHODS

Between October 2006 and August 2007, 1,137 married women were studied at the National Center for Diabetes, Endocrinology and Genetics (NCDEG) in Amman, Jordan. Women were grouped into a diabetic married group ( $n = 613$ ) and a nondiabetic married group ( $n = 524$ ). Diabetic women were those attending the Diabetes and Endocrinology clinics at the NCDEG, and nondiabetic women were their female companions and health workers at the center. Divorced, widowed, seriously ill, pregnant, or lactating women and those on contraceptive pills were excluded. The

study was approved by the ethics committee at the NCDEG.

All women were invited to attend a face-to-face interview with one of our female authors. Privacy and confidentiality were assured. The structured interviews were based on the 19-item Female Sexual Function Index (FSFI) questionnaire (6), which was translated into Arabic and tested for validity and reproducibility. Scores of the six domains were added to obtain the full scale score. For individual domain scores, scores of the individual items that comprise the domain were multiplied by the domain factors, where higher scores indicate less dysfunction (6).

Demographic data including age, BMI, and type and duration of diabetes were recorded. The presence of hypertension, dyslipidemia, nephropathy, retinopathy, autonomic and peripheral neuropathy, and coronary artery disease was documented depending on the women's history, physical examination, and medical records, and investigations were undertaken for each diabetes complication. A1C values in the last four consecutive clinic visits were attained from the women's medical records.

## Statistical analysis

Data were statistically analyzed using SPSS version 15 (SPSS, Chicago, IL). Prevalence and degree of each component of the FSFI were measured. ANOVA was used to find the factors affecting the outcome of each element of sexual dysfunction. Significant factors were then subjected to multivariate logistic regression analysis to assess the independent effect of each factor after controlling for potential confounders. All are expressed as means  $\pm$  SD. A  $P$  value  $\leq 0.05$  was considered statistically significant.

**RESULTS** — The age of diabetic women ranged from 23 to 68 years (mean  $\pm$  SD  $46 \pm 11$  years), and the age of nondiabetic women ranged from 22 to 70 ( $51 \pm 10$  years).

## Prevalence and types of FSD

The prevalence of FSD in diabetic women 50 years of age or older was significantly higher compared with that in nondiabetic

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Table 1—Prevalence and types of FSD in diabetic and nondiabetic Jordanian women

	Nondiabetic women			Diabetic women		
	Total	Age <50 years	Age ≥50 years	Total	Age <50 years	Age ≥50 years
Desire	3.5 ± 1.5	236 (65.2)	95 (59.0)	3.3 ± 1.6	165 (57.1)*	252 (78.5)*
Arousal	3.6 ± 1.6	176 (48.6)	84 (52.2)	3.3 ± 1.8*	146 (50.0)	210 (65.4)*
Lubrication	4.4 ± 1.7	97 (26.8)	53 (32.9)	3.8 ± 1.9*	89 (30.5)	167 (52.0)*
Orgasm	4.2 ± 1.7	194 (28.7)	62 (38.5)	3.8 ± 1.9	100 (34.2)	165 (51.4)*
Satisfaction	4.4 ± 1.6	124 (34.3)	60 (37.3)	4.1 ± 1.7*	116 (39.7)	138 (43.0)
Pain	2.5 ± 1.3	301 (83.4)	128 (80.0)	2.5 ± 1.3	243 (83.8)	260 (83.3)
Total	—	137 (38.1)	73 (45.6)	—	117 (40.8)	186 (59.6)*

Data are n (%) or means ± SD. \* $P < 0.05$  with the nondiabetic group within the same age-group.

women (Table 1). Desire, arousal, lubrication, and orgasm were more significantly affected in older diabetic women, whereas in younger women a significant difference was only found in desire.

Multivariate analysis showed that glycemic control, type of diabetes, smoking, hypertension, dyslipidemia, and peripheral and autonomic neuropathy did not have a significant effect on FSD. On the other hand, longer duration of diabetes, older age, higher BMI, and the presence of coronary artery disease, nephropathy, and retinopathy had significant detrimental effects on female sexual function.

**CONCLUSIONS**— This study shows that diabetic women in Jordan have more FSD than nondiabetic women. The prevalence of FSD in our study is in agreement with the global prevalence (2).

In our study, the prevalence of hypoactive sexual desire in diabetic women aged 50 years or older was significantly higher than in nondiabetic women (Table 1). This finding is in agreement with other studies (1,2). Arousal disorder was found to affect diabetic women aged ≥50 years more than nondiabetic women. This finding is concordant with those of the study

by Enzlin et al. (7). Neurovascular processes that mediate genital vasocongestion are impaired in diabetes (8). In our study, vaginal dryness was found significantly more often in diabetic women than in nondiabetic women. Orgasmic dysfunction was more prevalent in older diabetic women in comparison with their nondiabetic counterparts. Kolodny reported a higher frequency of orgasmic dysfunction in diabetic women than in hospitalized women for various reasons (5). There was no significant difference in the occurrence of dyspareunia between diabetic and nondiabetic women ( $P = 0.221$ ). However, diabetic women were less satisfied with their sexual life. This is in agreement with the findings of Enzlin et al. (7).

Sexual dysfunction among diabetic Jordanian women is common. This prevalence is significantly higher than in nondiabetic women aged ≥50 years.

#### References

1. Elnashar AM, El-Dien Ibrahim M, El-Desoky MM, Ali OM, El-Sayd Mohamed Hassan M: Female sexual dysfunction in Lower Egypt. *BJOG* 114:201–206, 2007
2. Erol B, Tefekli A, Ozbey I, Salman F, Dincag N, Kadioglu A, Tellaloglu S: Sexual dysfunction in type II diabetic females: a comparative study. *J Sex Marital Ther* 28 (Suppl. 1):S55–S62, 2002
3. Ajlouni K: *Sex in Judaism, Christianity and Islam: Man, Woman and Their Relationship*. Amman, Jordan, Jordan University Press, 2007
4. Basson R, Berman J, Burnett A, Derogatis L, Ferguson D, Fourcroy J, Goldstein I, Graziottin A, Heiman J, Laan E, Leiblum S, Padma-Nathan H, Rosen R, Seagraves K, Seagraves RT, Shabsigh R, Sipski M, Wagner G, Whipple B: Report of the international consensus development conference on female sexual dysfunction: definitions and classifications. *J Urol* 163:888–893, 2000
5. Kolodny RC: Sexual dysfunction in diabetic females. *Diabetes* 20:557–559, 1971
6. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, Ferguson D, D'Agostino RJ Jr: The Female Sexual Function Index (FSFI). *J Sex Marital Ther* 26: 191–208, 2000
7. Enzlin P, Mathieu C, Van den Bruel A, Bosteels J, Vanderschueren D, Demyttenaere K: Sexual dysfunction in women with type 1 diabetes: a controlled study. *Diabetes Care* 25:672–677, 2002
8. Meston MC, Frohlich PF: Update on female sexual function. *Curr Opin Urol* 11: 603–609, 2001