

WOMEN'S SEXUAL HEALTH

Prevalence and Predictive Factors of Female Sexual Dysfunction in a Sample of Saudi Women



Khaled Madbouly, MD,^{1,2} Mohammed Al-Anazi, MBBS,³ Hanan Al-Anazi, RN,⁴ Abdullah Aljarbou, MBBS,³ Raed Almannie, MD, FRCSC,³ Mohamad Habous, MD,⁵ and Saleh Binsaleh, MD, FRCSC, FECSM³

ABSTRACT

Introduction: Female sexual dysfunction (FSD) is a common health problem that is inadequately investigated in Saudi Arabia.

Aim: To assess the prevalence and predictors of FSD in a sample of Saudi women attending the primary care and gynecology clinics.

Methods: A cross-sectional clinic-based survey involved Saudi women attending primary care and gynecology clinics in a teaching hospital in Riyadh during the period from January to June 2019. Data were collected using a structured interview questionnaire. Female sexual function has been evaluated by the Arabic version of the Female Sexual Function Index.

Main outcome measures: The main outcome measure of this study was female sexual function using the Arabic version of the Female Sexual Function Index.

Results: 200 Saudi women were included in this study. Their age ranged from 18 to 50 years. Most of the participants (88.5%) were fairly satisfied or satisfied with their spouse's sexual ability and 120 (60%) had a risk of FSD. Participants with FSD reported the lowest scores for arousal and desire domains (3.03 ± 1.3 and 3.12 ± 1.1 , respectively) followed by orgasm domain (3.48 ± 1.4). Predictive factors for risk of FSD in our participants were age greater than 40 years ($P = .012$), unemployment ($P = .035$), low/moderate family income ($P = .014$), dissatisfaction with the spouse's sexual ability ($P = .005$), and higher weight ($P = .010$) and height ($P = .043$). Only age greater than 40 years ($P = .041$), low family income ($P = .007$), and dissatisfaction with spouse's sexual ability ($P = .011$) sustained independent significance in a multivariate logistic regression analysis.

Conclusion: A high prevalence of FSD was encountered in our sample of Saudi women. Desire and arousal were the most significantly affected domains followed by orgasmic problems. Age greater than 40 years, low socio-economic level, and dissatisfaction with the spouse's sexual ability are the most significant predictors. **Madbouly K, Al-Anazi M, Al-Anazi H, et al. Prevalence and Predictive Factors of Female Sexual Dysfunction in a Sample of Saudi Women. Sex Med 2021;9:100277.**

Copyright © 2020, The Authors. Published by Elsevier Inc. on behalf of the International Society for Sexual Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Key Words: Female Sexual Dysfunction; Female Sexual Function Index; Saudi; Prevalence; Risk Factors

INTRODUCTION

Sexual function is an essential component of life, and its dysfunction can impose a negative impact on the well-being of an individual.¹ Female sexual dysfunction (FSD) is a highly prevalent, underestimated health problem.^{2,3}

According to the Diagnostic and Statistical Manual of Mental Diseases, sexual dysfunction is characterized by a disturbance in the sexual response cycle or by pain associated with sexual intercourse.⁴ It is defined as a disorder of sexual desire, arousal, or orgasm and/or sexual pain that leads to

Received August 10, 2020. Accepted October 13, 2020.

¹Department of Urology, Prince Mohammed Bin Abdulaziz Hospital, Riyadh, Saudi Arabia;

²Department of Urology, Al-Azhar University, Damietta, Egypt;

³Division of Urology, Department of Surgery, Faculty of Medicine, King Saud University, Riyadh, Saudi Arabia;

⁴Faculty of Nursing, King Saud University, Riyadh, Saudi Arabia;

⁵Urology Department, Elaj Medical Centers, Jeddah, Saudi Arabia

Copyright © 2020, The Authors. Published by Elsevier Inc. on behalf of the International Society for Sexual Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.esxm.2020.10.005>

personal distress and affects quality of life and interpersonal relationships.⁵

Epidemiological data have estimated that prevalence of FSD may be 30–63%.^{2,6,7} Sexual dysfunction is often multifactorial and can be associated with age, social strata, level of education, employment, religion, and biological, medical, and psychological factors.³ The prevalence of FSD and influencing factors is variable among countries and different areas.^{3,8}

Assessment of female sexual function and FSD includes questionnaires, structured interviews, and comprehensive case history. Questionnaires are currently the first choice to screen individuals into different FSD categories.¹ The Female Sexual Function Index (FSFI) is a brief validated 19-item multidimensional self-reporting measure that quantifies 6 domains, including desire, arousal, lubrication, orgasm, satisfaction, and pain scale for evaluation of sexual function in women.^{9,10} A validated Arabic version of the Female Sexual Function Index (ArFSFI) was shown to be a reliably acceptable tool for FSD local assessment.¹¹

Although FSD is a common health problem, it is still under-investigated particularly in Eastern communities, where its open discussion is considered a taboo.⁸ Moreover, the Arabic culture is generally conservative toward sex and female sexuality.¹¹

How much risk of FSD is prevalent in Saudi Arabia and what exactly is its magnitude are common questions. Our aim is to evaluate the prevalence and predictors of FSD among a sample of women attending the primary care and gynecology clinics.

MATERIALS AND METHODS

A nonprobability, cross-sectional clinic-based survey involved Saudi women attending primary care and gynecology clinics in King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia, in the period from January to June 2019. Inclusion criteria were as follows: nonpregnant, nonlactating Saudi women aged between 18 and 50 years, married and sexually active during the past 6 months, able to give consent, and able to read and/or understand Arabic. Women with significant cardiovascular, renal, hepatic, or respiratory diseases that affect their daily activities, those who had undergone major pelvic surgery (eg, hysterectomy, cystectomy), and those with any proven psychiatric or mental illness were excluded.

Questionnaire

Data were collected using a structured interview questionnaire where each participant was interviewed and given the same questions, in the same way and in the same order. Sexual function was evaluated using the ArFSFI. This is a 19-item questionnaire measuring self-reported female sexual function during the last 4 weeks. The ArFSFI is divided into a 6-domain structure that includes desire (2 questions), arousal (4 questions), lubrication (4 questions), orgasm (3 questions), satisfaction (3 questions), and pain (3 questions).¹¹ With a maximum score of 36, a total score of 26.55 or less was confirmed to be indicative of FSD.¹⁰

Our assessment questionnaire otherwise included demographic characteristics such as participant's age, education level, occupation, family income (low or moderate vs high), and living environment (urban or rural). The height and weight of the participants were registered, and the body mass index was calculated. Other aspects of reproductive function were included such as the duration of marriage, menstrual status (regular, irregular, postmenopausal), and the mode of delivery (normal labor, caesarean section, or primary infertility). Evaluation also involved degree of satisfaction with spouse's sexual ability (severely dissatisfied, dissatisfied, fairly satisfied, or satisfied) according to a subjective personal impression of the female participant and chronic medical disease, for example, diabetes, asthma, hypothyroidism, and so forth.

Ethical Approval

All procedures were consistent with the institutional research committee's ethical standards (Reference number 18/0279/IRB) and with the Helsinki Declaration of 1964 and its later modifications or comparable ethical standards.

Informed consent has been given by all women who agreed to participate in the study.

Statistical Analysis

The impact of the different demographics and clinical characteristics on female sexual function was assessed using the chi-square test/Fisher's exact test for categorical variables and Student's *t*-test for continuous variables.

The influence of significant parameters was further evaluated by binary logistic regression analysis to determine significant independent predictors. Family income and satisfaction with spouse's sexual ability were dichotomized for better fit into the logistic regression model. Odds ratios and 95% CIs were calculated separately for each factor. A *P*-value of less than .05 was considered significant for all tests performed using SPSS statistics (version 21; IBM Corp, Armonk, NY).

RESULTS

The study included a total of 200 Saudi women. [Table 1](#) shows their various sociodemographic and clinical characteristics. Their age ranged from 18 to 50 years, mostly resident in rural areas (87%), with moderate family income (86%), and with high school or above level of education (92%). Of them, 2% were postmenopausal and 3.5% were infertile. Most of the participants (88.5%) were fairly satisfied or satisfied with their spouse's sexual ability.

Of the participants, 120 (60%) had a risk of FSD using a cut-off score value of 26.55. The overall mean FSFI score was 23.98 ± 5.78 . The total FSFI and domains scores were significantly less in participants with the risk of FSD apart from the pain domain score ($P = .058$). The total FSFI and domains scores are shown in [Table 2](#). The lowest mean score in

Table 1. Participants' sociodemographic and clinical characteristics

Characteristic	Number (%)
Age (years)	
18–30	74 (37)
31–40	111 (55.5)
41–50	15 (7.5)
Education level	
Primary school	5 (2.5)
Intermediate school	11 (5.5)
High school	50 (25)
College	118 (59)
Postgraduate	16 (8)
Employment	
No	117 (58.5)
Yes	83 (41.5)
Family income	
Low	12 (6)
Moderate	172 (86)
High	16 (8)
Residence status	
Urban	6 (3)
Rural	194 (97)
Circumcision	
Circumcised	10 (5)
Uncircumcised	190 (95)
Duration of marriage	
<5 ys	50 (25)
5–10 ys	55 (27.5)
>10 ys	95 (47.5)
Menstrual status	
Regular	155 (77.5)
Irregular	41 (22)
Postmenstrual	4 (2)
Mode of delivery	
Normal labor	149 (74.5)
Caesarean section	44 (22)
Primary infertility	7 (3.5)
Satisfaction with spouse sexual ability	
Severely dissatisfied	5 (2.5)
Dissatisfied	18 (9)
Fairly satisfied	75 (37.5)
Satisfied	102 (51)
Chronic pelvic pain	
No	141 (70.5)
Yes	59 (29.5)
Gynecological disease	
No	166 (83)
Yes	34 (17)
Pelvic surgery	
No	190 (95)
Yes	10 (5)
Chronic medical disease	
No	181 (90.5)
Yes	19 (9.5)

Table 2. Total female sexual function index and domains score

Domain*	Sexual dysfunction	No sexual dysfunction	Total
Desire	3.12 (1.1)	4.46 (.81)	3.66 (1.12)
Arousal	3.03 (1.3)	5.04 (.51)	3.83 (4.20)
Lubrication	4.02 (1.3)	5.1 (.73)	4.45 (1.26)
Orgasm	3.48 (1.4)	5.22 (.73)	4.17 (1.48)
Satisfaction	3.9 (1.5)	5.42 (.66)	4.5 (1.42)
Pain	3.26 (1.1)	3.4 (.51)	3.36 (.97)
Total score	20.8 (5.3)	28.73 (1.5)	23.98 (5.78)

*Domain scores are presented as the mean (SD).

participants with the risk of FSD is reported for arousal (3.03 ± 1.3) and desire scores (3.12 ± 1.1) followed by orgasm score (3.48 ± 1.4).

Univariate analysis of possible predictive factors showed that the risk of FSD is more likely in women older than 40 years ($P = .012$), who are unemployed ($P = .035$), with low/moderate family income ($P = .014$), who are not satisfied with the spouse's sexual ability ($P = .005$), and with a higher weight ($P = .010$) and height ($P = .043$) as demonstrated in Table 3. However, only age greater than 40 years ($P = .041$), low family income ($P = .007$), and dissatisfaction with spouse's sexual ability ($P = .011$) sustained independent significance in a multivariate logistic regression analysis (Table 4). Women older than 40 years were 5 times more likely to report FSD. Those with low or moderate family income had 6.06 times more risk to have FSD. Likewise, women dissatisfied with their spouse's sexual ability were 5 times more likely to suffer FSD.

DISCUSSION

Female sexual functioning is the ability to achieve sexual arousal, lubrication, orgasm, and satisfaction resulting in well-being and a good quality of life.¹² Diminished sexual function results in significant personal distress and has an impact on quality of life and interpersonal relationships.^{12–14}

Sexual dysfunction has been found to be more prevalent in women than in men and varies according to ethnicity, psychodemographic characteristics, and physical and psychological health status.²

Our study presents epidemiological data on the prevalence and predictors of FSD in a sample of Saudi women. We emphasize the high prevalence (60%) risk of FSD among our participants. Our data are consistent with reports from Egypt^{15,16}, Jordan,¹⁷ China,³ and Japan.¹⁸ Slightly lower rates were reported in Turkey (43.4%),¹⁹ Iran (46.2%),²⁰ and the United States.^{2,21} The difference in the risk of FSD rates recorded by different countries may reflect medical and psychological factors, influence of socioeconomic, cultural, and racial differences, the clinical

Table 3. Relation of female characteristics and sexual function

Characteristic	Sexual dysfunction	No sexual dysfunction	<i>P</i>	Test
Age				
30 ys or less	36 (48.6%)	38 (51.4%)	.023	Chi-square
31–40 ys	72 (64.9%)	39 (35.1%)		
Older than 40 ys	12 (80%)	3 (20%)		
Education level				
Primary school	3 (60%)	2 (40%)	.811	Chi-square
Intermediate school	5 (45.5%)	6 (54.5%)		
High school	31 (62%)	19 (38%)		
College	70 (59.3%)	48 (40.7%)		
Postgraduate	11 (68.8%)	5 (31.3%)		
Employment				
No	63 (53.8%)	54 (46.2%)	.035	Chi-square
Yes	57 (68.7%)	26 (31.3%)		
Family income				
Low or moderate	115 (62.5%)	69 (37.5%)	.014	Chi-square
High	5 (31.3%)	11 (68.8%)		
Living environment				
Urban	5 (83.3%)	1 (16.7%)	.405	Fisher's exact
Rural	115 (59.3%)	79 (40.7%)		
Circumcision				
Circumcised	7 (70%)	3 (30%)	.743	Fisher's exact
Uncircumcised	113 (59.5%)	77 (40.5%)		
Duration of marriage				
<5 ys	25 (50%)	25 (50%)	.154	Chi-square
5–10 ys	32 (58.2%)	23 (41.8%)		
>10 ys	63 (66.3%)	32 (33.7%)		
Menstrual status				
Regular	89 (57.4%)	66 (42.6%)	.372	Chi-square
Irregular	28 (66.3%)	13 (31.7%)		
Postmenstrual	3 (75%)	1 (25%)		
Mode of delivery				
Normal labor	87 (58.4%)	62 (41.6%)	.676	Chi-square
Caesarean section	28 (63.6%)	16 (36.4%)		
Primary infertility	5 (71.4%)	2 (28.6%)		
Satisfaction with spouse's sexual ability				
Dissatisfied	20 (87%)	3 (13%)	.005	Chi-square
Fair or satisfied	100 (56.5%)	77 (43.5%)		
Chronic pelvic pain				
No	82 (58.2%)	59 (41.8%)	.411	Chi-square
Yes	38 (64.4%)	21 (35.6%)		
Gynecological disease				
No	98 (59%)	68 (41%)	.539	Chi-square
Yes	22 (64.7%)	12 (35.3%)		
Pelvic surgery				
No	114 (60%)	76 (40%)	1.000	Fisher's exact
Yes	6 (60%)	4 (40%)		
Chronic medical disease				
No	106 (58.6%)	75 (41.4%)	.201	Chi-square
Yes	14 (73.7%)	5 (26.3%)		
Mean weight (kg.)	72.52 (±13.4)	67 (±11.7)	.010	<i>t</i> -test
Mean height (cm.)	159.79 (±6.7)	157 (±6.5)	.043	<i>t</i> -test
Mean BMI	28.48 (±5.5)	27.19 (±4.5)	.085	<i>t</i> -test

BMI = body mass index.

Bold values indicate statistical significance.

Table 4. Significant independent predictors of sexual dysfunction

Predictor	<i>P</i>	Odds ratio	95% CI
Age			
Older than 40 ys	.041	4.996	1.069–23.344
Family income			
Low or moderate	.007	6.060	1.630–22.531
Satisfaction with spouse's sexual ability			
Dissatisfied	.011	5.991	1.507–23.824

definition used for each dysfunction, and the criteria of samples examined (general population vs sexuality clinics).

The total and domain sexual function scores in our study were statistically significant between participants with and without risk of FSD (Table 2), confirming the previously reported high predictive capacity of the FSFI and ArFSFI in discriminating such conditions.^{9–11}

Our results showed that arousal (3.03 ± 1.3) and desire (3.12 ± 1.1) were the most affected domains. Similar results were reported by Aslan et al¹⁹ in a study that included 1,009 Turkish women. Desire and arousal disorders are the most frequently reported female sexual problems in the literature.^{15,16,18,20–23} Based on epidemiological data obtained from a National Health and Social Life Survey of the U.S. population, it has been estimated that a third of women lacked sexual interest and almost a fourth had no orgasms.² Oberg et al recorded that 45% of Swedish women had reduced desire.²⁴ Higher rates of 60% were reported in Turkish women.²⁵ Rates of 32–43% were reported for sexual arousal disorders.^{15,17,20,25} Others reported orgasm as the most affected domain.^{15,26}

Many potential risk factors for FSD were suggested including biological factors (eg, age, hormone level, pelvic floor disorder, and pelvic surgery), social factors (eg, education level, economic level, social status, local culture, and religion), and psychological factors (eg, mood, intimacy with the spouse, and marital relationship).³ Age, economic level, and satisfaction with spouse's sexual ability were the only predictive factors shown in our study (Table 4). No significant differences were detected for menstrual status, the mode of delivery, the duration of the marriage, and chronic diseases. Similar findings were recorded by Aslan et al.¹⁹ The present study showed the increased risk of FSD with age. Our findings showed that age greater than 40 years increased FSD risk by about 5 times. Lewis et al²⁷ reported that low sexual function prevalence increases as men and women age. The International Women's Survey on Health and Sexuality investigated participants from Europe (France, Germany, Italy, and the United Kingdom) and the United States aged between 20 and 70 years and reported that sexual activity decreased with aging and the proportion of women with low sexual function, specifically low desire, increased with age.^{22,28} Similarly, Abduljabbar et al²⁹ recorded a significantly greater incidence risk of FSD greater than the age of 40 years in a

group of 194 Saudi women using abridged 6-item version of the FSFI. Similar results were reported in studies of Egyptian,¹⁵ Turkish,¹⁹ Iranian,³⁰ and Japanese¹⁸ women. Elnashar et al¹⁶ documented a substantial association between women's age and sexual problems using a tool other than the FSFI. They reported lower rates of FSD risk in women aged 20–29 years than in women aged between 40 and 49 years. Low sexual function with aging is possibly due to the age-associated physiological changes in hormones, psychosocial and interpersonal factors, medication use, and associated diseases.⁵

Laumann et al² reported that low socioeconomic status and low level of education were risk factors for FSD. In 28.1% of respondents in lower Egypt, unfavorable economic conditions were among the aggravating factors for their sexual problems.¹⁶ Our findings showed that low sexual function is more common in women with lower family income (odds ratio: 6.06). This may be attributed to the low family income—associated female stress, anxiety, and depression.

Results of studies investigating the level of education as a risk factor were variable. Reports found no relationship,^{15,21} others showed that higher educational status is associated with a less risk of FSD.^{3,25,30} The reverse was also reported.³¹ The education level had no significance as related to the FSD risk in our participants.

Male erectile or other male sexual dysfunctions have significant adverse effects on the sexual function of their female partners.³² Furthermore, the risk of FSD may improve after the treatment of male sexual dysfunction.^{32,33} Dissatisfaction with spouse's sexual ability increased the risk of FSD by about 6 times in our respondents (Table 4). Similarly, Lou et al,³ reported a 6.94 increased risk of FSD due to dissatisfaction with spouse's sexual ability in 5,024 women in Beijing, China. A high risk of FSD because of dissatisfaction with spouse's sexual ability was also reported in Egyptian,¹⁵ Turkish,¹⁹ Iranian,³⁰ and Japanese¹⁸ women.

FSD is a common, underinvestigated health problem. Furthermore, many women are hesitant to discuss their sexuality and sexual health issues with their health-care providers. The situation is even more difficult in Eastern countries where it is considered as a taboo. Published reports on the risk of FSD from Saudi Arabia are scarce. They are limited by the use of either a nonvalidated Arabic version^{34,35} or abridged 6-item version of the FSFI²⁹ or surveying special participant populations.^{36,37} The present study is accredited with the use of the ArFSFI, its prospective nature, and the inclusion of married women only meaning that they are in a stable relationship. Furthermore, the structured interview has ensured that all questions from all the participants were answered completely and consistently. However, it is still limited by its cross-sectional hospital-based nature and the relatively small number of participants; thus, the results could not be extrapolated to the whole community without caution. Male partners were not interviewed or evaluated regarding their sexual performance. Data about their sexual abilities were obtained from their female partners, which may be subjective, incompletely accurate, or biased.

Our study addresses a significant and common health problem that is not adequately studied in our community. It emphasizes the high prevalence of the FSD risk that deserves attention as a major public health concern, with a need for more epidemiological, community-based studies. The knowledge and competency of physicians in FSD is increasingly required, so that they can professionally approach women with such dysfunction. We strongly recommend the use of the full version of the ArFSFI in the assessment of women with such dysfunction both in clinical and research settings for better standardization and comparison.

CONCLUSIONS

Female sexual problems are highly prevalent in this sample of Saudi women. The prevalence of low sexual function in the participants was significantly associated with female age, low socioeconomic level, and dissatisfaction with the spouse's sexual ability. Desire and arousal were the most significantly affected domains followed by orgasmic problems. Larger epidemiologic, community-based studies are strongly warranted.

ACKNOWLEDGMENTS

Authors' contributions: K.M. and S.B. contributed to protocol/project development, data analysis, and manuscript writing/editing; M.A.-A., H.A.-A., and A.A. contributed to data collection or management; and R.A. and M.H. contributed to manuscript writing/editing.

Corresponding Author: Saleh Binsaleh, MD, FRCSC, FECSM, Department of Surgery, Faculty of Medicine, King Saud University, P.O Box 36175, Riyadh 11419, Saudi Arabia. Tel: 00966-11-4671575; Fax: 00966-11-4679493; E-mail: binsaleh@ksu.edu.sa

Conflict of Interest: The authors report no conflicts of interest.

Funding: None.

STATEMENT OF AUTHORSHIP

Khaled Madbouly: Writing - Original Draft, Formal Analysis, Conceptualization, Methodology, Investigation, Resources, Writing - Review & Editing. Mohammed Al-Anazi: Methodology, Investigation, Resources. Hanan Al-Anazi: Methodology, Investigation, Resources. Abdullah Aljarbou: Methodology, Investigation, Resources. Raed Almannie: Resources, Writing - Review & Editing. Mohamad Habous: Resources, Writing - Review & Editing. Saleh Binsaleh: Writing - Original Draft, Formal Analysis, Conceptualization, Methodology, Investigation, Resources, Writing - Review & Editing.

REFERENCES

1. McCool ME, Theurich MA, Apfelbacher C. Prevalence and predictors of female sexual dysfunction: a protocol for a systematic review. *Syst Rev* 2014;3:75.
2. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. *JAMA* 1999;281:537-544.
3. Lou WJ, Chen B, Zhu L, et al. Prevalence and factors associated with female sexual dysfunction in Beijing, China. *Chin Med J (Engl)* 2017;130:1389-1394.
4. First MB, Wakefield JC. Diagnostic criteria as dysfunction indicators: bridging the chasm between the definition of mental disorder and diagnostic criteria for specific disorders. *Can J Psychiatry* 2013;58:663-669.
5. Basson R, Berman J, Burnett A, et al. Report of the international consensus development conference on female sexual dysfunction: definitions and classifications. *J Urol* 2000;163:888-893.
6. Jones LRA. The use of validated questionnaires to assess female sexual dysfunction. *World J Urol* 2002;20:89-92.
7. Shifren JL, Monz BU, Russo PA, et al. Sexual problems and distress in United States women: prevalence and correlates. *Obstet Gynecol* 2008;112:970-978.
8. El Atrash G, Ali MH, Abdelwahab HA, et al. The assessment of sexual dysfunction in Egyptian women with lower urinary tract symptoms. *Arab J Urol* 2014;12:234-238.
9. Rosen R, Brown C, Heiman J, et al. The female sexual function index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther* 2000;26:191-208.
10. Wiegel M, Meston C, Rosen R. The female sexual function index (FSFI): cross-validation and development of clinical cutoff scores. *J Sex Marital Ther* 2005;31:1-20.
11. Anis TH, Gheit SA, Saied HS, et al. Arabic translation of female sexual function index and validation in an Egyptian population. *J Sex Med* 2011;8:3370-3378.
12. Walton B, Thornton T. Female sexual dysfunction. *Curr Womens Health Rep* 2003;3:319-326.
13. Davison SL, Bell RJ, LaChina M, et al. The relationship between self-reported sexual satisfaction and general well-being in women. *J Sex Med* 2009;6:2690-2697.
14. Salonia A, Munarriz RM, Naspro R, et al. Women's sexual dysfunction: a pathophysiological review. *BJU Int* 2004;93:1156-1164.
15. Ibrahim ZM, Ahmed MR, Ahmed WAS. Prevalence and risk factors for female sexual dysfunction among Egyptian women. *Arch Gynecol Obstet* 2013;287:1173-1180.
16. Elnashar AM, El-Dien Ibrahim M, El-Desoky MM, et al. Female sexual dysfunction in lower Egypt. *BJOG* 2007;114:201-206.
17. Maaita M, Khreisat B, Tasso O, et al. Prevalence and associated risk factors of female sexual dysfunction among Jordanian women. *J Fam Med Prim Care* 2018;7:1488.
18. Hisasue S, Kumamoto Y, Sato Y, et al. Prevalence of female sexual dysfunction symptoms and its relationship to quality of life: a Japanese female cohort study. *Urology* 2005;65:143-148.
19. Aslan E, Beji NK, Gungor I, et al. Prevalence and risk factors for low sexual function in women: a study of 1,009 women in an

- outpatient clinic of a University Hospital in Istanbul. *J Sex Med* 2008;5:2044-2052.
20. Jaafarpour M, Khani A, Khajavikhan J, et al. Female sexual dysfunction: prevalence and risk factors. *J Clin Diagn Res* 2013;7:2877-2880.
 21. Rosen RC, Taylor JF, Leiblum SR, et al. Prevalence of sexual dysfunction in women: results of a survey study of 329 women in an outpatient gynecological clinic. *J Sex Marital Ther* 1993;19:171-188.
 22. Hayes RD, Bennett CM, Fairley CK, et al. What can prevalence studies tell us about female sexual difficulty and dysfunction? *J Sex Med* 2006;3:589-595.
 23. Ponholzer A, Roehlich M, Racz U, et al. Female sexual dysfunction in a healthy Austrian cohort: prevalence and risk factors. *Eur Urol* 2005;47:366-375.
 24. Oberg K, Fugl-Meyer AR, Fugl-Meyer KS. On categorization and quantification of women's sexual dysfunctions: an epidemiological approach. *Int J Impot Res* 2004;16:261-269.
 25. Cayan S, Akbay E, Bozlu M, et al. The prevalence of female sexual dysfunction and potential risk factors that may impair sexual function in Turkish women. *Urol Int* 2004;72:52-57.
 26. Ojomu F, Thacher T, Obadofin M. Sexual problems among married Nigerian women. *Int J Impot Res* 2007;19:310-316.
 27. Lewis RW, Fugl-Meyer KS, Bosch R, et al. Epidemiology/risk factors of sexual dysfunction. *J Sex Med* 2004;1:35-39.
 28. Graziottin A. Prevalence and evaluation of sexual health problems - HSDD in Europe. *J Sex Med* 2007;4(SUPPL. 3):211-219.
 29. Abduljabbar HSO, Alkasi MA, Khayat SW, et al. Screening of sexual dysfunction in Saudi women before and after the age of 40 years. *Clin Exp Obstet Gynecol* 2016;43:526-528.
 30. Safarinejad MR. Female sexual dysfunction in a population-based study in Iran: prevalence and associated risk factors. *Int J Impot Res* 2006;18:382-395.
 31. Sidi H, Puteh SEW, Abdullah N, et al. The prevalence of sexual dysfunction and potential risk factors that may impair sexual function in Malaysian women. *J Sex Med* 2007;4:311-321.
 32. Fisher WA, Rosen RC, Eardley I, et al. Sexual experience of female partners of men with erectile dysfunction: the female experience of men's attitudes to life events and sexuality (females) study. *J Sex Med* 2005;2:675-684.
 33. Çayan S, Bozlu M, Canpolat B, et al. The assessment of sexual functions in women with male partners complaining of erectile dysfunction: does treatment of male sexual dysfunction improve female partner's sexual functions? *J Sex Marital Ther* 2004;30:333-341.
 34. Alsibiani SA, Rouzi AA. Sexual function in women with female genital mutilation. *Fertil Steril* 2010;93:722-724.
 35. Alsibiani SA. Effects of pregnancy on sexual function. Findings from a survey of Saudi women. *Saudi Med J* 2014;35:482-487.
 36. AlMogbel TA, Amin HS, AlSaad SM, et al. Prevalence of sexual dysfunction in Saudi women with type 2 diabetes: is it affected by age, glycemic control or obesity? *Pak J Med Sci* 2017;33:732-737.
 37. Rouzi AA, Sahly N, Sawan D, et al. The prevalence of sexual dysfunction in the female health care providers in Jeddah, Saudi Arabia. *Sci Rep* 2015;5.