

Female sexual dysfunction among married women in the Gaza Strip: an internet-based survey

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BACKGROUND: Since sexual function is an important element of human life, sexual dysfunction may negatively affect the quality of life for both males and females. It is a widespread public health problem that is inadequately studied in the Arab world.

OBJECTIVE: Determine the prevalence of female sexual dysfunction (FSD) and associated factors in all women who sought reproductive health services in the community and who were in an active sexual relationship.

DESIGN: A cross-sectional survey.

SETTING: Community.

SUBJECT AND METHODS: Married Palestinian women living in the Gaza strip in Palestine who were aged from 18-60 years old and could use the internet volunteered to participate during routine health visits. We used the Arabic version of the Female Sexual Function Index, which is comprised of six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. The data were analyzed descriptively and by univariate and multiple logistic regression analysis.

MAIN OUTCOME MEASURE: Frequency of FSD and association with demographic, socioeconomic and clinical factors.

SAMPLE SIZE: 385 married women.

RESULTS: The prevalence of FSD was 61% (n=235). Of those, 26.4% (101/385) had desire disorder, 20.2% (47/235) had arousal disorder, 18.4% (101/385) had orgasm disorder, 6.7% (26/385), 79% (304/385), and 21.2% (82/385) had lubricant disorder, pain disorder, and satisfaction, respectively. Logistic regression analysis showed that independent factors associated with FSD were parity (OR: 2.068; CI 95%: 1.047–3.985; $P<.05$), marriage dissatisfaction (OR: 6.299; CI 95%: 2.879–13.781; $P<.001$), and living in stressful conditions (OR: 2.181; CI 95%: 1.380–3.448; $P<.001$). There was no evidence of statistically significant associations between FSD and polygamy, intercourse frequency, wife's age, wife's job, husband's age, husband's job, education, abortion history, number of children, marital duration and using of family planning methods.

CONCLUSION: FSD was common in women participating in our survey. More research on the effect of sexual dysfunction on quality of life is recommended as well as research on the awareness of the presence of dysfunction in women.

LIMITATION: The use of an internet survey was the major limitation of the study. Findings may not be generalizable. Further studies are needed to include women who do not have internet access.

CONFLICT OF INTEREST: None.

A significant health problem affecting marital life is female sexual dysfunction (FSD),¹⁻³ which has an important impact on quality of life.⁴ FSD is a highly prevalent and often underestimated problem in the general community.⁵ Relatively recent investigations have found the prevalence of FSD in women to surpass that of males.^{6,7} A multinational study reported that 20-25 percent of Asian women have sexual problems.⁸ The same study showed that hesitation in seeking help is common for economic and socio-cultural reasons.

Traditionally, FSD has included desire/libido disorders, excitement disorders, pain/discomfort and inhibited orgasm.⁶⁻⁹ Sexual dysfunction in males that affect fertility includes erectile dysfunction, Peyronie's disease (abnormal curvature of the penile), low libido, and ejaculatory disorders. Other problems in women are genito-pelvic pain/penetration disorder and low sexual desire.¹⁰ FSD is a common complication after most pelvic surgeries.⁵ Psychological and interpersonal factors can contribute to all types of sexual dysfunction.¹¹

Assessment of FSD requires a validated and reliable instrument such as the Female Sexual Function Index (FSFI). This instrument has been translated into more than 20 languages and has become the gold standard, an indispensable tool for clinical research in the evaluation of female sexual function.¹² The FSFI is a short multidimensional instrument for evaluation of sexual function in women that was developed by Rosen et al.¹³ The questionnaire consists of 19 questions on sexual desire, sexual excitement, lubrication, orgasm, sexual satisfaction and pain in six domains.¹³ No previous report has described FSD among the Palestinian population due to the cultural sensitivity of this topic. The aim of this study was to determine the prevalence of sexual dysfunction and related factors in a population of women living in Gaza. Sexual function is influenced by different individual and environmental factors. We hypothesized the following:¹⁴⁻¹⁶ 1) FSD is more prevalent in older women, 2) factors associated with FSD are polygamy, a previous history of abortions, parity, frequency of intercourse, number of children, menstruation status, stress of life, low level of education, low-income level, and marriage to older husbands are factors associated with FSD, 3) women unsatisfied with marriage suffer from FSD more than women satisfied with their marriage, 4) and women who live a stressful life suffer from FSD more than women faced with less stressful life conditions.

SUBJECTS AND METHODS

This internet-based cross-sectional study involved Palestinian married women who lived in the Gaza strip

from May to September 2017, were aged between 18 and 60 years, and were sexually active on the survey date. Exclusion criteria included pregnancy, lactation and the presence of chronic disease. Data was collected through an online questionnaire which was developed using Google forms and through the help of nongovernmental health organization (NGOs) which operates in all Gaza Governorates. The NGOs provide maternal and child health services. The nurses and midwives introduced the study to the potential participant at the end of a health visit and provided the link to the questionnaire, which was accessed anonymously. They also encouraged women to provide the link to their relatives, friends, and neighbors. Participating women had to join a Facebook group run by the first author to obtain access to the link. We received the responses on a Microsoft Excel spreadsheet and the data was downloaded for analysis.

The questionnaire consisted of two parts: the first part was designed to collect information on potential predictors of FSD, which had been determined from a review of the literature on FSD. The questionnaire included information on demographic and economic factors and obstetric and gynecological history. The second part contained the Arabic Version of Female Sexual Function Index. The questionnaire pertains to FSD for the 4 weeks. The questionnaire was validated by Anis et al.¹⁷ The second part has 19 questions and covers six domains: desire (two questions), arousal (four questions), lubrication (four questions), pain (three questions), satisfaction (three questions) and orgasm (three questions). The questions in each domain have five to six responses that range from 1 to 5 or 0 to 5. The cut-off point of the ArFSFI to determine whether a woman has sexual dysfunction is 28.1.¹⁷ The prevalence of sexual dysfunction was totaled for each domain. Sexual dysfunction for each domain was considered present when the score was 3.3 or less (score range 1 to 5) for desire, 3.4 or less (score range 0 to 5) for arousal, 3.4 or less (score range 0 to 5) for lubrication, 3.4 or less (score range 0 to 5) for orgasm, 3.8 or less (score range 0 to 1 to 5) and 3.8 or less (score range 0 to 5) for satisfaction and pain respectively.

In the analyses, FSD was the binary dependent variable. Independent variables were the socioeconomic and obstetrical and gynecological variables. The socioeconomic variables included age, level of education, employment status, husband's age, husband's employment status, marital duration, marital satisfaction, presence of stressful life events, polygamy, and family income. The obstetrical and gynecological variables included parity, number of children, use of family plan-

ning methods, menstruation, intercourse frequency and history of abortion. All survey responses were entered into Excel and then converted to SPSS software version 23 for analysis. Data were checked for outliers, missing data and normal distribution. Any questionnaire with 5% or more of responses missing was excluded from the analysis. Continuous variables are expressed as the mean and standard deviation (SD). Categorical variables are expressed by frequency and percentage and comparisons were made using chi-square tests. The prevalence of sexual dysfunction was also calculated for each domain and compared among the age groups. One-way ANOVA was used to compare parametric sexual function scores and age categories, and a post-hoc test (Bonferroni) test was used to determine significance within age groups. A univariate analysis was conducted with the independent variables on the outcome variable, sexual dysfunction. Findings were presented as the crude odds ratio and 95% confidence interval. All independent variables with a *P* value <.05 were chosen for a multiple logistic regression analysis. All tests were two-sided, with a *P*<.05 considered statistically significant. The cutoff point for females with or without sexual dysfunction was 28.1. The sample size of 385 participants was based on an assumption that the proportion of the population with FSD was 50% since the prevalence of FSD was unknown to us.¹⁸

This study was approved by the Palestinian Health Research Council, Helsinki committee (ethical code number: PHRC/HC/223/17) in 2017. All participants were informed about the research objectives, and inclusion and exclusion criteria, at the beginning of the survey. Voluntary participation was emphasized and ensured and consent was taken from women before they started the survey. Data was collected and analyzed anonymously.

RESULTS

Of 565 responses received, only 385 questionnaires were included in the analysis. The mean age (SD) of wives was 29.9 (6.9) years and ranged from 18 to 60 years. About half lived in Gaza city (47.5%), most had a university degree or higher, and about one-third were employed (Table 1). The mean length of marriage was 8.7 (6.7) years. More than two thirds of the women had normal delivery (69.6%) and around 45% used different types of contraceptives (Table 2). The majority had regular menstruation (82.2%) and had at most three children (83.1%). Most women were parous and had a duration of marriage of less than 20 years (86.8% and 91.2% respectively).

Sixty-one percent (n=235) had FSD (Table 3). Sexual

Table 1. Sociodemographic characteristics of the study population.

Age group (years)	
18-29	204 (53.0)
30-39	140 (36.4)
40-49	32 (8.3)
50-60	9 (2.3)
Residence	
North	82 (21.3)
Gaza city	183 (47.5)
Middle	63 (16.4)
South	57 (14.8)
Wife's education	
Illiterate	9 (2.3)
High school	74 (19.2)
University	272 (70.6)
Postgraduate	30 (7.8)
Wife's job status	
Job	141 (36.6)
Jobless	244 (63.4)
Husband's age	
18-29	109 (28.3)
30-39	195 (50.6)
40-49	54 (14.0)
50-66	27 (7.0)
Husband's job status	
Job	308 (80.2)
Jobless	76 (19.8)
Polygamy	
Yes	17 (4.4)
No	368 (95.6)
Income	
Financial aid	23 (6.0)
Less than 1000 NIS	89 (23.1)
1000-2000 NIS	180 (46.8)
More than 2000 NIS	93 (24.2)
Marital satisfaction	
Yes	306 (79.5)
No	79 (20.5)
Life stresses	
Yes	181 (47.0)
No	204 (53.0)

Table 2. Obstetrical and gynecological history of participants.

Methods of delivery	
Normal	268 (69.6)
Cesarian delivery	61 (15.8)
Nulliparous	56 (14.5)
Contraceptive methods	
No usage	104 (27.0)
Intrauterine device	95 (24.7)
Condom	41 (10.6)
Hormonal pill	35 (9.1)
Hormonal injection	2 (.5)
Withdrawal method	108 (28.1)
Frequency of intercourse	
3 or fewer	296 (76.9)
More than 3	89 (23.1)
Menstrual history	
Regular	319 (82.9)
Irregular	56 (14.5)
Menopause	10 (2.6)
Abortion history	
Abortion	148 (38.4)
No abortion	237 (61.6)
Number of children	
4 or fewer children	320 (83.1)
More than 4 children	65 (16.9)
Fewer than 20	351 (91.2)
20 and more	34 (8.8)
Parity	
Nulliparous	51 (13.2)
Parous	334 (86.8)

Values are number (percentage).

dysfunction was described as a pain problem in 79 percent of those with sexual dysfunction (**Figure 1**). The domains that had a positive correlation with age were desire ($P=.05$), arousal ($P=.05$) and lubrication ($P=.02$). Post-hoc comparisons indicated lubrication to be significantly different between the youngest and oldest age group ($P<.02$) (**Table 4**).

Women were divided into those with normal sexual function (FSD score >28.1) and those that were sexu-

Table 3. Frequency of female sexual dysfunction by age group.

Age range (years)	Sexual function (n=150)	Sexual dysfunction (n=235)
18-29	86 (42.2)	118 (57.8)
30-39	56 (40)	84 (60)
40-49	8 (25)	24 (75)
50-60	0	9 (100)
Total	150	235

Values are number (percentage).

ally dysfunctional (FSD score ≤ 28.1). Five independent variables were significantly correlated with sexual dysfunction and were chosen for the logistic regression analysis: wife's age, husband's age, parity, stressful life, and marital satisfaction (**Table 5**). There was no statistically significant association with husband's job, intercourse frequency, wife's job, wife's education, number of children, duration of marriage, polygamy and history of abortion (**Table 5**). Logistic regression analysis showed that parity, marriage dissatisfaction, and living in stressful conditions were independent factors and predictors for FSD (**Table 6**).

DISCUSSION

Sexuality is a fundamental need of human beings. It is a human right to enjoy and practice.¹⁹ However, human sexuality is a very sensitive subject to humans in general and for females in the conservative Islamic culture. Women are reluctant to speak about it or to seek help

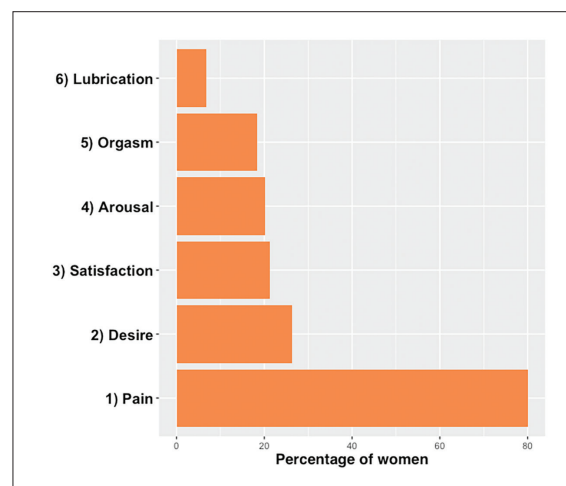


Figure 1. Specific issues in 235 women with sexual dysfunction.

Table 4. Mean scores for specific female sexual dysfunction issues by age groups (years).

	18-29 (n=204)	30-39 (n=140)	40-49 (n=32)	50-60 (n=9)	F P value	Total percentage weight, n (%)
Desire	4.04 (1.14) (67.4)	3.91 (3.13) (65.2)	3.71 (1.08) (61.8)	3.13 (0.65) (52.2)	2.557 .05	3.94 (1.13) (65.8) 102 (26.4)
Arousal	4.52 (1.23) (75)	4.22 (3.13) (70.3)	4.22 (1.05) (70.4)	3.73 (0.79) (62.2)	2.615 .05	4.37 (1.25) (72.8) 78 (20.2)
Lubricationa	4.87 (1.02) (81.1)	4.69 (1.10) (78.2)	4.68 (0.77) (78.1)	3.86 (0.46) (64.4)	3.288 .02	4.76 (1.03) (79.4) 26 (6.7)
Orgasm	4.59 (1.15) (76.4)	4.40 (1.27) (73.3)	4.40 (0.90) (73.3)	4.22 (0.69) (70.3)	.973 .40	4.49 (1.18) (74.9) 71 (18.4)
Satisfaction	4.89 (1.27) (81.4)	4.741 (1.44) (79)	4.53 (1.33) (75.6)	4.26 (0.87) (71)	1.273 .28	4.79 (1.33) (79.8) 82 (21.2)
Pain	3.35 (0.67) (56)	3.36 (0.65) (55.7)	3.27 (0.522) (54.5)	3.60 (0.52) (60)	.597 .61	3.35 (0.65) (55.9) 304 (79)
Total	26.27 (4.81) (73.8)	25.33 (5.42) (71)	24.84 (4.17) (69.9)	22.8 (2.47) (63.9)	2.525 .60	25.73 (4.99) (72.2) 235 (61)

because of sociocultural constraints regarding sexual life.^{20,21} Sexual dysfunction among married woman is a health problem that is not addressed well and no previous survey has been conducted to investigate this problem in the Gaza strip. This is the first report to address this problem in an area under political conflict with deteriorated socioeconomic conditions which affects marital and psychological wellbeing.

The majority of the participants lived in Gaza city (45.5%) and the mean of age was 30 years old. Dysfunction was present in 61% of our sample and the most common complication was pain disorder (79%). FSD has a negative impact on the interpersonal relationships of women, which affects the quality of life, self-esteem and often causes psychopathological disorders. The reasons for FSD are multifactorial.²² The results of the many epidemiological studies to estimate the prevalence of FSD around the world vary widely. A report from China showed that 25.6% of women had FSD; 10.6% had desire disorder, 9.3% lubrication difficulties, 8.8% orgasmic disorder (as the inability to reach or delay) and 8.4% reported pain.²³ These results were compatible with a study in Malaysia that showed that 25.8% of FSD with 39.3% desire disorder, 25.8% arousal problems, 21.5% lubrication problems, 16.6% orgasm problems, 21.5% satisfaction problem and

16.6% pain problems.²⁴ In another study conducted in Iran, the prevalence of FSD was reported as 46.2% Desire was 45.3% of the problems, arousal was 37.5%, the lubrication was 41.2%, orgasm was 42.0%, satisfaction was 44.5% and pain was 42.5%.¹⁴ Our study reports a prevalence of FSD similar to that from Jordan²⁵ and Egypt²⁶, which might be due to a common sociocultural background, and the psychologically stressful events in the Gaza Strip. Our study found that 79% have pain disorder which is higher than reported another study.²⁷ This rate is likely due to stressful life events, poor socioeconomic conditions and poverty conditions as stated in the literature.²⁸ Overall, 26.4% of the study participants reported a desire problem. Hormonal, neurological, vascular, psychological, disease/operation or drugs can be the causes of low sexual desire.²⁹ Various medical conditions may reduce sexual desire (e.g. diabetes mellitus, hypothyroidism, Addison's disease, Cushing's disease, lesions of the temporal lobe, menopause, coronary artery disease, heart failure, renal failure, stroke, and HIV).³⁰ Furthermore, reduced sexual desire can be due to family situations, work-related issues, and psychological factors.³¹ Arousal disorder is often attributed to an inhibition of desire.³² Inhibited desire is often attributed to arousal problems. The most common biological factors are depression and associated

Table 5. Univariate logistic analysis of factors associated with female sexual dysfunction.

		Normal sexual function (n=150)	Sexual Dysfunction (n=235)	P value	Crude Odds Ratio (95% CI)
Wife's age	Less than 40	142 (41.3)	202 (58.7)	<.01	2.90 (1.30-6.46)
	40 or more	8 (19.5)	33 (80.5)		
Husband's age	Less than 40	127 (41.7)	177 (58.2)	.03	1.80 (1.06-3.08)
	40 or more	23 (28.4)	58 (71.6)		
Husband's job	Have job	126 (40.9)	182 (59.1)	.08	1.59 (0.93-2.73)
	Jobless	23 (30.3)	53 (69.7)		
Marital satisfaction	Yes	142 (46.4)	164 (53.6)	.01	7.68 (3.57-16.50)
	No	8 (10.1)	71 (89.8)		
Stressful life	Yes	47 (25.9)	134 (74.1)	.01	0.34 (0.22-0.52)
	No	103 (50.4)	101 (49.5)		
Number of children	4 and less	132 (41.2)	188 (58.8)	0.05	1.83 (1.00-3.29)
	More than 4	18 (27.7)	47 (73.3)		
Parity	Para	121 (35.2)	213 (74.8)	<.01	2.32 (1.27-4.21)
	Nulliparous	29 (56.8)	22 (43.2)		
Length of marriage (years)	Fewer than 20	142 (40.5)	209 (59.5)	60.0	2.20 (0.97-5.01)
	20 and more	8 (23.5)	26 (76.5)		
Intercourse frequency per week	3 or fewer per week	110 (37.1)	186 (62.9)	0.1	0.72 (0.44-1.17)
	More than 3 per week	40 (44.9)	49 (55.1)		
Family planning	Yes	101 (35.9)	180 (64.1)	0.05	1.58 (1.00-2.50)
	No	49 (47.1)	55 (52.9)		
Abortion	Yes	61 (41.2)	87 (58.8)	0.47	1.66 (0.76-1.77)
	No	89 (37.5)	148 (62.4)		
Polygamy	Yes	8 (47)	9 (52.9)	0.48	1.41 (0.53-3.75)
	No	142 (38.5)	226 (61.4)		
Wife's job	Having job	58 (41.1)	83 (58.9)	0.50	1.15 (0.76-1.76)
	Jobless	92 (37.7)	152 (62.3)		
Income	2000 NIS and less	118 (40.4)	174 (59.6)	0.30	1.29 (0.79-2.10)
	More than 2000 NIS	32 (34.4)	61(65.6)		
Wife's education	Secondary school or not educated	35 (42.2)	48(57.8)	0.49	1.18 (0.72-1.94)
	University or postgraduate	115 (38.1)	187 (61.9)		

Values are number (percentage).

Table 6. Multiple logistic regression analysis of independent factors associated with female sexual dysfunction.

Variable	B	SE	Wald	P value	Adjusted odds ratio	95% confidence interval	
						Lower	Upper
Parity Nullip ^a Parous	0.727	0.335	4.720	.031	2.068	1.074	3.985
Wife age ≤40 ^a >40	0.905	0.542	2.788	.095	2.471	0.855	7.146
Husband age ≤40 ^a >40	-0.023	0.375	.004	.095	0.977	0.469	2.036
Marital dis- satisfaction Yes ^a No	1.840	0.399	21.230	.001	6.299	2.879	13.781
Stressful life Yes No ^a	0.780	0.234	11.155	.001	2.181	1.380	3.448

^aReference category. Model fit measures: Deviance (-2LL): 450.130, MacFadden R²: 0.126, Nagelkerke R²: 0.210, Omnibus test: chi-square=64.671, df=5, P<.001)

drug therapy. Insufficient stimulation or psychological inhibition may lead to insufficient lubrication of the vagina.³²

Current research studies reveal a wide range of potential risk factors for FSD. Medical, psychological, and/or social factors can precipitate the problem. Currently, our study shows that women who report complaints from life stresses have more FSD more than women not living in stressful conditions.³³ Marital satisfaction is another variable that had a greater effect on our participant's sexual relationship. In our study, women with FSD had greater marital dissatisfaction than those who do not have FSD. Similar findings from a study conducted in Iran lend credence to life stress and poor relationships being associated with FSD.³⁴⁻³⁶

Parous women in our study had higher dysfunction than nulliparous women as in previous research.³⁷ A high rate of episiotomy, which might cause pelvic floor trauma (perineal laceration or episiotomy) as a result of vaginal deliveries, might be linked to sexual dysfunction.³⁸ In our findings, participant age and partner age was not a risk factor for FSD as seen in previous studies, which is perhaps explained by the majority of our participants being young, while sexual dysfunction is more common in older age groups.^{26,39}

A limitation of the study is its cross-sectional design which prohibits an understanding of causal relationships. An internet-based survey has a high potential for selection bias because there are many households

of low socioeconomic status that have no internet connection and are unable to participate.

In conclusion, FSD in our study population in the Gaza Strip was high, which may be due to stress and bad socioeconomic conditions and stressful life events. FSD affects quality of life significantly but can be effectively managed by healthcare providers with appropriate evaluations and individualized treatments. The couple facing stressful psychological events that affects their social life and marital satisfaction should seek marital consultation in order to avoid a sexual problem. Further studies on sexual function during pregnancy, the postnatal period and menopause are needed along with more research on the effect of sexual dysfunction on quality of life. More research on clinical base sitting are recommended and research on the awareness of Gaza women of dysfunction and the inability to speak about this problem and find help. In addition, empowering health care providers to assess and manage this health problem is suggested.

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