

Prevalence and risk factors of female sexual dysfunction among healthcare personnel in malaysia

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Abstract

Objective: To determine the prevalence and risk factors of female sexual dysfunction (FSD) among healthcare personnel in selected healthcare facilities in Malaysia.

Methods: This was a cross-sectional study carried out at three large healthcare facilities that were selected by convenience sampling. Within each facility, stratified random sampling was used to select suitable candidates to participate in the study (n=201). Validated questionnaires were used to assess depression, anxiety, sexual function in women and erectile dysfunction (ED) in their partners.

Results: The prevalence of FSD was 5.5%. Women with sexual dysfunction were more likely to be married longer (OR=4.08; 95% CI; 1.15–4.50), had lower frequency of sexual intercourse (OR=5.00; 95% C; 1.05–23.76) and had a spouse with ED (OR=24.35; 95% CI; 4.55–130.37). Multivariate analysis showed that ED was the strongest predictor for FSD (AOR=27.30; 95% CI; 4.706–159.08).

Conclusion: One in eighteen female healthcare personnel suffered from FSD and presence of ED in the partner strongly impacted her sexual function, negatively. The findings highlight the importance of including the male partner in clinical assessment of FSD.

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1. Introduction

Female sexual dysfunction (FSD) is a highly prevalent disorder, which affects 11%–43% of women [1–4] and has a profound negative impact on a woman's self-esteem, her relationships and overall quality of life [5]. The mechanisms underlying FSD are complex and multi-factorial. It is also dynamic, that at different stages in a woman's life, the reasons underlying sexual problems may vary, taking into account the physiological changes related to aging as well as psychosocial circumstances. An interaction of biological,

psychosexual and contextual factors is frequently implicated, and this makes a thorough assessment of FSD imperative [6].

FSD is associated with poor perception of personal health status, lower education level, depression, anxiety, thyroid conditions, urinary incontinence and older age [7]. The effect of drugs like antidepressants on FSD is also significant [8]. Other associated factors for FSD are economic hardship, being unmarried, and having had early traumatic sexual experience [1,2]. The association between a woman's age and her academic status has been inconsistent, with difference in the opinion of various researchers [2,4,9].

In a conservative society like Malaysia, matters pertaining to sexuality are not discussed openly and neither it is frequently a focus of clinical attention. Indeed, the influence of cultural attitudes and beliefs does play a major role in determining the help seeking behavior of women with sexual difficulties and influence the way physicians approach the problem [10]. Nevertheless, during recent years, there has been an interest to study FSD in Malaysia. Cross sectional

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surveys have found rates of FSD in primary care populations ranging between 18.2% and 29.6% [11–14]. These studies have found FSD to be associated with older age and menopause, a higher academic status, being married longer, having more children and an older husband as well as a lower frequency of sexual intercourse.

The present study was conducted with the aim of determining the prevalence and risk factors of FSD among female healthcare personnel from selected tertiary government hospitals in Malaysia. Female healthcare personnel were chosen as the study sample because it was postulated that they would have a good perception of personal health status and furthermore, studies of sexual health among healthcare personnel have never been done in Malaysia.

2. Materials and methods

2.1. Study design, sample size and sampling

This cross-sectional study was conducted between August 2010 and September 2011 in three large tertiary government hospitals in Malaysia, whose locations were in urban and rural areas. The selection of the three sites was done by means of convenience sampling and essentially they were chosen for logistical reason. The principal investigator was working in two of the sites, and at the third site the data were collected by another investigator. At each center, the female healthcare personnel were recruited via stratified random sampling based on the proportion of the job categories i.e. medical officers, staff nurses, allied health personnel and health assistants. Within each group, the subjects were recruited by simple random sampling. The hospitals well represented both the urban and rural populations, and the various ethnic groups in Malaysia.

The study sample size for prevalence was calculated using the Sample Size Calculator for Estimations [15], with an estimated prevalence of FSD of 15% and a precision of 5% ($d=0.05$), giving a sample size of 196 subjects. The PS software was used for calculation of sample size for two proportions, to detect a 10% difference in proportions, with 80% power and precision of 5% [16]. Since the former required a larger sample size, it was taken as sample size for the study. This sample size was further inflated by 30% [14] to cater to the possible non-response. Thus, the final overall minimum sample size was 255. It was divided proportionately among the hospitals according to the respective female healthcare personnel population size.

From each hospital, a list of all female healthcare personnel was obtained from the administration office. Women meeting the eligibility criteria were then randomly selected as per the sample size required for each hospital.

2.2. Study subjects

The inclusion criteria were: female healthcare personnel comprising doctors, allied health workers, nurses and ward

assistants, aged 18 years and above, currently married and sexually active. Sexually active implied that the women were engaging in sexual intercourse for at least once a month. The allied health workers comprised of radiographers, pharmacists, physiotherapists, occupational therapists, dietician and other workers directly involved with patient care. The exclusion criteria were: pregnancy, women who were up to two months post partum, suffering from any psychiatric illness, having other serious and/or debilitating medical conditions such as chronic renal, cardiovascular, respiratory, cerebrovascular, autoimmune, uro-gynaecological diseases, poorly controlled diabetes mellitus, other endocrine diseases or malignancy. Written consent was obtained from the selected eligible participants in each hospital.

2.3. Study instruments

Sexual function in the female participants was assessed by the Malay version of the Female Sexual Function Index (MVFSFI). This is a 19-item multidimensional self rating instrument that was originally developed by Rosen [17] and has been validated for use in local Malay language [18]. The FSFI assesses overall sexual function as well as the domains of desire, arousal, lubrication, orgasm, satisfaction and pain. A score of ≤ 55 on the MVFSFI was used to distinguish between women who suffered from FSD and those who did not, with the sensitivity and specificity at this cut off point being 0.99 and 0.97, respectively. The women were also assessed for anxiety and depressive symptoms using a validated Malay version of the 30 item General Health Questionnaire (GHQ) [19,20]. A cut-off score of 6 on the GHQ-30, which had a sensitivity and specificity of 0.87 and 0.81 respectively, was used to determine women who had symptoms that were indicative of depression or anxiety [21]. The GHQ30 was used as a Malay version has been validated for local use. Bearing in mind that some of the respondents have very minimal years of schooling, the GHQ30 was ideal as it used simple language. Sexual function in the partners of the respondents was assessed by the validated Malay version of the 5 item International Index of Erectile Function (IIEF-5), which is a self rated instrument to screen for erectile dysfunction (ED) [22,23]. The validated Malay version of the IIEF-5, at its optimal cut-off point, has a sensitivity and specificity of 0.85 and 0.75, respectively and is useful both in clinical and research settings. Socio-demographic details such as age, academic attainment, duration of marriage, number of children and frequency of sexual intercourse were recorded for the female subjects. For the partners of the respondents, the presence of medical problems and smoking status were also inquired.

2.4. Ethical issues

Informed and written consent was obtained from all female respondents and their partners. This study was approved by the Medical Research Ethics Committee (MREC) of the Ministry of Health Malaysia (MREC Research ID: 4930) and the Ethics Committee of University Malaya Medical Center, Malaysia.

2.5. Statistical analysis

Statistical analysis was performed using SPSS for Windows Version 16 (SPSS Inc., Chicago, IL, USA). The outcome variable explored was FSD. Both descriptive and inferential analyses were conducted. For univariate analyses, results were expressed as counts and proportions (%) for categorical variables, and mean (\pm SD) for continuous variables. For bivariate categorical comparisons, chi-squared tests were performed. Logistic regression analyses were done to evaluate the strength of relationship between each of the dependent variables and the independent variables that were statistically significant in the bivariate analyses. The results were expressed in terms of both crude and adjusted Odds ratio (OR) together with its 95% CI. For all tests, significance was set at $p < 0.05$.

3. Results

A total of 266 women who fulfilled the inclusion criteria were randomly selected, of which 43 did not give their consent to participate in the study. A further 22 women were excluded from the study due to incomplete or incorrectly answered questionnaires; hence the final number and response rate of female subjects were 201 and 75.6%, respectively. The corresponding partners of the respondents were lower ($n=163$), as 38 partners of the respondents refused to give the consent. The mean age (years) of the women was 40.0 with a standard deviation (SD) of ± 9.35 with Malays, Chinese and Indian women making up 65.5%, 8.0% and 11.9% of the subjects respectively with a further 14.9% of the female subjects being made up of the various indigenous ethnic groups of Malaysia. The mean age (years) of the men was 43.2 with a SD of ± 10.13 . The socio-demographic characteristics of the female and male participants are described in Table 1.

Table 2 shows the overall prevalence of FSD and within its specific domains. Up to 65% of the partners of the respondents suffered from ED. Majority (50.9%) suffered from mild ED, while 13.5% from mild to moderate ED and only 0.6% had moderate ED.

Table 3 shows the prevalence of FSD by socio-demographic and spouse characteristics. Few of the likely variables investigated as being implicated in FSD were age of each partner, years of marriage, presence of anxiety or depressive traits and medical history of the male respondent. Frequency of sexual intercourse, duration of marriage and ED status in males were identified as risk factors of FSD (Table 3). Logistic regression showed that respondents with a lower frequency of sexual intercourse ($p=0.043$, OR=5.00, 95% CI 1.05, 24.76), a longer duration of marriage ($p=0.030$, OR=4.08, 95% CI 1.15, 14.50) and whose partners had mild to moderate ED ($p < 0.001$, OR=24.35, 95% CI 4.55, 130.37) were more likely to have sexual dysfunction. Multivariate analysis showed ED in the partners of the

Table 1
Socio-demographic characteristics of the respondents and their partners.

	Females (n=201)		Males (n=163)	
	n	%	n	%
Age				
20–29	37	18.4	23	14.1
30–39	62	30.8	43	26.4
40–49	58	28.9	45	27.6
50–59	43	21.4	45	27.6
≥ 60	1	0.5	7	4.3
Ethnicity				
Malay	131	65.2	103	63.2
Chinese	16	8.0	13	8.0
Indian	24	11.9	22	13.5
Others	30	14.9	25	15.3
Education level				
Primary	5	2.5	4	2.5
Secondary	87	43.3	100	61.3
Diploma	85	42.3	31	19.0
Degree	12	6.0	20	12.3
Postgraduate	12	6.0	8	4.9
Occupation				
Medical officers	20	10.0	4	2.5
Allied health	19	9.5	5	3.1
Nurses	96	47.8	-	-
Attendants	66	32.8	10	6.1
Senior officials/manager			14	8.6
Professionals			7	4.3
Technical/associates			46	28.2
Clerical			25	15.3
Self-employed			12	7.4
Elementary			27	16.6
Retired			13	8.0
Years of marriage				
0–5	46	22.9		
6–10	36	17.9		
11–15	25	12.4		
16–20	30	14.9		
>20	64	31.8		
Frequency of Sexual Intercourse				
>3 times per week	22	10.9		
2–3 times per week	80	39.8		
2–3 times per month	88	43.8		
< once a month	11	5.5		
Smoker				
Yes			55	33.7
No			108	66.3
Medical History				
None			119	73.0
Hypertension			13	8.0
Diabetes			23	14.1
Back problems			5	3.1
Others			3	1.8

respondents was the strongest predictor of FSD after controlling for duration of marriage and frequency of sexual intercourse ($p < 0.001$, OR 27.30, 95% CI 4.71, 159.08) (Table 4). There was a moderate positive correlation between IIEF-5 and FSD scores (Pearson's $r=0.597$, Fig. 1) shows the strength of association between IIEF-5 and FSD. The r^2 of 0.356 indicated that 35.6% of the variation FSD scores may be explained by IIEF-5.

Table 2
Prevalence of FSD and its specific domains.

	Prevalence (n=201)	
	n	%
Female Sexual Dysfunction	11	5.5
Within the domains of FSD		
Sexual Desire Disorder	38	18.9
Low Sexual Arousal	7	3.5
Lubrication Disorder	5	2.5
Orgasmic Disorder	4	2.0
Sexual Dissatisfaction	7	3.5
Pain Disorder	6	3.0

4. Discussion

Epidemiological surveys pertaining to sexual problems in Malaysian women have only begun to surface, in the last few years [13,14]. The prevalence of FSD in this study was 5.5%. This was markedly lower than other studies done in Malaysia, which showed rates of 18.2% to 29.6% [14].

Table 3
Prevalence of FSD by socio-demographic and spouse characteristics.

Variable	Female Sexual Dysfunction (FSD)		χ^2	p-value
	Yes n (%)	No n (%)		
Age (years)				
≥ 50	6 (3.8)	151 (92.6)	2.572	0.109
< 50	5 (11.4)	39 (88.6)		
Education level				
Tertiary	2 (8.3)	22 (91.7)	0.431	0.624
Diploma and below	9 (5.1)	168 (94.9)		
Occupation				
Doctors	1 (5.0)	19 (95.0)	0.001 ^a	1.000
Others	10 (5.5)	171 (94.5)		
GHQ-indicative of anxiety or depression				
Yes	2 (7.1)	26 (92.9)	0.175 ^a	0.653
No	9 (5.2)	164 (94.8)		
Duration of marriage (years)				
< 20	4 (2.9)	133 (97.1)	5.421	0.039
≥ 20	7 (10.7)	57 (89.3)		
Frequency of sexual intercourse				
≥ 2×/week	2 (2.0)	100 (98.0)	4.937	0.043
< once a week	9 (9.1)	90 (90.9)		
Number of children				
≥ 2	0 (0.0)	47 (100.0)	3.552 ^a	0.071
< 2	11 (7.1)	143 (92.9)		
Husband's age (years)				
< 50	3 (2.7)	108 (97.3)	3.626 ^a	0.112
≥ 50	5 (9.6)	47 (90.4)		
Husband smokes				
Yes	4 (7.3)	51 (92.7)	0.995 ^a	0.445
No	4 (3.7)	104 (96.3)		
Husband has medical illnesses				
Yes	4 (9.1)	40 (90.9)	2.259 ^a	0.213
No	4 (3.4)	115 (96.6)		
Husband's ED status				
None to mild	2 (1.4)	138 (98.6)	25.737	<0.001
Mild to moderate	6 (26.2)	17 (73.9)		

^a Fishers Exact Test.

This discrepancy, while significant, is not surprising in view of the differences in the study populations and methodology. Having been conducted in primary care settings and amongst women with medical problems such as diabetes, the rates are expected to be higher considering that the association between medical problems and sexual dysfunction has been well established [24]. While our study was multi-centre, other studies were mostly conducted at a single center or setting.

The rate of FSD in this study may be compared to an epidemiological study done on a sample representative of Denmark whereby the authors observed a rate of 11% [2]. The Danish study used a random sample of adults from a national register out of which 2295 women responded and were subjected to an interview by a trained rater. The rate of 11% from this Danish study was twice that of the present study, and it is quite possibly a reflection of the much lower sample size which affected the power of this study. The use of trained interviewers is also a factor that may improve the detection of FSD but will be quite impossible to conduct in the Malaysian context. This is because of cultural sensitivities with regard to sexuality, whereby people might be reluctant and not forthcoming to divulge the intricacies of their sexuality. Another potential reason for low prevalence of FSD in this study was the fact that most of the partners of the respondents were generally in good health as physical wellbeing of the spouse was an important determinant in the sexual wellbeing of the woman. Only 27% of the partners of the respondents in this study suffered from medical problems, and with low rates of the more severe medical illnesses such as hypertension (8.0%) and diabetes (14.1%) which are well known to be associated with ED [25]. In the present study only a small proportion of men suffered from mild to moderate ED (13.5%), while 0.6% suffered from moderate ED and none had severe ED.

The present study found a significant association between FSD and a lower frequency of sexual intercourse, which has been previously established across various cultures [1,14,26]. The study by Laumann found that women with lower sexual activity were more likely to experience problems related to low sexual desire and arousal. In Malaysia, studies done by Hatta et al. also demonstrated that women with a lower frequency of sexual intercourse (less than 1–2 times a week) were more likely for suffer from FSD. While an association between the frequency of sexual intercourse and FSD was clearly present, how this is mediated, still remains debatable. In the present study, duration of marriage was also found to be significantly associated with FSD, whereby those women who were married for more than twenty years, were at higher risk. This association of longer duration of marriage and sexual problems has been established in other studies conducted globally, highlighting the fact that these problems transcend across cultural and ethnic boundaries [27–29]. The exact mechanism by which the duration of marriage exerts its effect on women's sexual function remains poorly

Table 4
Logistic regression for FSD by selected independent variables.

Variable	β	S.E.	<i>p</i> value	Crude OR	95% CI	Adjusted OR	95% CI
Frequency of sexual intercourse ≥ 2×/week	1.609	0.795	0.043	5.00	1.05–23.76	6.74	0.66–68.54
< once a week							
Duration of marriage (years) < 20	1.407	0.646	0.030	4.08	1.15–14.50	2.49	0.43–14.32
≥ 20							
Husband's ED status None to mild	3.193	0.856	<0.001	24.35	4.55–130.37	27.36	4.71–159.08
Mild to moderate							

(OR=Odds ratio, 95% CI=95% Confidence Interval).

understood. A pragmatic approach would be a multi-factorial one, taking into consideration the quality of the marital relationship, a host of psychosocial variables, age related physiological and medical problems in one or both partners.

In the present study, the effect of the male partner's sexual functioning was also found to have a significant impact on FSD and it was the main predictor for FSD after controlling for other variables. ED in particular has shown to have major repercussions on a woman's sexual well being and previous studies have shown this association [30]. In this study, 65% of the partners of the respondents had some degree of ED, which is a startlingly high figure, considering that a large epidemiological survey has previously found rates of any degree of ED to be 52% [31]. Other studies have shown much lower rates of ED (between 7% and 18%) depending on the age group of men that were sampled, with the prevalence rising with age [1]. Having a partner with ED may serve as a significant stressor to a woman. This may lead to frustration and tension within the relationship, and impact

upon her sexual functioning. Further, in a conservative society, a woman may internalize her problems, and consider it inappropriate to communicate her feelings regarding her sexual problems, leading to a vicious cycle that negatively affects her sexuality. The impact of ED on a woman sexual function is significant and warrants further attention. The importance of this association is in the clinical management of patients who present with sexual problems; when faced with sexual dysfunction. Therapy must involve the couple, as the problems may not be restricted to one partner. There is a tendency for Asian men in particular, to delay seeking help (if at all) for their sexual problems [32]. Hence, a female presenting with sexual complaints presents an opportunity to screen for erectile problems in her partner, which contributes significantly to FSD.

In terms of the limitations, the results may not be applicable to women in general as it was done exclusively among female healthcare workers who are subjected to a range of psychosocial stressors that are a direct consequence

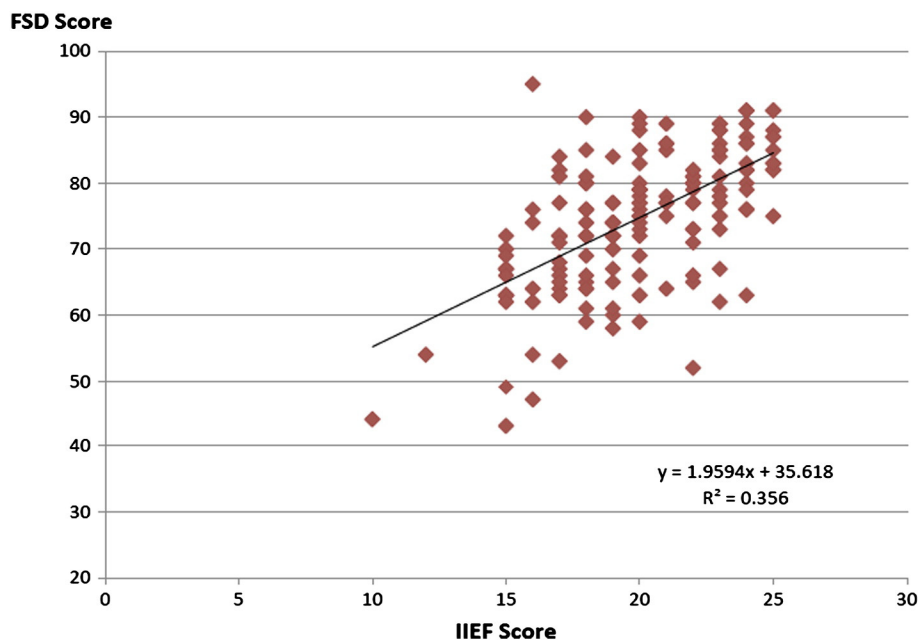


Fig. 1. Scatter plot of correlation between FSD and IIEF-5 score.

of the challenges that are associated with their career [33]. Another limitation of the study may be confounding factors related to the past psychiatric history, i.e. history sexual abuse was not included in the study, which may have influenced the outcome of the sexual functioning among the studied groups. Work shift which could be an important confounding factor in influencing the sexual functioning of the healthcare personnel was also not included in this study.

5. Conclusion

Approximately 1 in 18 healthy female healthcare personnel suffers from FSD. Within specific domains of female sexual function, low sexual desire was the most prevalent, affecting 18.9% of the women. Duration of marriage, frequency of sexual intercourse and ED in the male partner were significantly associated with FSD, with ED being the strongest predictor. This highlights the importance of including partner variables in future studies on FSD, especially in an Asian region like Malaysia.

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