Sexual health of women from a gynaecology clinic in Hong Kong

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Objectives: To identify factors associated with female sexual dysfunction (FSD) among Hong Kong Chinese women in a gynaecology outpatient clinic.

Methods: Chinese women aged 18 to 65 years who had been sexually active in the past 4 weeks before recruitment and attended the gynaecology clinic of Kwong Wah Hospital between October 2020 and July 2021 were invited to participate in a sexual health survey. Participant demographics were collected through the clinical management system. Sexual function in the previous 4 weeks was assessed using the Female Sexual Function Index (FSFI).

Results: 206 women (mean age, 43.6 years) were included in the analysis. The mean total FSFI score was 23.44; 42% of participants were at risk of FSD, with a total FSFI score of ≤23.45. The score was lowest in the sexual desire domain (2.88) and highest in the coital pain domain (4.51). Participants were divided into three age groups based on their reproductive age status: 18 to 35 years (n=44), 36 to 50 years (n=116), and 51 to 65 years (n=46). Although older age groups tended to have higher risks of FSD, the differences between groups were not significant. Specifically, only the satisfaction domain score was lower in the age group of 36 to 50 years than in the age group of 18 to 35 years (4.16 vs 4.61, p=0.01). The coital pain domain score was lower in menopausal women than in premenopausal women (3.76 vs 4.51, p=0.03). Parous women had a lower sexual desire domain score (2.78 vs 3.04, p=0.04) and higher vaginal lubrication domain score (4.42 vs 3.74, p=0.02) than nulliparous women. Women using contraception had a higher vaginal lubrication domain score than women not using contraception (4.47 vs 3.91, p=0.02). Women with distress related to sexual function had a lower total FSFI score (19.74 vs 23.78, p=0.01), lower satisfaction domain score (3.80 vs 4.42, p=0.02), and lower coital pain domain score (3.38 vs 4.51, p=0.01), compared with women without distress related to sexual function.

Conclusion: Although older women tend to be at higher risk of FSD, the correlation between age and FSFI score was not significant. Menopausal women had a lower coital pain domain score; women not using contraception had a lower vaginal lubrication domain score.

Keywords: Risk factors; Sexual dysfunction, physiological; Sexual dysfunctions, psychological; Sexual health; Sexuality; Surveys and questionnaires

Introduction

Sexual health is defined as a state of physical, emotional, mental, and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction, or infirmity¹. Female sexual function plays a crucial role in the well-being and quality of life of women. Female sexual response involves neurovascular, endocrine, and psychosocial factors^{2,3}.

dysfunction (FSD) has been estimated to be 30% to 55%⁶⁻⁸. Differences in the prevalence were due to differences in FSD definitions and assessment tools. In an epidemiological survey in mainland China involving 25 446 women aged 20 to 70 years, the prevalence of FSD was 29.7%⁶. In Hong Kong, the prevalence was 25.6%

Sexual health among Chinese women is underexplored^{4,5}. The prevalence of female sexual

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to 37.9% among married or cohabiting Chinese women aged <49 years^{9,10} and 77.2% among women aged 40 to 60 years¹¹. Of 159 infertile women from two subfertility clinics in Hong Kong, 32.5% were at risk of FSD¹². Of 431 Chinese unmarried young women aged <26 years from sexual health clinics in Hong Kong, 17.6% were at risk of FSD¹³. Of 540 women aged ≥40 years from a community women's centre in Hong Kong, 85.1% (91.2% among postmenopausal women) were at risk of FSD, which is associated with depression, and vaginal dryness and low sexual desire are the most common problems¹⁴. In Hong Kong, among couples undergoing assisted reproductive technologies, 22.6% of wives were at risk of FSD¹⁵.

Age, menopausal status, and sociodemographic factors are risk factors for FSD^{6,16,17}. In mainland Chinese women, being single or divorced, childbearing, and with lower educational attainment are associated with an increased risk of FSD, whereas higher educational attainment and urban residency are associated with a decreased risk of FSD6. In Turkish women, FSD is associated with smoking and marital status but not with educational status or contraceptive drug use¹³. The partner's age is negatively associated with the Female Sexual Function Index (FSFI) score¹⁸. Results are mixed with regard to the use of hormonal contraception on FSD, but non-use of contraception is associated with FSD¹⁹⁻²¹. Diabetes and non-gynaecological cancers negatively affect sexual function, and pelvic inflammatory disease and pelvic organ prolapse increase the risk of FSD6. FSD occurs more frequently in women with diabetes or hypertension^{22,23}. Chronic pain also negatively affects sexual function²⁴, as do depression, anxiety disorders, and schizophrenia²⁵⁻²⁸. We aimed to identify factors associated with FSD among Hong Kong Chinese women seeking medical care for gynaecological conditions.

Methods

Chinese women aged 18 to 65 years who had been sexually active in the past 4 weeks before recruitment and attended the gynaecology clinic of Kwong Wah Hospital between October 2020 and July 2021 were invited to participate in a sexual health survey. Those who could not read Chinese or were of non-Chinese ethnicity were excluded.

Participant demographics were collected through the clinical management system, including age, menopausal status, marital status, education level, employment status, religious belief, partner's age, and parity, as well as gynaecological conditions (menstrual disorders, chronic pelvic pain or dysmenorrhoea, pelvic mass, urinary or prolapse symptoms, vaginal discharge, and post-coital bleeding), hormonal treatments, medical comorbidities (hypertension, diabetes, chronic pain, and non-gynaecological cancers), and psychiatric history (depression, anxiety disorders, and schizophrenia). Sexuality issues were assessed using yes-or-no questions, including current contraception use, perceived distress related to sexual function, communication dynamics within relationships, and a history of seeking medical care for sexual dysfunction.

Sexual function in the previous 4 weeks was assessed using the FSFI, which comprises 19 questions in six domains: sexual desire, arousal, vaginal lubrication, orgasm, satisfaction, and coital pain²⁹. Each item is scored from 0 to 5. Individual domain scores are the sum of scores of questions under the same domain multiplied by a factor ranging from 0.3 to 0.6. Total FSFI scores range from 2 to 36; higher scores indicate less risk of FSD. The FSFI has been validated in an urban Chinese population in Taiwan with high reliability (Cronbach's α=0.96) and validity (87.1%)30. Different FSFI cut-off scores have been used to identify FSD among women in different ethnic groups or geographical regions^{31,32}. The cut-off score of 23.45 had 66.9% sensitivity and 72.7% specificity for identifying FSD among urban Chinese women³³. For the FSFI domains of sexual desire, arousal, vaginal lubrication, orgasm, and coital pain, the cut-off scores were $\leq 2.7, \leq 3.15, \leq 4.05, \leq 3.8$, and ≤ 3.8 , respectively³³. A cut-off score for the satisfaction domain was not established owing to a lack of data based on DSM-IV. The above cut-offs were used in our study, because of similar urban and cultural backgrounds of the sample.

Sample size was calculated based on a previous territory-wide survey in Hong Kong involving 1510 women⁹, of whom 37.9% had FSD based on the DSM-IV. Assuming that 37.9% of women are at risk of FSD, with an estimated precision of 10% (d=0.1) at two-tailed 5% significance (z=1.96), the estimated sample size was 92 using the Cochran's sample size formula³⁴. Assuming a response rate of 60% and an incomplete questionnaire rate of 20% owing to the COVID pandemic, the estimated sample size was 192.

FSFI score of ≤ 23.45 was defined as at risk of FSD. Women at risk and not at risk of FSD were compared using the Student's t test or Chi-squared test. Analysis of

variance was performed. Ap value of <0.05 was considered statistically significant. Multiple regression analysis was performed to identify factors associated with FSD. Pearson's correlation was used to determine whether the woman's age or the partner's age affected female sexual function. Levene's test for equality of variances and Student's *t* test were used to detect any difference in FSFI total score and domain scores across different groups. Analyses were performed using the SPSS (Windows version 24.0; IBM Corp, Armonk [NY], United States).

Results

Of 244 women recruited, 227 (93%) responded. Of these, 21 were excluded owing to not being sexually active in the past 4 weeks (n=1), invalid consent (n=3), and incomplete questionnaires (n=17). The remaining 206 women (mean age, 43.6±8.9 years) were included in the analysis (Table 1). The mean age of their partners was 47.0±10.3 years. The mean follow-up duration in the gynaecology clinic was 42.7±42.2 months. Reasons for attending the gynaecology clinic included menstrual disorder (n=134), dysmenorrhoea or chronic pelvic pain (n=32), a pelvic mass (n=111), genital prolapse (n=4), vaginal discharge (n=4), post-coital bleeding (n=12), and other reasons (n=77), for example intra-uterine contraceptive device removal, abnormal pap smear, and vulval conditions. Participants could have multiple reasons for attending the gynaecology clinic.

The total FSFI score ranged from 2.8 to 33.6 (mean, 23.44 \pm 6.18); 42% of participants were at risk of FSD, with a total FSFI score of \leq 23.45. The score was lowest in the sexual desire domain (2.88) and highest in the coital pain domain (4.51).

Participants were divided into three age groups based on their reproductive age status: 18 to 35 years (n=44), 36 to 50 years (n=116), and 51 to 65 years (n=46). Although older age groups tended to have higher risks of FSD, the differences between groups were not significant (Table 2). Specifically, only the satisfaction domain score was lower in the age group of 36 to 50 years than in the age group of 18 to 35 years (4.16 vs 4.61, p=0.01, Table 3). The coital pain domain score was lower in menopausal women than in premenopausal women (3.76 vs 4.51, p=0.03). Parous women had a lower sexual desire domain score (2.78 vs 3.04, p=0.04) and higher vaginal lubrication domain score (4.42 vs 3.74, p=0.02) than nulliparous women. Women using contraception had a higher vaginal lubrication domain score than women not using contraception (4.47).

vs 3.91, p=0.02). Women with distress related to sexual function had a lower total FSFI score (19.74 vs 23.78, p=0.01), lower satisfaction domain score (3.80 vs 4.42, p=0.02), and lower coital pain domain score (3.38 vs 4.51, p=0.01), compared with women without distress related to sexual function.

The FSFI total and subscale scores were not associated with communication dynamics within relationships, underlying gynaecological conditions, follow-up duration, or medical comorbidities. The number of women with psychiatric conditions (depression, anxiety neurosis, and schizophrenia) was too small for comparison.

Discussion

In Asian populations (China, Turkey, India, Japan), the prevalence of FSD has been reported to be 26.1% to $73.2\%^{33,35-37}$, consistent with the 42% (29.5% among the age group of 18 to 35 years, 44.8% among the age group of 36 to 50 years, and 47.8% among the age group of 51 to 65 years) reported in the present study. Discrepancies in the prevalence of FSD among studies can be explained by differences in recruitment, assessment, and cut-off scores. Our sample was recruited from a gynaecology clinic during the COVID pandemic. Women who had not been sexually active in the past 4 weeks were excluded; this may underestimate the prevalence of FSD. The FSFI questionnaire is merely an assessment tool for female sexual function, rather than a diagnostic tool for FSD. Thus, it cannot be used to determine the prevalence of FSD. The Taiwan version of the FSFI questionnaire has not been validated in Hong Kong women.

In the present study, 21.4% and 56.3% of participants were in the age groups of 18 to 35 years and 36 to 50 years, respectively, and 29.5% and 44.8% of them were at risk of FSD, respectively. Of these women, 40.6% were at risk of FSD. This rate was higher than that reported in a previous Hong Kong study. The discrepancy can be explained by our specific recruitment of women seeking medical care for gynaecological conditions. These women are potentially at higher risk of FSD. In addition, the higher rate of FSD among reproductive age groups can be explained by the gynaecology clinic settings, which are characterised by more frequent interactions, closer doctorpatient relationships, better rapport, and increased openness in discussing sexual problems. Moreover, the recruitment was conducted during the COVID pandemic. The increased societal stress during the pandemic is associated with lower FSFI scores on sexual functioning and activity³⁸.

Table 1. Comparisons of women at risk or not at risk of female sexual dysfunction (FSD) based on the Female Sexual Function Index (FSFI)

Variable	No. (%) of	No. (%) of	p Value	
	participants ⁻	At risk of FSD (FSFI score ≤23.45) [n=87]	Not at risk of FSD (FSFI score >23.45) [n=119]	
Age group, y				0.15
18-35	44 (21.4)	13 (29.5)	31 (70.5)	
36-50	116 (56.3)	52 (44.8)	64 (55.2)	
51-65	46 (22.3)	22 (47.8)	24 (52.2)	
Menopausal status				0.06
Premenopausal	179 (86.9)	71 (39.7)	108 (60.3)	
Menopausal	27 (13.1)	16 (59.3)	11 (40.7)	
Marital status				0.90
Married	176 (85.4)	74 (42.0)	102 (58.0)	
Single	30 (14.6)	13 (43.3)	17 (56.7)	
Education level				0.04
Primary or below	12 (5.8)	9 (75.0)	3 (25.0)	
Secondary	136 (66.0)	55 (40.4)	81 (59.6)	
Tertiary or above	58 (28.2)	21 (36.2)	37 (63.8)	
Occupation				0.75
Employed	142 (68.9)	61 (43.0)	81 (57.0)	
Unemployed	64 (31.1)	26 (40.6)	38 (59.4)	
Religious belief				0.24
Yes	53 (25.7)	25 (47.2)	28 (52.8)	
No	153 (74.3)	62 (40.5)	91 (59.5)	
Parity				0.29
Parous	150 (72.8)	60 (40.0)	90 (60.0)	
Nulliparous	56 (27.2)	27 (48.2)	29 (51.8)	
Distress related to sexual function issues				0.09
Yes	19 (9.2)	11 (57.9)	8 (42.1)	
No	187 (90.8)	74 (39.6)	113 (60.4)	
Talked with partner about sexual function issues				0.27
Yes	67 (32.5)	32 (47.8)	35 (52.2)	
No	139 (67.5)	55 (39.6)	84 (60.4)	
Had medical consultation for sexual function issues				1
Yes	7 (3.4)	3 (42.9)	4 (57.1)	
No	199 (96.6)	84 (42.2)	115 (57.8)	
Used contraception				0.11
Yes	122 (59.2)	46 (37.7)	76 (62.3)	
No	84 (40.8)	41 (48.8)	43 (51.2)	
Medical comorbidity				0.84
Yes	112 (54.4)	48 (42.9)	64 (57.1)	
No	94 (45.6)	39 (41.5)	55 (58.5)	
Psychiatric history				0.15
Yes	13 (6.3)	3 (23.1)	10 (76.9)	
No	193 (93.7)	84 (43.5)	109 (56.5)	
Hormone treatment				0.70
Yes	38 (18.4)	15 (39.5)	23 (60.5)	
No	168 (81.6)	72 (42.9)	96 (57.1)	

Table 2. Proportions of participants at risk of female sexual dysfunction (FSD) in each domain of the Female Sexual Function Index (FSFI)

Age group, y	No. (%) of participants at risk of FSD in each domain of the FSFI							
	Sexual desire (cut- off score, ≤2.7)	Arousal (cut-off score, ≤3.15)	Vaginal lubrication (cut-off score, ≤4.05)	Orgasm (cut-off score, ≤3.8)	Satisfaction	Coital pain (cut-off score, ≤3.8)	Overall	
18-35 (n=44)	17 (38.6)	11 (25.0)	12 (27.3)	16 (36.4)	-	9 (20.5)	13 (29.5)	
36-50 (n=116)	58 (50.0)	39 (33.6)	39 (33.6)	40 (34.5)	-	21 (18.1)	52 (44.8)	
51-65 (n=46)	23 (50.0)	17 (37.0)	18 (39.1)	14 (30.4)	-	19 (41.3)	22 (47.8)	
Overall	98 (47.6)	67 (32.5)	69 (33.5)	70 (34.0)	-	49 (23.8)	87 (42.2)	

Table 3. Female Sexual Function Index (FSFI) domain scores in different comparison groups

	Mean±standard deviation FSFI score						
	Sexual desire	Arousal	Vaginal lubrication	Orgasm	Satisfaction	Coital pain	Overall
All participants (n=206)	2.88±0.82	3.41±1.20	4.32±1.65	3.98±1.37	4.35±1.10	4.51±1.56	23.44±6.18
Age group, y							
18-35 (n=44)	3.00 ± 0.95	3.65±1.23	4.54±1.40	4.12±1.32	4.61±0.95	4.68 ± 1.52	24.60±5.94
36-50 (n=116)	2.87±0.80	3.65±1.24	4.34±1.84	3.92±1.43	4.16±1.11	4.57±1.56	23.20±6.37
51-65 (n=46)	2.78 ± 0.73	3.32±1.05	4.04±1.30	3.99±1.29	4.60±1.12	4.21±1.57	22.90±5.91
p Value	0.44	0.32	0.35	0.71	0.01	0.30	0.37
Menopausal status							
Premenopausal (n=179)	2.90±0.85	3.43±1.24	4.38±1.68	4.00±1.40	4.34±1.09	4.51±1.71	23.68±6.29
Menopausal (n=27)	2.76±0.63	3.24 ± 0.86	3.87±1.35	3.81±1.15	4.44±1.15	3.76±1.37	21.9±5.20
p Value	0.41	0.46	0.13	0.49	0.64	0.03	0.16
Parity							
Parous (n=150)	2.78±0.79	1.13±0.90	4.42±1.60	3.99 ± 1.32	4.43±1.09	4.57±1.53	23.98±5.40
Nulliparous (n=56)	3.04±0.91	1.58±0.21	3.74±1.93	3.59±1.81	4.21±1.14	4.01±2.00	22.00±7.77
p Value	0.04	0.26	0.02	0.08	0.20	0.06	0.08
Used contraception							
Yes (n=122)	2.90±0.82	3.52±1.16	4.47±1.22	4.07±1.31	4.47±1.53	4.60±1.53	24.10±5.88
No (n=84)	2.85 ± 0.82	3.24±1.23	3.91±1.43	3.85±1.45	4.19±1.20	4.39±1.59	22.50±6.51
p Value	0.69	0.09	0.02	0.26	0.07	0.34	0.07
Distress related to sexual function issues							
Yes (n=19)	2.72±1.12	2.80±1.28	3.55±1.50	3.44±1.57	3.80±1.30	3.38±1.87	19.74±6.86
No (n=187)	2.86±0.80	3.38±1.25	4.30±1.73	3.92±1.46	4.42±1.07	4.51±1.64	23.78±6.02
p Value	0.48	0.06	0.08	0.19	0.02	0.01	0.01

In the present study, despite lower FSFI scores tended to be associated with increasing age, correlation was not significant between age and FSFI scores in all domains, except for satisfaction. Specifically, only the satisfaction domain score was lower in the age group of

36 to 50 years than in the age group of 18 to 35 years. Although sexual function may decline with age, women aged 51 to 65 years may have more stable relationships or a better understanding of their own sexual needs, thereby having a higher satisfaction domain score than women

aged 36 to 50 years. In contrast, in a survey of female sexual function in a Dutch population, increasing age was significantly associated with lower FSFI total and subscale scores, except for the satisfaction domain³⁹.

In the present study, premenopausal and menopausal women were comparable in terms of the FSFI total score, although menopausal women scored significantly lower in the coital pain domain. However, menopause is a risk factor for FSD^{6,16,17}. Menopausal women are more likely to experience FSD secondary to vaginal dryness and pain, compared with premenopausal women¹⁴. In the present study, premenopausal women were of greater heterogeneity because of a wider age range and a larger number, whereas the number of menopausal women was small. This may decrease the statistical power for assessing the effect of menopause on FSFI scores.

In the present study, women not using contraception had a higher risk of lubrication problems. Non-use of contraception is associated with FSD and dissatisfaction, possibly owing to concerns of unintended pregnancy¹⁹. In an Italian study, a lower total FSFI score was associated with women not using contraceptives²⁰. Caution should be exercised when interpreting the association between lower lubrication domain score and non-use of contraception, owing to confounders (eg, age).

In the present study, 9.2% of women reported distress related to sexual function, but only 3.4% of them had sought medical consultations. In Chinese culture, sex is generally a taboo topic and perceived as a private matter⁵. Women with FSD are reluctant to seek treatment, resulting in underdiagnosis and undertreatment. Distress related to sexual function should have been evaluated using validated psychometric tools (such as the Female Sexual Distress Scale⁴⁰), rather than yes-or-no questions.

In the present study, the FSFI total and subscale scores were not associated with underlying gynaecological conditions or medical comorbidities. In contrast, FSD has been reported to be associated with gynaecological diseases (pelvic inflammatory disease and pelvic organ prolapse), medical conditions (hypertension and diabetes), and psychiatric conditions^{6,22-28}. The differences can be explained by cultural differences and the small sample size in our study.

FSD can negatively impact the women's quality of life. Gynaecologists can be the first point of contact for women at risk of sexual dysfunction. The use of FSFI to screen women at risk of FSD may facilitate timely referral to sexual health specialists. A multidisciplinary approach involving psychiatrists, endocrinologists, psychologists, and sex therapists is imperative for holistic care. The Family Planning Association of Hong Kong offers a wide range of services for female sexual health, including talks on sex and intimacy, sex coaching, and sexual dysfunction therapy. The Community Rehabilitation Service Support Centre in Queen Elizabeth Hospital receives referrals from doctors, nurses, allied health professionals, and medical social workers, and provides specialised services including occupational therapy and physiotherapy on sexuality counselling and rehabilitation.

The present study has limitations. Although the sample size was adequate for determining factors associated with FSD, the sample size may be inadequate for subgroup analyses. The sample was recruited from a gynaecology clinic. The findings may not be generalised to the general population. The distribution of the three age groups was uneven and the number of participants was smaller in the age groups of 18 to 35 years and 51 to 65 years. Distress related to sexual function should have been evaluated using validated psychometric tools (such as the Female Sexual Distress Scale⁴⁰), rather than yes-or-no questions. Communication dynamics and health-seeking behaviours should have been evaluated using open-ended questions, rather than yes-or-no questions. Open-ended questions should also have been used to evaluate types of contraception use, specific gynaecological diseases, and types of hormones used. There may have been selection bias during recruitment, as sexual function is a sensitive issue, especially for Chinese women. The Taiwan version of the FSFI has not been validated in Hong Kong women; cut-off scores for Hong Kong women have not been established.

Conclusion

Of Hong Kong gynaecology patients, 42% are at risk of FSD. Although older women tend to be at higher risk of FSD, the correlation between age and FSFI score was not significant. Menopausal women had a lower coital pain domain score; women not using contraception had a lower vaginal lubrication domain score.

Contributors

WCL, TWL, JCPW and SSWN designed the study. AMHC, WKYY and PW acquired the data. AMHC and WKYY analysed the data. PW and KKWH drafted the manuscript. WCL and TWL critically revised the manuscript for important intellectual content. All authors had full

access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have no conflicts of interest to disclose.

Funding and support

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability

All data generated or analysed during the present

study are available from the corresponding author on reasonable request.

Ethics approval

The study was approved by the Kowloon Central/Kowloon East Cluster Research Ethics Committee (reference: KC/KE-2019-0248/ER-3). The patients provided written informed consent for participating in the questionnaire study and for publication.

Acknowledgment

The authors thank Dr Chang Shiow-Ru for permitting us to use the Taiwan version of the FSFI.

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