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Original Article

Prevalence of Sexual Dysfunction among Infertile Women Attending Gynaecology Outpatient Clinic in a Tertiary Hospital in Northwest Nigeria

Kasheem AdeniyiAminu[1], Hauwa ShuaibuUmar [1], Nana Hauwa Madugu[1], Suleiman Usman[2], Shafa'atu Ismail Sada[1], Rabi'at Muhammad Aliyu[1],

[1]Department of Obstetrics and Gynaecology, Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, Kaduna State, Nigeria. [2]Department of Community Medicine, ABUTH, Zaria, Kaduna State, Nigeria.

Abstract

Background: Infertility adversely affects sexual well-being, but the prevalence and correlates of female sexual dysfunction (FSD) among infertile women in northwest Nigeria remain understudied. This study assessed FSD prevalence and associated factors in women attending gynaecology outpatient clinics of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria.

Methodology: A descriptive cross-sectional study of 194 sexually active women with infertility recruited by systematic sampling from the ABUTH gynaecology outpatient clinics between January and May 2021. Data were collected using a semi-structured questionnaire and the 19-item Female Sexual Function Index (FSFI), which was translated into Hausa for non-literate respondents. FSD was defined by FSFI scores ≤26.55. Associations were tested with χ^2/Fisher's exact tests and multivariable logistic regression to determine adjusted odds ratios (aOR) at 95% confidence intervals (CI). Statistical significance was set at $p<0.05$.

Results: The overall prevalence of FSD (FSFI ≤26.55) was 56.7% (110/194). Hypoactive sexual desire disorder was the most common.The significant independent predictors of FSD werepremarital sexual abuse (aOR = 5.77, p = 0.036), male-factor infertility (aOR = 4.94, p = 0.006), and spousal erectile dysfunction (aOR = 9.05, p = <0.001).

Conclusion: Over half of infertile women at ABUTH reported sexual dysfunction, mainly low desire. These findings emphasize the importance of integrating routine psychosexual screening and counseling into infertility care to improve treatment outcomes and quality of life.

Keywords: Prevalence, sexual dysfunction, infertile female.

***Correspondence:** Dr Kasheem Adeniyi Aminu, Senior Registrar, Department of Obstetrics and Gynaecology, Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State, Nigeria, Email: sen.kasheem06@gmail.com, Tel: +2347065679562

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Introduction

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5),female sexual dysfunction (FSD) is defined as a persistent difficulty in responding to sexual stimulation or experiencing sexual pleasure lasting at least six months, causing significant distress or relationship problems.[1] It involves various sexual challenges causing individual or couple distress. To qualify as a disorder, symptoms must last six months, occur in at least 75% of sexual encounters, and result in notable distress impacting daily life.[1,2]FSDaffects women across all ages, but the rate of female sexual distress rises during midlife, increasing from about 10% in women aged 18–44 years to a peak of roughly 15% among those aged 45–64 years.[2] Globally, about 41% of women of reproductive age experience sexual dysfunction,[3] while 46.7%[4] was reported among Nigerian women.

Infertility accounts for over 60% of gynaecologic clinic consultations in Nigeria,[5] with varied infertility prevalence rates across NorthernNigeria ranging from 23.9% [6] in Bauchi, 15.7% [7] in Sokoto, and 16% [8] in Kano. Infertility represents a significant source of stress in one's life and can have adverse effects on an individual's sexual function.[9] Research indicates that sexual dysfunction is more prevalent among women with infertility. [10]The stress associated with infertility can adversely affect marital satisfaction and sexual health. In addition, the process of investigating, diagnosing, and treating infertility can contribute to or worsen existing sexual problems, potentially becoming a contributing factor to infertility itself.[5]However, it is difficult to determine whether sexual dysfunction is a cause or a consequence of infertility, as it can be bidirectional.[10] Therefore, interventions addressing psychosexual concerns must be included in the process of evaluating and treating couples who are experiencing infertility.[11]

Research on FSD among infertile women in Northern Nigeria is scarce despite thehigh burden of infertility and evidence suggesting a bidirectional relationship between infertility and sexual dysfunction. An understanding of the burden of FSD in this population is crucial to ensuring holistic infertility management and guiding targeted interventions.The aim of this study was to determine the prevalence of sexual dysfunction and associated factors among infertile women attending the Gynaecology outpatient clinics of Ahmadu Bello University Teaching Hospital, Zaria.

Methodology

This descriptive cross-sectional study involved 194 consenting women with primary or secondary infertility, at various stages of evaluation or treatment, who had been sexually active in the preceding four weeks. Participants were recruited from the Gynaecology Outpatient Clinic of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, from 20th January2021 to 20th May 2021.

Women with gynaecological conditions or prior surgical procedures known to affect sexual function, such as malignancies, genital fistula, prolapse, female circumcision, or pelvic floor surgery, were excluded.

Sample size: A sample size of 194 participants was calculated using the Cochrane formula for cross-sectional study in which the proportion is a qualitative variable:

$n= Z^2 P(1-p)/d^2$[12]

where n=minimum sample size, Z=standard normal deviate at 95% confidence interval (1.96), p = prevalence of hypoactive sexual desire among infertile women in Zaria (0.885),[13] and margin of error d = 0.05.

A 10% non-response allowance was applied; the final target sample was 194.

Sampling technique: Systematic sampling was used for participants' selection. Clinic records showed that an average of 25 infertile women attended the gynaecology outpatient clinic per week. Over the 4-month study period (≈16 weeks), the estimated sampling population was 400 women. With a calculated

sample size of 194, the sampling interval was k = sampling population/sample size ≈ 2. At the start of each week, a random start number (2) was chosen, after which every 2nd woman on the clinic attendance register was selected. If an eligible selected woman declined to participation, the next woman on the list was approached. Recruitment continued each week until the required sample size of 194 was obtained

Data collection: The data was collected using a semi-structured questionnaire comprising socio-demographic information and the Female Sexual Function Index (FSFI),[14] a validated 19-item, multidimensional self-report tool assessing six domains of sexual function over the preceding four weeks: desire, arousal, lubrication, orgasm, satisfaction, and pain. Each domain score was calculated using a specific factor ratio (0.6, 0.3, 0.3, 0.4, 0.4, 0.4, respectively, with a total FSFI score ranging from 2 to 36. The FSFI demonstrated high test-retest reliability (r = 0.79–0.86) and strong internal consistency (Cronbach's $\alpha \geq 0.82$). Sexual dysfunction is defined by FSFI Scores ≤26.55.

Data collection and quality control

The FSFI was self-administered where possible; for non-literate respondents, the trained female research assistants read the Hausa FSFI verbatim and recorded responses, while other sections were completed via interviewer administration by the principal investigator, assisted by trained research assistants who were trained on neutral phrasing, confidentiality and how to manage participant distress. Data was cross-checkedto ensure accuracy.

FSFI translation and validation

For participants who were non-literate or preferred Hausa, the FSFI was translated into Hausa using a standard linguistic validation process. Two independent bilingual translators performed forward translation into Hausa; discrepancies were reconciled by a panel of three clinicians (two Obstetricians and gynaecologists and one Psychiatrist) experienced in sexual health to produce a single Hausa version. This Hausa version was then back-translated into English by an independent bilingual translator blinded to the original questionnaire. The back-translation was compared with the original FSFI, and adjustments were made to ensure conceptual equivalence. Finally, the Hausa version underwent pilot testing in 20 women with similar socio-demographic characteristics to assess clarity and cultural appropriateness; minor wording edits were made accordingly. Internal consistency (Cronbach's α) on pilot data was assessed and found acceptable (>0.80).

Handling recalls and social desirability bias

To minimize recall and social-desirability bias, we used the following measures: the FSFI was self-administered where possible and verbatim Hausa translations were read by trained female research assistants for non-literate participants; interviews were conducted in private; research staff were trained to use neutral phrasing and to maintain confidentiality; recall periods were restricted to those specified by the validated FSFI instrument (prior 4 weeks); participants were reassured that responses were anonymous and would not affect their care; and data collection forms did not record identifying information.

Statistical analysis

Data was analyzed using IBM SPSS version 25. Bivariate associations were assessed with χ^2 or Fisher's exact test. Variables with $p<0.05$ at bivariate analysis, plus age and education, were entered into a multivariable binary logistic regression model to estimate adjusted odds ratios (aOR) with 95% CIs. Model fit was assessed using the Hosmer–Lemeshow goodness-of-fit test. Statistical significance was set at $P <0.05$.

Ethical considerations

Ethical approval was obtained from the ABUTH Health Research Ethics Committee (ABUTHZ/HREC/F31/2021), and all participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time without consequences to their care. Written informed consent was obtained from each participant before enrolment.

Confidentiality of the participants was ensured by anonymizing all data, conducting the interviews in private settings, and securely storing both paper and electronic records with restricted access to the research team.

Results

A total of 194 women at various stages of infertility evaluation and treatment were recruited by a systematic sampling technique over the study period. The response rate was 100%. The mean age of the respondents was 31.24years (SD 5.053) while the modal age group was (30-39 years). Majority of the respondents (93.3%) were 39 years and below. About 48.9% of the respondents were Hausa/Fulani,and Islam was the predominant religion of the respondents. Majority of the respondents (79.8%) were in a monogamous family setting, and almost half (49.5%) had tertiary education.

Table 1: Socio-demographic Characteristics of Respondents (n = 194)

Variable	Frequency	Percent (%)
Age (years)		
20–29	70	36.1
30–39	111	57.2
≥40	13	6.7
Tribe		
Hausa/Fulani	95	48.9
Yoruba	28	14.4
Igbo	8	4.1
Northern minority tribes	54	27.8
Southern minority tribes	9	4.6
Religion		
Islam	125	64.4
Christianity	69	35.6
Marriage type		
Monogamous	154	79.4
Polygamous	40	20.6
Highest education level		
No formal/Qur'anic	6	3.1
Primary	15	7.7

Secondary	77	39.7
Tertiary	96	49.5
Occupation		
Housewife	70	36.1
Civil servant	34	17.5
Professional	21	10.8
Artisan	18	9.3
Student	11	5.7
Business	34	17.5
Unemployed	6	3.1

The average duration of marriage was 6.63 years, and the mean duration of infertility was 4.58 years. The respondents had been undergoing infertility treatment for an average of 2.20 years, and the mean BMI was 25.36 kg/m².

Table 2: Summary of key continuous demographic and clinical variables (n = 194)

	Minimum	Maximum	Mean	Std. D.
Duration of marriage(years)	1	16	6.634	3.373
BMI (Kg/m2)	17.57	33.05	25.368	3.129
Duration of infertility(years)	0.33	16	4.586	2.647
Duration of infertility treatment(years)	0	13	2.193	1.809
Age of Husband (years)	26	55	38.891	5.781
Explanatory notes: Std. D.- Standard deviation				

More than half of the respondents (56.7%) had Female Sexual Dysfunction defined by FSFI score ≤26.55.

Table 3: Prevalence of sexual dysfunction among respondents (n=194).

FSFI score	Frequency	Percent
Normal sexual function(FSFI >26.55) at 95% CI	84	43.3 (36.3-50.3)
Sexual dysfunction(FSFI ≤26.55)at 95% CI	110	56.7 (49.7-63.7)
Total	194	100
Explanatory notes: FSFI score- Female sexual function index score, CI- Confidence interval		

The mean desire score (3.765) among respondents was the lowest while mean pain score (4.913) was the highest.

Table 4: Mean domain score among respondents (n=194)

Sexual Domain	Minimum	Maximum	Mean	Std. Deviation
Desire score	0.6	6	3.7655	0.78218
Arousal score	1.8	6	4.0082	0.72999
Lubrication score	1.8	6	4.4505	0.68721
Orgasm score	1.2	6	3.9345	1.04266
Satisfaction score	1.6	6	4.1722	1.09173
Pain score	2	6	4.9134	1.0939

The history of at least one previous induced abortion (P=0.035), premarital sexual abuse (P=0.027), relationship with spouse (P=0.004) and presence of erectile dysfunction in husband (P=0.034) were found to have statistically significant associations with sexual dysfunction among the participants. Also, there was a statistically significant association between the cause of infertility (P<0.0001) and the occurrence of FSD.

Table 5: Factors affecting sexual function among the respondents (n=194)

Risk Factor	FSFI >26.55	FSFI ≤26.55	Test Statistic	p-value
History of abortion			Fisher's Exact = 7.251	0.035
None	79	91		
1	5	12		
≥2	0	7		
Premarital sexual abuse			$\chi^2 = 5.946$	0.027
Yes	2	13		
No	82	97		

Erectile dysfunction in spouse			$\chi^2 = 3.965$	0.034
Yes	11	27		
No	73	83		
Spousal relationship			Fisher's Exact = 12.921	0.004
Cordial	67	70		
Tolerable	12	28		
Patriarchal	2	11		
Loveless	3	0		
Difficult	0	1		
Explanatory notes: FSFI- Female sexual function index, χ^2- chi-square test				

In the multivariable logistic regression analysis, three variables remained significant predictors of FSD. Women with a history of premarital sexual abuse had significantly higher odds of experiencing sexual dysfunction (AOR = 5.77, p = 0.036). Similarly, those with male-factor infertility were more likely to report sexual dysfunction compared to other causes of infertility (aOR = 4.94, p = 0.006). However, the strongest predictor of FSD was the presence of erectile dysfunction in the husband, which increased the likelihood of female sexual dysfunction more than seven-fold (AOR = 9.05, p = <0.001).

Table 6: Multivariable logistic regression analysis of factors associated with FSD Among Infertile Women (n=194)

Predictor Variable	B	SE	Wald	Df	*p*-value	Exp(B)
Premarital sexual abuse	1.752	0.836	4.386	1	0.036	5.77
Erectile dysfunction in husband	2.202	0.605	13.231	1	<0.001	9.05
Cause of infertility	—	—	25.202	4	<0.001	—
Male factor	1.597	0.578	7.625	1	0.006	4.94
Female factor	-0.62	0.82	0.571	1	0.45	0.54
Combined factor	-0.541	0.771	0.494	1	0.482	0.58
Unexplained	-0.399	0.723	0.304	1	0.581	0.67
Education level (overall test)	—	—	3.183	3	0.364	—
Primary	0.975	1.041	0.877	1	0.349	2.65
Secondary	1.295	0.943	1.886	1	0.17	3.65
Tertiary	0.806	0.95	0.72	1	0.396	2.24

Duration of infertility (years)	-0.001	0.035	0.001	1	0.977	1
Constant	-1.833	1.314	1.946	1	0.163	0.16
Explanatory notes: B- Regression Coefficient, SE- Standard Error, df- Degrees of Freedom, Exp(B)- Adjusted Odds Ratio, Wald- significance of each predictor in the model, P-value-						

Summary of key findings

Over half (56.7%) of the women had FSD as defined by an FSFI score ≤26.55.The desire domain was the most affected sexual function domain, while pain had the highest mean score. Additionally,a history of induced abortion, premarital sexual abuse, poor spousal relationship, presence of erectile dysfunction (ED) in the husband, and female-factor infertility were significantly associated with sexual dysfunction.

Furthermore, multivariable logistic regression showed that women with premarital sexual abuse had about six times higher odds of FSD, those with male-factor infertility had over four times higher odds of FSD, and the strongest predictor was husband's erectile dysfunction, which increased the odds of FSD more than nine-folds.

Discussion

This study found a high prevalence of Female Sexual Dysfunction (FSD) among infertile women, exceeding the global prevalence of 41% reported among premenopausal women in a recent meta-analysis but was consistent with the higher rates observed in developing regionscorrelated with greater gender inequality at the national level.[3]The prevalence observed in our study is consistent with findings from regions characterized by similar sociocultural and gender-related constraints. Northern Nigeria, being predominantly Muslim, culturally conservative, and markedly patriarchal, presents gender norms that often limit women's autonomy in sexual decision-making and restrict open discussions about sexual health.[6]These dynamics, compounded by entrenched gender inequality and infertility-related emotional distress,may increase women's vulnerability to sexual dysfunction and reduce their likelihood of seeking support.

The increased burden in this population also reflects the psychological and relationship strain associated with infertility. Previous studies demonstrate that infertility can precipitate anxiety, depressive symptoms, low self-esteem, and marital tension, [15,16] impairing sexual desire, arousal, and satisfaction. In addition, timed intercourse and the pressure to conceive may cause sexual activity to feel obligatory rather than intimate, thereby reducing spontaneity and emotional connection between partners.[16]

The prevalence of FSD in this cohort aligns with findings from Iran,[17]but is lower than findings from Turkey,[18]and Southwest Nigeria.[5] The differences in prevalence across studies may result from variations in sample characteristics, socio-cultural norms, and exclusion of women with medical or gynecological conditions that independently affect sexual function. In Northern Nigeria, cultural and religious norms often limit open discussion of sexual concerns, which may contribute to underreporting or delayed recognition of dysfunction.[6]

Among the FSFI domains, the sexual desire domain was the most affected, consistent with findings from Kano.[19] Infertility may alter women's perceptions of sexual activity, especially when pregnancy becomes the principal goal of intercourse. Repeated unsuccessful attempts to conceive may therefore diminish motivation for sexual engagement.[20]

Multivariable analysis identified three factors that independently increased the likelihood of FSD after adjusting for age and education: History of premarital sexual abuse (aOR = 5.77, p = 0.036), male-factor infertility (aOR = 4.94, p = 0.006), and Spousal erectile dysfunction (aOR = 9.05, p = <0.001). Prior

history of sexual abuse is a well-recognized determinant of later sexual difficulties. [21,22] Survivors may experience impaired intimacy, fear, avoidance of sexual activity, or intrusive recollections, particularly in emotionally demanding contexts such as infertility treatment. The strong association observed here reinforces the need for trauma-informed approaches in reproductive health services.

Male-factor infertility significantly increased the odds of FSD in this study, a finding consistent with evidence showing that male infertility often leads to psychological distress, increased levels of anxiety, depressive symptoms, feelings of guilt, perceived inadequacy, low self-esteem, and social isolation.[23] Also, the ongoing uncertainty and repeated cycles of hope and disappointment inherent in infertility treatments can further exacerbate psychological distress.[24]Additionally, prolonged period of male infertility increases the risk of male sexual dysfunction including low libido, performance anxiety, and erectile dysfunction,[25] ultimately increasing the risk of FSD in their female partner.

Spousal erectile dysfunction exhibited the strongest association with FSD in this study. This finding is consistent with evidence from China showing that dissatisfaction with a partner's sexual ability and partner-related sexual difficulties are independent predictors of FSD. [26]Erectile dysfunction can reduce sexual frequency, generate relationship tension, and diminish arousal and sexual satisfaction within the couple.

Other variables including age, level of education, type of infertility, female factor infertility, and duration of infertility, were not independently associated with FSD, consistent with some studies [10] but differing from others reporting stronger associations with infertility duration or secondary infertility.[27] These discrepancies likely reflect differences in cultural context, study design, and operational definitions across populations.

Finally, the interpretation of these findings must consider the measurement validity of the FSFI within this sociocultural context of Northwest Nigeria. Although the FSFI is a well-validated instrument internationally, its use in Northern Nigeria, where discussions of sexuality are culturally sensitive, may influence how women interpret and respond to its items. Despite validating and translating the tool into Hausa to improve comprehension, cultural norms surrounding modesty and sexual silence may have led to underreporting of FSD due to embarrassment, social desirability, or fear of marital repercussions. These factors may influence domain-specific scores and potentially underestimate the true burden of sexual dysfunction. Further local validation studies are therefore warranted to ensure conceptual equivalence and cultural appropriateness of the FSFI in this setting

Conclusion and recommendations

This study found a high rate of female sexual dysfunction (FSD) among infertile women in Northern Nigeria, with hypoactive sexual desire being the most common issue. The key independent predictors of FSD included premarital sexual abuse, male factor infertility, and spousal erectile dysfunction. The findings highlight the importance of routinely screening infertile couples for sexual dysfunction and incorporating psychosexual and marital counseling into infertility care. Given the cultural sensitivity surrounding sexual health in this setting, further contextual validation of the sexual function assessment tool (FSFI) is needed. Future studies should explore causal links and test interventions to improve sexual health in this population.

Study limitations

The cross-sectional design prevents causal inference. Also, sexual dysfunction was self-reported and may be influenced by recall or social desirability bias, particularly in a cultural setting where open discussion of sexuality is limited. Also, the single-center design may limit generalizability.

Statements of conflicting interests

The authors declare no conflict of interest.

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