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Assessment of female sexual function and the occurrence of its dysfunction

Avaliação da função sexual feminina e a ocorrência da sua disfunção

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Abstract

Objective: To assess and identify female sexual dysfunction (SD) using the Female Sexual Function Index (FSFI). **Methods:** A cross-sectional study was conducted in a Family Health Unit of Olinda, Pernambuco, from August 2023 to January 2024. A random sample of women aged ≥ 18 years and with active sexual life was included. SD was defined by a total FSFI score (sum of the scores of each domain) lower than 26. The phases of sexual intercourse were assessed using six domains and their possible types of dysfunction: disorders of desire, arousal, lubrication, orgasm, satisfaction with sexual life, and pain. Measures of central tendency, dispersion, and 95% confidence intervals (95% CI) were calculated for the occurrence of SD. Data were analyzed using the Microsoft Excel and Stata software, version 15. **Results:** Among the 105 women interviewed, 22 (20.9%; 95% CI: 14.1% to 29.9%) experienced SD. This condition was more prevalent among women aged > 35 years and those who were overweight or obese. The use of hormonal contraceptives was significantly associated with SD ($p < 0.001$). **Conclusion:** SD in women aged > 35 years and overweight or obese should be considered. The results highlight the need for an individua-

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lized assessment of female sexual health, particularly among users of hormonal contraceptives.

Keywords: Hormonal contraceptives; Physiological sexual dysfunctions; Gynecology; Women's health; Sexual health

Resumo

Objetivo: Avaliar a resposta sexual feminina por meio da utilização do escore de avaliação do *Female Sexual Function Index (FSFI)*, identificando a ocorrência da sua disfunção. **Métodos:** Corte seccional, conduzido em uma Unidade de Saúde da Família, em Olinda, Pernambuco, de agosto de 2023 a janeiro de 2024. A amostra aleatória foi constituída por mulheres com vida sexual ativa e idade ≥ 18 anos. A disfunção sexual feminina (DSF) foi definida pelo somatório dos valores finais de cada domínio investigado pelo FSFI com escore final de valor < 26. As fases da relação sexual foram avaliadas por meio de seis domínios e possíveis tipos de disfunção: distúrbios de desejo, excitação, lubrificação, orgasmo, satisfação com a vida sexual e dor. Foram calculadas medidas de tendência central e dispersão, bem como a ocorrência da DSF com seu respectivo intervalo com 95% de confiança (IC95%). Os dados foram analisados utilizando os programas Microsoft Excel e Stata, versão 15. **Resultados:** Das 105 mulheres entrevistadas, 22 (20,9%; IC95%: 14,1 – 29,9) apresentaram disfunção sexual. A condição foi mais prevalente entre mulheres com idade > 35 anos e aquelas com sobrepeso/obesidade. O uso de contraceptivos hormonais esteve significativamente associado a DSF (p < 0,001). **Conclusão:** A ocorrência de DSF em mulheres com mais de 35 anos e sobrepesadas/obesas deve ser considerada. Os resultados reforçam a necessidade de uma avaliação individualizada da saúde sexual feminina, sobretudo dentre as usuárias de contraceptivos hormonais.

Palavras-chave: Contraceptivos hormonais; Disfunções sexuais fisiológicas; Ginecologia; Saúde da mulher; Saúde sexual

INTRODUCTION

The importance of female sexual health is notorious and unquestionable in the relationships, well-being, and emotional connections throughout the life of women. Nowadays, the pleasurable aspect of sexual intercourse has overlapped with the reproductive purpose.[1] According to the World Health Organization, sexual health is fundamental to the overall health and well-being of individuals, couples, and families.[2]

Female sexuality is related to the intrinsic characteristics of the gender. Also, the impacts of several external factors, mainly related to body image and self-esteem of women, may contribute to the development of sexual dysfunctions (SD) and interfere with individual and marital quality of life.[3]

Human SD is characterized by the inability of individuals to participate in sexual intercourse as they would like during the phases of desire, arousal, or orgasm. In women, the sexu-

al response is complex and involves physiological, psychological, cultural, religious, and social components.[4]

Female SD is defined as a disorder in the cycle of sexual response or pain associated with sexual intercourse, which results in personal suffering and may interfere with the quality of life and interpersonal relationships.[5] The stages of reproductive life require women to take different attitudes toward sexual practice. Biological (e.g., hormonal fluctuations and chronic diseases), psychological, and sociodemographic factors may also influence SD.[6]

The American Psychiatric Association (2014) classifies SD as a mental disorder. The Diagnostic and Statistical Manual of Mental Disorders includes lack of communication in the relationship, health status, history of sexual or emotional abuse, and depression as etiologies for this dysfunction.[7]

Although limited, studies on sexual changes in women are essential for a better understanding of this issue. Therefore, the present study aimed to assess and identify SD using the Female Sexual Function Index (FSFI).

METHODS

This cross-sectional study was conducted in a Family Health Unit located in the most populous neighborhood of Olinda (Pernambuco, Brazil). The sample included sexually active women aged ≥ 18 years recruited from the waiting room of the Family Health Unit between August 2023 and January 2024. Those who had not menstruated for more than 120 days, had mental illness, or were pregnant were excluded.

Data were collected during a structured face-to-face interview conducted using a questionnaire designed for this study. All women who agreed to participate voluntarily signed an informed consent form, which was prepared according to the Resolution 466/12 of the National Health Council and the principles and norms governing studies involving human beings.[8]

The FSFI9 questionnaire, validated in English and adapted to Portuguese, was used to assess SD.10 The FSFI[9] is a brief, self-administered, specific, and multidimensional questionnaire containing 19 questions that assess sexual function over the last four weeks using multiple-choice answers associated with six domains and possible types of dysfunction: disorders of desire, arousal, lubrication, orgasm, satisfaction with sexual life, and pain during or after sexual intercourse.

For each question, an answer pattern was expected. Response options were scored from 0 to 5, which reflects an increasing level related to the presence of the questioned function. The scores of the questions about pain were inverted. A score of 0 indicated the absence of sexual activity in the past four weeks. The total score was calculated by summing the scores of each domain and multiplying by a factor that standardized the influence of each domain on the total score.

Therefore, for the total score, the values from the questions were summed and multiplied by the correction factor before summing the domain scores. The sum of the domain scores produced the total score of the patient; a total score of < 26 out of 36 confirmed the diagnosis of SD.[10]

The following exposure variables were also analyzed: a) biological and sociodemographic factors, including age group (≤ 34 years and ≥ 35 years), self-reported race (black, brown, or white), marital status (with or without a partner), literacy skills (able or unable to read and write), and body mass index (eutrophic and overweight or obese); b) gynecological and obstetric history throughout life, including age at the first sexual intercourse, number of sexual partners, contraceptive use (yes or no), vaginal discharge (yes or no), vaginal pruritus (yes or no), children (yes or no), and type of delivery (vaginal or instrumental vaginal, cesarean section, and never delivered).

Data were stored in a database created for the study. To verify any errors, data were typed and compared. A descriptive analysis of biological, sociodemographic, gynecological, and obstetric characteristics was performed. Measures of central tendency and dispersion were calculated using Pearson's Chi-square test and, when necessary, Fisher's exact test. The occurrence of SD and respective 95% confidence intervals (95% CI) were also calculated. Data were analyzed using the Microsoft Excel and Stata software, version 15 (Statistical Software for Professionals, StataCorp LP, UK).

RESULTS

Among 105 women interviewed, 22 (20.9%; 95% CI: 14.1% to 29.9%) had an FSFI total score < 26, indicating SD, whereas 83 (79.1%; 95% CI: 70.1% to 85.5%) had a score between 26 and 36, indicating the absence of SD patterns.

Table 1 presents the sociodemographic and biological characteristics according to the sexual function assessment. Women with SD were characterized as overweight or obese (54.5%), aged ≥ 35 years (54.6%), self-reported as black or brown (77.3%), and were in a relationship with a partner (81.8%).

Table 1. Biological and sociodemographic characteristics of women according to sexual function assessment. Olinda, Pernambuco, Brazil.

	Sexual dysfunction						
Variables	Yes n = 22	%	No n = 83	%	Total n = 105	%	p-value
Age group (years)							
18 – 34	10	45.4	40	48.2	50	47.6	0.819
≥ 35	12	54.6	43	51.8	55	52.4	
Self-reported color or race							
Non-black (white)	5	22.7	25	30.1	30	28.6	0.523**
Black (black and brown)	17	77.3	58	69.9	75	71.4	
Marital status							
With partner	18	81.8	58	69.9	76	72.3	0.201**
Without partner	4	18.2	25	30.1	29	27.6	
Able to read and write							
Yes	19	86.4	81	97.6	100	95.2	0.061**
No	3	13.6	2	2.4	5	4.8	
BMI*							
Eutrophic	10	45.5	37	44.6	47	44.7	0.564**
Overweight or obese	12	54.5	46	55.4	58	55.3	

*BMI = body mass index; **Fisher's exact test.

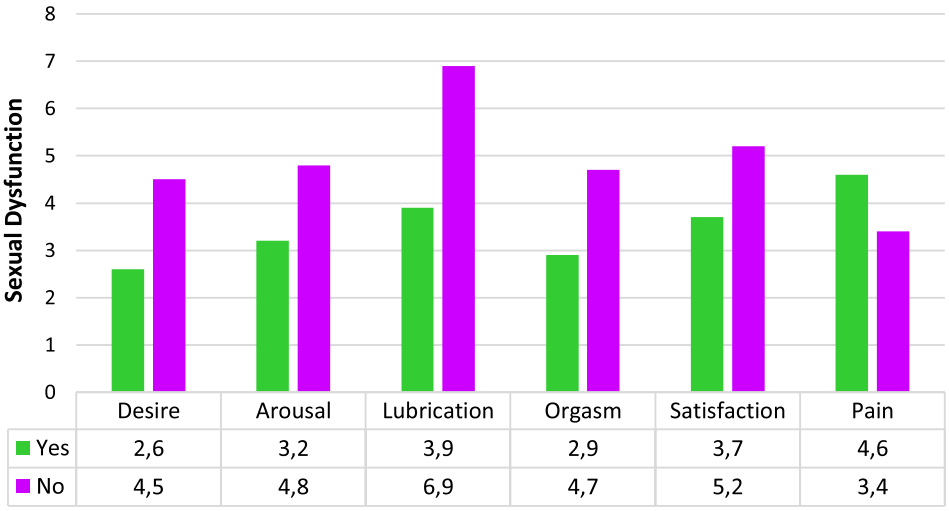
Regarding gynecological and obstetric history, women with SD had their first intercourse with a mean age of 16.5 years (15 to 19 years), had children (59.1%), and had undergone cesarean sections (31.8%). Most participants denied using contraceptives (63.6%), vaginal discharge (77.3%), and pruritus (90.9%). The use of hormonal contraceptives was significantly associated with SD ($p < 0.001$) (Table 2).

Table 2. Gynecological and obstetric history according to sexual function assessment. Olinda, Pernambuco, Brazil, 2023.

	Sexual dysfunction						
Variables	Yes n = 22	%	No n = 83	%	Total n = 105	%	p-value
First sexual intercourse* ($P_{25} – P_{75}$)	16.5 (15 – 19)	-	17 (15 – 18)	-	17 (15 – 18)	-	-
Number of partners* ($P_{25} – P_{75}$)	4 (2 – 10)	-	4 (2 – 6)	-	4 (2 – 6)	-	-
Oral contraceptive use							
Yes	8	36.4	58	69.9	66	62.8	<0.001[a]
No	14	63.6	25	30.1	39	37.4	
Vaginal discharge							
Yes	5	22.7	9	10.8	14	13.3	0.145**
No	17	77.3	74	89.2	91	86.7	
Vaginal itching							
Yes	2	9.1	5	6.1	7	6.7	0.608**
No	20	90.9	78	93.9	98	93.3	
Children							
Yes	13	59.1	49	59.1	62	59.1	0.996
No	9	40.9	34	40.9	43	40.9	
Type of delivery							
Vaginal or Instrumental vaginal	6	27.3	26	31.3	32	30.5	0.906
Cesarean section	7	31.8	23	27.7	30	28.6	
Never delivered	9	40.9	34	40.9	43	40.9	

*median; **Fisher's exact test; [a]statistically significant.

The phases of sexual intercourse presented in Figure 1 were assessed using six domains and types of dysfunctions: disorders of desire, arousal, lubrication, orgasm, satisfaction with sexual life, and pain during or after sexual intercourse. SD was more prevalent among those who experienced challenges in desire, arousal, orgasm, satisfaction, and lubrication; the latter factor impacted most the sexuality of the participants.



	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain
Yes	2,6	3,2	3,9	2,9	3,7	4,6
No	4,5	4,8	6,9	4,7	5,2	3,4

Figure 1. Analysis of the Female Sexual Function Index domains, according to sexual dysfunction. Olinda, Pernambuco, Brazil, 2023.

DISCUSSION

SD was less frequent than in other studies conducted in the state of Pernambuco.[5,11] One study with a similar sample size conducted in the family planning outpatient clinic of a teaching hospital in the capital of Pernambuco demonstrated that 36% had SD. Another study conducted in a clinic that offered specialized care for women's health found that 44.4% experienced some level of SD.[11] The low incidence of SD observed in our study was possibly because it was conducted in a service not specialized in women's health.

The results indicated a high percentage of women with SD aged ≥ 35 years, validating recent data that associated sexual problems with aging.[11] Women in this group encounter family and professional pressures that may impact their sexual interest, as they often prioritize external needs over their own.[12] The low number of studies investigating the prevalence and predictive factors of SD in young adults aged < 40 years hindered the discussion about the magnitude of sexual issues in this age group.[3]

In this study, the prevalence of women with SD who did not use contraceptives was significantly higher than those who did. Literature regarding this topic remains controversial. The subdermal implant of levonorgestrel, for example, reduces sexual desire.[13] On the other hand, oral contraceptives may affect sexual desire without interfering with sexual satisfaction.[14] Literature lacks studies showing a direct relationship between copper intrauterine devices or oral contraceptives and significant changes in sexual desire.[14] However, a systematic review with meta-analysis supported our results by demonstrating a significant reduction in the sexual desire of women who used contraceptives compared with those who did not.[15]

Although rarely studied as risk factors for SD, overweight, obesity, and various limitations resulting from decreased mobility and social stigma may affect body image, self-esteem, and the quality of sexual life, contributing to the vulnerability of psychological and emotional disorders in women.[3] In the present study, 54% of women with SD were overweight or obese, supporting other studies indicating that at least two-thirds of obese women experienced some degree of SD.[16] Women who are overweight or obese, according to body mass index and abdominal circumference, may also develop disorders in sexual desire, often due to feelings of inferiority, low self-esteem, or concerns about self-image.[17]

Situational factors, such as relationship problems, may also contribute to SD. This issue may lead to hypoactive sexual desire, hinder the desire of women for a partner, and impair the affective sexual dynamics of the couple.[18] Although marital status was not associated with SD, 81.8% of women with SD had partners.

A survey on SD conducted at the University Hospital of Rio de Janeiro demonstrated that sexual intercourse initiated before the age of 15 was associated with female SD.[12] Although our study did not assess sexual intercourse within the same age group, an intimate relationship between the onset of early sexual activity and SD was perceived. This situation is justified by considering the opportunities for engaging in sexual relations, the contemporary lifestyle, and environmental stimuli.

The results regarding the assessed domains (desire, arousal, lubrication, orgasm, satisfaction, and pain) were expected. Among women with normal sexual function, lubrication was the most significant domain, followed by satisfaction and arousal. Thus, women who did not experience these phenomena were likely to exhibit or develop SD.

Studies indicated that sexual activity was directly linked to arousal, which affects sexual quality. Sexual interest is associated with emotional and motivational interactions that facilitate sexual stimulation, creating a subjective response to desire and enhancing physical arousal in sexually functional women.[4]

Lack of lubrication, use of medications, and certain diseases that involve hormonal changes hinder the production of vaginal secretions and may lead to vaginal dryness.[19] Decreased vaginal lubrication may also be linked to low levels of estradiol, which often corresponds with reduced sexual desire.[20] Additionally, literature indicates that the inability of women to maintain proper lubrication until the end of sexual intercourse may impair sexual activity and cause distress for women.[21]

Orgasm is one of the four phases of the female sexual response cycle (libido, arousal, orgasm, and resolution). For many women, these phases can differ in order, overlap, repeat, or be absent during sexual intercourse. Moreover, the subjective satisfaction with sexual experiences may not necessarily require all phases, including orgasm.[5,11,18] In fact, orgasm is influenced by bi-

ological, personal, psychoemotional, interpersonal, behavioral, and sociocultural factors.[3,11] This reality explains why those women who did not exhibit problems in other assessed domains had difficulties achieving orgasm.

Regarding pain, the findings supported the study by Hill and Taylor,[22] which suggested that women who have dyspareunia were the most likely to develop SD.

This study has some limitations related to the cross-sectional design. SD was assessed using only the FSFI score, adapted and translated to Portuguese, without a specific clinical diagnosis, which may have influenced the assessment of sexual function. Additionally, as this is a descriptive study, causal inferences could not be drawn. However, we emphasize that this study is relevant due to the scarcity of studies regarding SD experienced by women.

The occurrence of SD in this study provides a better understanding of the sexuality of women and enables the implementation of strategic interventions. The use of contraceptives was significantly higher among women with SD than in those with unchanged sexual function and should be a priority during care. Further prospective studies are needed to better elucidate SD and its associated factors.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

ABMC: Conceptualization, Investigation, Project Administration, Visualization, Writing – Review and Writing. **AHG**: Conceptualization, Investigation, Project Administration, Visualization, Writing - review and editing. **YFO**: Conceptualization, Investigation, Visualization, Writing - review and editing. **MEDM**: Investigation, Visualization, Writing - review and editing. **PADC**: Conceptualization, Methodology, Supervision, Validation. **ETLS**: Conceptualization, Methodology, Supervision, Validation, Visualization, Writing - review and editing. **CAM**: Conceptualization, Data curation, Data analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing - original draft, Writing - review and editing. All authors read and agreed with the final version of the manuscript.

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