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RESEARCH PAPERS

SEXUALITY AFTER MENOPAUSE: SEXUAL DYSFUNCTION, RELATED FACTORS, AND THE ASSOCIATION OF VAGINAL HORMONE THERAPY

SEXUALIDADE NA PÓS-MENOPAUSA: DISFUNÇÃO SEXUAL, FATORES RELACIONADOS E A ASSOCIAÇÃO DA TERAPIA HORMONAL VAGINAL

SEXUALIDAD EN LA POSMENOPAUSIA: DISFUNCIÓN SEXUAL, FACTORES RELACIONADOS Y SU ASOCIACIÓN DE LA TERAPIA HORMONAL VAGINAL

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Abstract: Introduction: Female sexuality is a central dimension of health and quality of life, but it is often under-recognized in post-menopause, a phase in which biological and sociocultural factors can influence sexual experience. Sexual dysfunction (SD) is frequent during this period and is still under-addressed in clinical practice. Objective: To analyze the prevalence of SD, associated factors, and the role of vaginal hormone therapy in sexual function in postmenopausal women, regardless of sexual partner status. Methodology: Observational cross-sectional study with 108 postmenopausal women attending a gynecology outpatient clinic in Passo Fundo-RS. Sexual function was assessed using the 6-item Female Sexual Function Index (FSFI-6). Results: The prevalence of SD among the 108 patients was 77.8%. Among those with SD, 72.6% had a stable sexual partner (p=0.013), while among patients without SD, 95.8% had a stable sexual partner. SD was more prevalent with increasing age (p=0.041). Women using vaginal HRT experienced less sexual dysfunction compared to those not using HRT (p=0.045). Conclusion: Sexual dysfunction was prevalent among postmenopausal women. Vaginal hormone therapy was associated with improved sexual function, regardless of sexual partner, reinforcing sexuality as an individual dimension of women's health.

Keywords: Female sexuality; Postmenopause; Sexual dysfunction; Vaginal hormone therapy; Aging.

Resumo: Introdução: A sexualidade feminina é a dimensão central da saúde e da qualidade de vida, porém, pouco reconhecida no pós-menopausa, fase em que fatores biológicos e socioculturais podem influenciar a vivência sexual. A disfunção sexual (DS) é frequente nesse período e ainda pouco abordada na prática clínica. Objetivo: Analisar a prevalência de DS, os fatores associados e o papel da terapia hormonal vaginal na função sexual em mulheres na pós-menopausa, independentemente da parceria sexual. Metodologia: Estudo transversal observacional com 108 mulheres pós-menopáusicas, atendidas em ambulatório de ginecologia em Passo Fundo-RS. A função sexual foi avaliada pelo Female Sexual Function Index de 6 itens (FSFI-6). Resultados: A prevalência de DS entre as 108 pacientes foi 77,8%. Entre as que apresentaram DS, 72,6% tinham parceria sexual fixa enquanto as pacientes que não apresentaram DS, 95,8% tinham parceria sexual fixa (p=0,013). A DS foi mais prevalente conforme o aumento da idade das mulheres (p=0,041). As mulheres em uso de TH vaginal apresentaram menos DS quando comparadas àquelas que não faziam uso de TH (p=0,045). Conclusão: A disfunção sexual foi prevalente entre mulheres pós-menopáusicas. A terapia hormonal vaginal associou-se à melhor função sexual, independentemente da presença de parceria sexual, reforçando a sexualidade como dimensão individual da saúde feminina.

Palavras-chave: Sexualidade Feminina; Pós-menopausa; Disfunção Sexual; Terapia Hormonal Vaginal; Envelhecimento.

Resumen: Introducción: La sexualidad femenina es una dimensión central de la salud y la calidad de vida, pero es poco reconocida en la posmenopausia, fase que factores biológicos y socioculturales pueden influir en la experiencia sexual. La disfunción sexual (DS) es frecuente y aún poco abordada en la práctica clínica. Objetivo: Analizar la prevalencia de DS,

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factores asociados y el papel de la terapia hormonal vaginal en la función sexual en mujeres posmenopáusicas. Metodología: Estudio observacional transversal con 108 mujeres posmenopáusicas de una clínica ambulatoria de ginecología en Passo Fundo-RS. La función sexual se evaluó utilizando el Índice de Función Sexual Femenina de 6 ítems (FSFI-6). Resultados: La prevalencia DS fue del 77,8%. Entre aquellas con DS, el 72,6% tiene una pareja sexual estable (p = 0,013), entre las pacientes sin DS, el 95,8% tiene una pareja sexual estable. La DS fue más prevalente con el aumento de la edad (p = 0,041). Las mujeres que utilizaron terapia hormonal sustitutiva vaginal experimentaron menos disfunción sexual (p = 0,045). Conclusión: La disfunción sexual fue frecuente entre las mujeres posmenopáusicas. La terapia hormonal vaginal se asoció con una mejor función sexual, independientemente de la pareja, lo que refuerza la sexualidad como una dimensión individual de la salud.

Palabras clave: Sexualidad femenina; Posmenopausia; Disfunción sexual; Terapia hormonal vaginal; Envejecimiento.

Introduction

Female sexuality is recognized as an essential dimension of health and quality of life, integrating physical, emotional, relational, and sociocultural aspects (WORLD HEALTH ORGANIZATION, 2002). However, throughout aging—especially during postmenopause—women's experience of sexuality tends to be progressively silenced and overlooked, both in society and in clinical practice. This scenario contributes to the normalization of sexual difficulties and the underreporting of complaints related to sexual health (CABRAL *et al.*, 2012).

In postmenopausal women, reduced estrogen levels can lead to genitourinary changes such as decreased vaginal lubrication, loss of mucosal trophism, and dyspareunia—factors frequently associated with sexual dysfunction (NORTH AMERICAN MENOPAUSE SOCIETY, 2022). Studies demonstrate a high prevalence of sexual dysfunction in postmenopausal women, with wide variation depending on the studied population, assessment instruments, and sociocultural context (DENNERSTEIN *et al.*, 1997; THORNTON *et al.*, 2015). Despite this, female sexuality in this life stage is still commonly addressed in a restrictive manner, often conditioned on having a sexual partner or engaging in penetrative intercourse (BASSON, 2005).

Vaginal hormone therapy is well established for the treatment of the genitourinary syndrome of menopause, improving local symptoms and providing potential benefits to sexual function (NORTH AMERICAN MENOPAUSE SOCIETY, 2022; PARISH *et al.*, 2013). However, few studies have evaluated sexual dysfunction in postmenopause from the perspective of sexuality as an individual experience, encompassing both women with and without a sexual partner (BASSON, 2005; ABDO *et al.*, 2002).

Thus, a knowledge gap remains regarding the magnitude of sexual dysfunction in postmenopausal women and its associated factors, as well as the specific role of vaginal hormone therapy in sexual function regardless of partnership status.

The present study aimed to assess the prevalence of sexual dysfunction and associated factors in postmenopausal women attending a gynecological outpatient clinic, highlighting the role of vaginal hormone therapy in the sexual function of women with and without a stable partner.

Methodology

This cross-sectional study with convenience sampling included 108 postmenopausal women attending the Gynecology Outpatient Clinic of Hospital São Vicente de Paulo (HSVP), Passo Fundo, Rio Grande do Sul, Brazil. Eligible patients waiting for routine gynecological care were consecutively invited to participate between August 2023 and January 2025.

The inclusion criteria were: women aged 40 to 80 years with a confirmed diagnosis of menopause who were able to complete the self-administered FSFI-6 questionnaire. Patients with primary ovarian insufficiency or premature menopause were excluded. The diagnosis of menopause was defined as amenorrhea for at least 12 consecutive months, or FSH>30 mIU/mL and estradiol <20 pg/mL in patients with non-natural/induced menopause (e.g., those undergoing previous pelvic chemotherapy or radiotherapy).

The clinical variables collected included: age, current employment status, time since menopause, type

of menopause (natural or non-natural/induced), use of vaginal and/or systemic hormone therapy (HT), presence of a spouse or stable partner, parity, comorbidities (systemic arterial hypertension, diabetes mellitus, dyslipidemia, thyroid disorders, anxiety, depression, prior malignancies, or history of hysterectomy), and medication use (antidepressants, benzodiazepines, diuretics, antihypertensives, levothyroxine, antidiabetic agents, and lipid-lowering drugs).

The 6-item Female Sexual Function Index (FSFI-6) questionnaire—derived from the original 19-item FSFI and validated for Brazilian Portuguese—was applied (DALL'AGNO *et al.*, 2019). This self-report instrument assesses female sexual function over the preceding four weeks across six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. Each item is scored from 0 to 5, yielding a total score between 0 and 30. Sexual dysfunction (SD) was defined as a score ≤20 points (DALL'AGNO *et al.*, 2019; GUENDLER *et al.*, 2023).

The study evaluated sexual function across all participants regardless of whether they had engaged in sexual intercourse in the preceding four weeks. The prevalence of SD was also determined separately among sexually active participants.

For the sample size calculation, an expected prevalence of 71% was assumed, with a margin of error of ±10%, a 95% confidence interval, and accounting for potential losses, yielding a minimum required sample of 80 participants (CABRAL *et al.*, 2012).

Data were analyzed using IBM SPSS Statistics for Windows, Version 24.0. The Kolmogorov–Smirnov test was applied to assess the normality of numerical variables. Continuous variables were expressed as mean ± standard deviation (SD) or median (interquartile range, IQR), while categorical variables were expressed as absolute numbers and percentages (n,%). Differences between groups were evaluated using Student's t-test, the Mann–Whitney U test, or Fisher's exact test, as appropriate. A two-tailed pp-value ≤0.05 was considered statistically significant.

The study protocol was approved by the local Institutional Review Board / Ethics Committee (CAAE: 69779223.5.0000.5342). All participants provided written informed consent prior to enrollment.

Results

A total of 108 women participated in the study, with an overall SD prevalence of 77.8%. Among the 75 sexually active participants (defined as having engaged in sexual intercourse in the previous four weeks), the prevalence of SD was 68.0%.

The mean age was 60.0±7.3years, the mean time since menopause was 11.2±7.4years, and 52.7% of the women had been postmenopausal for less than 10 years (Table 1).

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Table 1 - Clinical profile of the women participants in the study

Variables	n = 108
Age (mean ± SD), years	60,0 ± 7,3
Time since menopause (mean ± SD), years	11,2 ± 7,4
Up to 10 years (%)	57 (52,7)
11 years or more (%)	51 (47,2)
Type of menopause, n (%)	
Natural	83 (76,8)
Surgical/induced	25 (23,1)
Stable partner, n (%)	
Yes	84 (77,8)
No	24 (22,2)
Hormone therapy, n (%)	30 (27,8)
Systemic only	14 (12,9)
Vaginal only	10 (9,2)
Combined systemic and vaginal	6 (5,6)
Comorbidities, n (%)	96 (89,7)
Hypertension	67 (62,0)
Diabetes	22 (20,4)
Dyslipidemia	25 (23,1)
Anxiety	8 (7,4)
Depression	12 (11,1)
Thyroid disorders	26 (24,0)
Neoplasms	11 (10,1)
Hysterectomized women	22 (20,3)
Sexual Disfunction, n (%)	
Yes	84 (77,8)
No	24 (22,2)

Approximately one-third of the participants were using HT: 9.2% were receiving vaginal HT exclusively, 12.9% systemic HT exclusively, and 5.6% combined systemic and vaginal HT (Table 1). Systemic HT was predominantly administered orally, combined with a progestogen in women with an intact uterus. The vaginal estrogen formulations utilized were estradiol, estriol, and promestriene.

Most participants had natural menopause, reported having a stable partner, and presented with at least one comorbidity (Table 1).

SD was significantly more prevalent with advancing age ($p=0.041$) and among women without a stable partner ($p=0.013$). Neither the type of menopause ($p=0.423$) nor the time since menopause ($p=0.288$) showed a significant association with SD (Table 2).

Table 2 - Comparison of the characteristics of patients with and without sexual dysfunction

Female characteristics	Patients with sexual dysfunction (n = 84)	Patients without dysfunction (n= 24)	p-value
Age (mean ± SD), years	60,9 ± 7,1	57,08 ± 7,9	0,041*
Time since menopause, median (percentile)	11(6,0-16,0)	8,0 (3,5-15,8)	0,288**
Type of menopause, n (%)			
Natural	66 (79,5)	17 (20,5)	0,423***
Non-natural	18 (72,0)	7 (28,0)	
Stable partner, n (%)			
Yes	61 (72,6)	23 (95,8)	0,013***
No	23 (27,4)	1 (4,2)	
Gravidity, median (percentile)	3,0 (2,0-4,0)	2,0 (2,0-3,8)	0,407**
Parity, median (percentile)	2,0 (2,0-3,0)	2,0 (1,0-3,8)	0,392**
Hormone therapy, n (%)	20 (23,8)	10 (41,7)	0,120***
Systemic	15 (17,9)	5 (20,8)	0,769***
Vaginal	9 (10,7)	7 (29,2)	0,045***
Antidepressant use, n (%)	33 (39,3)	8 (33,3)	0,642***
Antihypertensive use, n (%)	44 (52,4)	15 (62,5)	0,487***
Comorbidities, n (%)	73 (88,0)	23 (95,8)	0,450***

Data are presented as mean ± standard deviation, median (25th–75th percentiles), or absolute number (percentage).

* Student's t-test **Mann–Whitney U test *** Fisher's exact test

A p-value ≤ 0.05 was considered statistically significant.

Table 3 - Univariate and multivariate analyses, by logistic regression, for the association of vaginal hormone therapy (independent variable) with sexual dysfunction (dependent variable) n = 108

Model	OR	95% CI (lower limit)	95% CI (upper limit)	p
Model 1 – Univariable	0,29	0,09	0,89	0,031
Model 2 – Multivariable	0,32	0,10	0,99	0,049
Model 3 – Multivariable	0,27	0,08	0,91	0,035

Model 1: VHT

Model 2: VHT + age

Model 3: VHT + age + stable partner

VHT: vaginal hormone therapy; considered vaginal hormone therapy only and combined vaginal and systemic hormone therapy, with systemic-only hormone therapy as the reference category.

OR: odds ratio; 95% CI: 95% confidence interval.

The median number of pregnancies was higher among women with SD, 3.0 (2.0–4.0) compared to those without SD, 2.0 (2.0–3.7), although this difference did not reach statistical significance (Table 2).

Regarding HT regimens, women using vaginal HT exhibited a significantly lower prevalence of SD (p=0.045). Conversely, systemic HT (estrogen alone or combined with progestogen) was not significantly

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associated with SD (p=0.769) (Table 2). No statistically significant associations were identified between specific comorbidities or medication classes and the presence of SD (Table 2).

In the multivariable logistic regression models with vaginal HT as the primary independent variable—adjusted for age and the presence of a stable partner—vaginal HT (used either alone or in combination with systemic HT, compared to systemic HT alone) remained independently associated with a lower prevalence of SD. However, given the borderline significance (p=0.049) and an upper confidence limit close to unity (0.99), these estimates should be interpreted with caution due to potential sample instability in smaller subgroups (Table 3).

Discussion

Our findings demonstrate a high prevalence of sexual dysfunction among postmenopausal women, corroborating previous reports in the literature (CABRAL *et al.*, 2012; DENNERSTEIN *et al.*, 1997). This elevated frequency may reflect both the physiological changes inherent to biological aging and sociocultural patterns that historically invalidate the sexuality of older women, thereby normalizing sexual distress (BASSON, 2005; ABDO *et al.*, 2002).

The association between older age and an increased prevalence of sexual dysfunction highlights the interplay between biological and psychosocial dimensions in female aging (DENNERSTEIN *et al.*, 1997; BASSON, 2005). Interestingly, the duration of menopause was not significantly associated with SD, indicating that the experience of sexuality after the menopausal transition cannot be explained solely by chronological or hormonal milestones (CABRAL *et al.*, 2012; BASSON, 2005).

Although having a stable partner was associated with a lower rate of SD, the high frequency of dysfunction observed even among partnered women demonstrates that sexuality cannot be reduced to relationship status alone (DENNERSTEIN *et al.*, 1997; BASSON, 2005). Female sexual experience involves multiple determinants, including emotional intimacy, partner communication, body image, and psychological well-being (BASSON, 2005; ROSEN *et al.*, 2000).

The use of vaginal hormone therapy was significantly associated with better sexual function, irrespective of age or partnership status. This underlines the premise that intimate healthcare for women should not be contingent upon active sexual partnership. Local estrogen therapy promotes physical comfort, alleviates dyspareunia, and fosters a positive relationship with one's own body—core elements of sexuality viewed as an individual experience (NORTH AMERICAN MENOPAUSE SOCIETY, 2022; BASSON, 2005; PARISH *et al.*, 2013; SOBRAC, 2024).

These observations align with contemporary models of human sexuality by affirming that sexual health persists across the lifespan and is not restricted to coitus. Destigmatizing female sexuality during post menopause in both clinical and community settings is essential to deliver comprehensive care and validate diverse expressions of sexual well-being.

This study has limitations that warrant consideration. First, its cross-sectional design precludes establishing causal inferences. Second, the sample size (n=108) resulted in small subgroups (such as women on vaginal HT, n=16), producing borderline statistical associations (p=0.045) that require cautious generalization. Finally, the FSFI-6 was initially validated in younger, sexually active populations; applying this tool to older women (up to 80 years) or to individuals without recent partnered sexual activity may have artificially inflated the estimated prevalence of sexual dysfunction (77.8%), as inactive participants systematically score zero in domains such as lubrication and orgasm.

Final considerations

Sexual dysfunction was highly prevalent among postmenopausal women managed in an outpatient gynecological setting. The use of vaginal hormone therapy was associated with better sexual function, independent of relationship status, reinforcing the understanding of sexuality as an essential, self-contained component of female health throughout aging.

Fostering open clinical communication, attentive listening, and validation of mature women's sexual

well-being are paramount steps toward overcoming historical neglect, safeguarding bodily autonomy, and improving sexual healthcare delivery.

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