



PREVALENCE OF GENITOURINARY SYNDROME OF MENOPAUSE AND IMPACT ON SEXUALITY OF WOMEN IN QUINDÍO (COLOMBIA), 2013-2016

Prevalencia del síndrome genitourinario de la menopausia en mujeres e impacto en la sexualidad, en Quindío (Colombia), 2013-2016

Franklin José Espitia De La Hoz, MD¹

Received: December 14/17 – Accepted: November 14/18

ABSTRACT

Objective: To determine the prevalence of the genitourinary syndrome of menopause in a population of sexually active women 40 years of age or older.

Materials and methods: Descriptive cross-sectional study which included women diagnosed with menopause, sexually active over the past six weeks and residents of the Department of Quindío in the coffee growing Andean region of Colombia. Excluded were women with surgical menopause, illiterate, and with mental disorders or deficit. The study was conducted in a private referral centre between 2013 and 2016. Consecutive convenience sampling was used. Measured variables included demographics, vulvovaginal and lower urinary tract symptoms associated with the genitourinary syndrome of menopause, and the presence of global sexual dysfunction, using the Female Sexual Function Index validated in Spanish and by type of dysfunction. A descriptive analysis of the data was performed applying absolute and relative frequency measurements. Prevalence was calculated as the

number of women with genitourinary syndrome of menopause/number of women interviewed.

Results: Of a total of 597 women selected to participate in the study, 558 (93.46%) were included in the final analysis. The prevalence of the genitourinary syndrome of menopause was 51.61% (62.88% in women over 55 years of age and 39.32% in women under 55). The prevalence of sexual dysfunction in the study group was 67.2%. Findings included altered desire (67.2%), arousal (45.16%), orgasm (44.08%), and lubrication (32.25%), as well as pain during intercourse (13.97%).

Conclusion: A high prevalence of the genitourinary syndrome of menopause and sexual dysfunction was found in the study population. Population studies are required in order to determine the size of the problem in the Latin American region.

Key words: atrophy, dyspareunia, menopause, prevalence, lower urinary tract symptoms.

RESUMEN

Objetivo: conocer la prevalencia del síndrome genitourinario de la menopausia en una población de mujeres sexualmente activas, con edad igual o mayor a 40 años.

1 Gynaecology and Maternal-Foetal Medicine Service, Clínica La Sagrada Familia, Armenia (Colombia). espitiafranklin@hotmail.com

Materiales y métodos: estudio de corte transversal descriptivo. Se incluyeron mujeres diagnosticadas con menopausia, con actividad sexual en las últimas seis semanas, y residentes en el Quindío, departamento ubicado en la zona andina cafetera en Colombia. Se excluyeron mujeres con menopausia quirúrgica, analfabetas, con padecimientos de trastornos mentales o déficit mental. El estudio se realizó en una institución privada de referencia entre el 2013 y 2016. Se hizo un muestreo consecutivo por conveniencia. Se midieron variables sociodemográficas, síntomas vulvo-vaginales y síntomas del tracto urinario inferior relacionados con la presencia del síndrome genitourinario de la menopausia, presencia de disfunción sexual global por medio del Índice de Función Sexual Femenina validado en español, y por tipo de disfunción. Se realizó un análisis descriptivo de la información utilizando medidas de frecuencia absoluta y relativa. Se calculó la prevalencia como: número de mujeres con síndrome genitourinario de la menopausia / número de mujeres encuestadas.

Resultados: de un total de 597 mujeres seleccionadas para participar, se analizaron finalmente 558 (93,46%). La edad promedio fue de $59,73 \pm 8,4$ años. La prevalencia del síndrome genitourinario de la menopausia fue del 51,61%. La prevalencia de disfunción sexual en el grupo estudiado fue del 67,2%. Se presentaron trastornos en el deseo (67,2%), la excitación (45,16%), el orgasmo (44,08%), la lubricación (32,25%) y dolor durante la relación (13,97%).

Conclusión: en el grupo de población evaluado se encontró una importante prevalencia del síndrome genitourinario de la menopausia y de disfunción sexual. Se requieren estudios poblacionales para hacer una aproximación a la magnitud del fenómeno en la región latinoamericana.

Palabras clave: atrofia, dispareunia, menopausia, prevalencia, síntomas del sistema urinario inferior.

INTRODUCTION

The genitourinary syndrome of menopause (GSM) was defined in 2014 by the International Society for the Study of Women's Sexual Health and the North American Menopause Society as a "set of signs and symptoms associated with reduced levels of oestrogens and other sexual steroids, leading to changes in the labia majora or minora, clitoris, vestibule/introitus, vagina, urethra and bladder" (1, 2). This new terminology seeks to replace the terms postmenopausal atrophic vaginitis/atrophic vulvovaginitis or vulvovaginal atrophy (VVA) because they are inadequate and do not provide an appropriate description of the changes that occur in the genitourinary system with menopause (1). The term vaginitis is associated with infection, atrophy has negative connotations, and not all people feel comfortable using the terms vulva or vagina (1, 3). It has been described that close to 50% of postmenopausal women show symptoms associated with urogenital atrophy (4). On the other hand, it has been reported that postmenopausal changes of the genitourinary system are accompanied by female sexual function disorders (5).

GSM is diagnosed based on one or more symptoms such as irritation, itching, stinging, dryness and burning, accompanied by urinary symptoms such as dysuria, urinary frequency and urgency, or recurrent urinary tract infection (UTI) (1, 2). The differential diagnosis must be made with vulvovaginal (vulvovaginitis) or vaginal (vaginitis) infection and vulvar dystrophy which present with similar symptomatology but are different entities (2). Several tools are available for the diagnosis of sexual dysfunctions, including the Female Sexual Function Index (FSFI) which has adequate reliability, internal consistency, test-retest reliability and discrimination validity (6); moreover, it is self-administered, short, fast and reliable when applied to a wide age range (7, 8) and has been validated in Colombia (8).

The treatment of GSM is based on life-style changes, administration of local or systemic hormones, and the use of local lubricants and moisturisers, with the aim of reducing symptoms (9). The use of local vitamin E (10), oestrogen receptor modulators (ERMs) such as ospemifene (11, 12), and vaginal laser has been described recently, although studies only show short-term results (13).

GSM has been considered an increasingly significant problem due to its impact on health, wellbeing, sexuality and quality of life of the affected women (3); however, there are no studies regarding its prevalence or impact on quality of life and sexuality in the population of postmenopausal women in Colombia. Consequently, the objective of this study is to make a first approach to the prevalence of genitourinary syndrome of menopause in this country and to assess its impact on women experiencing menopause.

MATERIALS AND METHODS

Design and population. Descriptive cross-sectional study performed between March 1, 2013 and September 30, 2016 in Armenia, the capital of the Department of Quindío (located in central Colombia). The study was conducted at Clínica La Sagrada Familia, a private, referral, teaching institution that serves populations affiliated to the contributive and state-subsidised healthcare regimes of the Colombian social security system. The study included women 40 years of age or older, diagnosed with menopause, sexual activity within the past six weeks, and with uterus. Women with surgical menopause, illiterate, with mental disorders or mental deficit were excluded. Consecutive sampling was used.

Procedure. Patients were selected among the population of women included in the institution's menopause and climacterium program. Data were collected by nurses, members of our research team, trained in patient recruitment and form completion.

They interviewed the women at the time of their visit to the specialist, after having verified the inclusion and exclusion criteria. Women who met the selection criteria and agreed to participate in the research were explained the objectives of the study, asked to sign the informed consent, and given assurance about confidential management of their information.

Once the informed consent was signed, they were given a self-reporting questionnaire in order to document sociodemographic characteristics, symptoms, history and clinical examination findings. This was followed by sexual function assessment using the Female Sexual Function Index (FSFI) which consists of 19 questions that assess female sexual function over the past four weeks. Questions are grouped under six domains: Desire (items 1-2); Arousal (items 3-6); Lubrication (items 7-10); Orgasm (items 11-13); Satisfaction (items 14-16); and Pain (items 17-19). Each question includes 5 or 6 options that are assigned a score between 0 and 5. The score for each domain is multiplied by a factor and, at the end, the result is the arithmetic sum of all the domains, and the higher the score the better the sexual function. The total score on the FSFI ranges from 2 to 36. A score of 26.55 or less, or a score of less than 3.6 for any domain is considered a risk criterion for sexual dysfunction (6-8,14). Afterwards, the presence of GSM was assessed by the specialist, in accordance with the woman's complaints. The diagnosis was made with the finding of one or more of the following symptoms: vulvovaginal symptoms (stinging, reduced lubrication, dyspareunia, pain, coital discomfort, pruritus, burning, postcoital bleeding and vaginal dryness) or lower urinary tract symptoms (dysuria, tenesmus, nocturia, frequency, incontinence, recurrent urinary infections, urgency, postcoital infections and reduced urethral urine flow). Once the diagnosis was made, the women were explained the nature of their clinical condition and offered

therapeutic options (local oestrogen therapy or lubricant use). Individual answers and FSFI findings were documented in the clinical record as well as in a special form designed by the researchers.

Statistical analysis. The following demographic variables were considered: age, race, marital status, occupation, level of schooling, height, weight, body mass index (BMI), age at menopause, time since menopause, alcohol intake, cigarette smoking, sedentarism, personal history of depression or sexual dysfunction, use of hormonal replacement therapy, and a history of breast cancer. Sexual behaviour variables included masturbation, oral sex, intercourse (vaginal or anal), average monthly frequency of intercourse, time of cohabitation with a partner, history of sexual abuse or sexual violence in the marriage, partner with sexual dysfunction, and chronic diseases. Additionally, the questions of the FSFI questionnaire domains were included.

These variables were analysed using the SPSS version 19 and Epi Info version 3.5.1 software packages. Categorical variables were expressed as percentages, and numerical variables were expressed as means with standard deviations. Prevalence was calculated as the number of women with GSM over the total number of women surveyed.

Ethical considerations. The study was approved by the Ethics and Research Committee of Clínica La Sagrada Familia. Participants in the study were asked to sign the informed consent, and information confidentiality was ensured.

RESULTS

Of a total number of 663 women enrolled in the climacterium program, 597 (90%) were selected and, of them, thirteen (2.17%) refused to participate. Of the remaining 584 women who met the selection criteria, 14 (2.34%) did not complete the FSFI questionnaire correctly, and 12 (2.01%) dropped out before completing the questionnaire. Therefore, a total of 558 women (93.46%) were taken into consideration for the analysis.

The mean age of the included population was 59.73 (SD \pm 8,4), BMI was 31.8 (SD \pm 4,65), the majority of women were of mestizo race, housewives, were in a stable relationship, had a low schooling level and belonged to the contributive insurance regime. Age of onset of menopause was 48.1 (SD \pm 5.39), with a mean duration of menopause of 9.6 years (SD \pm 7.5) (Table 1). In terms of cohabitation with a partner, 27.41% (153) reported living together for more than 20 years. The most frequent sexual practice was vaginal intercourse (100%), and the least frequent was anal intercourse (8.42%); masturbation was found to be an uncommon practice (5.73%) among the surveyed women; 87.63% (489) reported enjoying oral sex more than intercourse. To the question “how many times did you have intercourse in the past month?” (period defined as the previous thirty days), 38.53% (215) responded affirmatively, with a median of 3 sexual encounters per month (range between 0 and 6). Regarding sexual dysfunction of the partner, 96.23% (537) of the women reported some form of sexual dysfunction in their partner. Eighty-four (15.05%) reported having suffered some form of sexual violence at some point in time, while 19.35% (108) reported intimate partner sexual violence or abuse after the onset of menopause because of their refusal to have intercourse. These figures underscore the high prevalence of sexual violence in this group of women and point to the need to create policies designed to prevent gender violence against older women.

Of the participants, 39.24% had hypertension, 7.52% had type II diabetes, 32.79% dyslipidemias (54.09% low HDL cholesterol levels, 24.59% high triglycerides, and 21.31% elevated total cholesterol), and 6.45% had hypothyroidism.

GSM prevalence in the study population was 51.61% (n = 288/558). Prevalence was higher in women over 55 years of age (62.8%) than in women under 55 (37.2%). The most frequently reported symptom was vaginal dryness (84%), followed by

Table 1.
Sociodemographic and sexual and reproductive health characteristics of the interviewed population of menopausal women in Quindío (Colombia), 2013-2016
n = 558

Variables and categories	(%)
Age*	59.73 ± 8.4
Height*	157.91 ± 8.74
BMI*	31.8 ± 4.65
Race	
Hispanic	318 (56.98%)
Indigenous	36 (6.45%)
Afro-Colombian	204 (36.55%)
Marital status	
Married	219 (39.24%)
Free union	117 (20.96%)
Single	87 (15.59%)
Separated-Divorced	51 (9.13%)
Widow	84 (15.05%)
Socioeconomic bracket	
High	76 (13.62%)
Medium	423 (75.8%)
Low	59 (10.57%)
Occupation	
Housewives	401 (71.86%)
Employees	85 (15.23%)
Retired	72 (12.9%)
Education	
Primary	351 (62.9%)
Secondary	201 (36.02%)
Technical	84 (15.05%)
Professional	66 (11.82%)
Social Security Affiliation	
Contributive regime	437 (78.31%)
Subsidised regime	121 (21.68%)

Table 1. Sociodemographic and sexual and reproductive health characteristics of the interviewed population of menopausal women in Quindío (Colombia), 2013-2016 n = 558	
Variables and categories	(%)
Personal history of depression	116 (20.78%)
Personal history of sexual dysfunction	107 (19.17%)
History of breast cancer	55 (9.85%)
Origin	
Urban	497 (89.06%)
Rural	61 (10.93%)
Use of hormonal replacement therapy	148 (26.52%)
Alcohol use	72 (12.9%)
Cigarette smoking	
Smokers n (%)	189 (33.87%)
Former smokers n (%)	227 (40.68%)
Sedentarism	265 (47.49%)

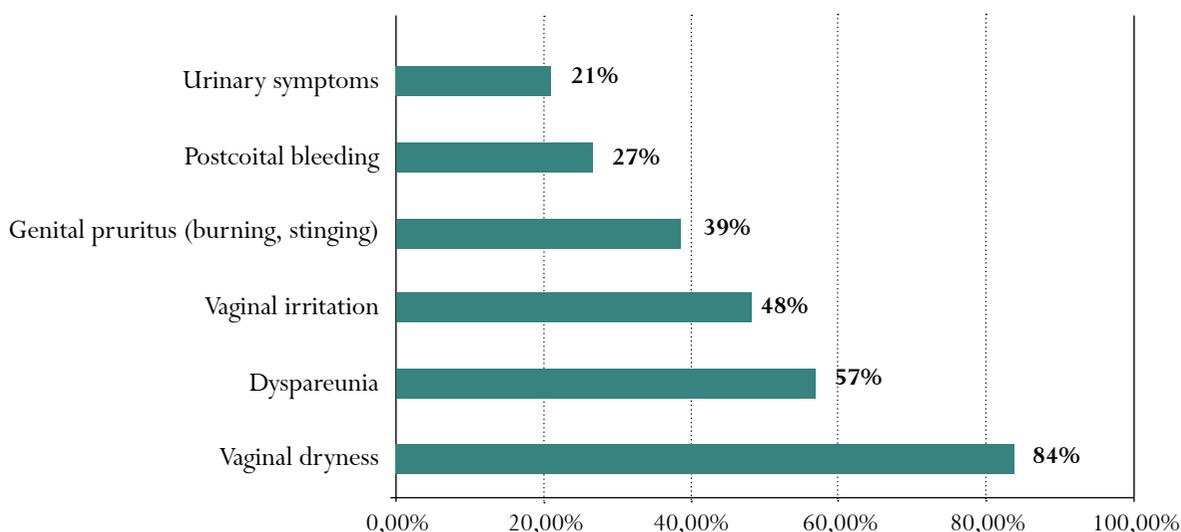
* Mean \pm standard deviation (SD)

Table 2. Female sexual function index in women with GSM in Quindío		
Domains	mean (SD)	Sexual dysfunction (%)
Desire	3.27 \pm 1.02	67.2
Arousal	3.57 \pm 1.08	45.16
Lubrication	3.72 \pm 1.14	32.25
Orgasm	3.63 \pm 1.05	44.08
Satisfaction	4.08 \pm 1.17	70.96
Pain	4.47 \pm 1.11	13.97

dyspareunia (57%) (Figure 1). In terms of vulvo-vaginal and lower urinary tract symptoms associated with the presence of GSM, it was found that 71.87% of the symptomatic women presented with three symptoms, 22.91% with four, and 5.2% had five or more symptoms.

The mean total score on the FSFI for the study population was 26.58; the highest and the lowest scores were 29.43 and 4.74, respectively, with a standard deviation of \pm 7.38 points. The prevalence of sexual dysfunction in the study group was 67.2% (n = 375/558), with an FSFI score of 19.47 \pm 8.52.

Figure 1.
GSM symptoms reported by menopausal women in Quindío (Colombia), 2013-2016



The most frequent problems related to sexual dysfunction were altered desire in 375 cases (67.2%), followed by altered arousal in 252 (45.16%), altered orgasm in 246 cases (44.08%), lubrication problems in 180 (32.25%) and, finally, coital pain (dyspareunia) in 78 cases (13.97%). It was found that 7.73% had one sexual dysfunction complaint, 78.13% had two, and 14.13% had three or more sexual dysfunction complaints. Table 2 describes the detailed scores for each FSFI domain in the population of women with GSM in Quindío.

In the group of women with GSM, 53.37% ($n = 155$) considered that the condition had a negative impact on their daily lives; 64.23% ($n = 185$) reported negative consequences for their sexual life, with 57.98% ($n = 167$) reporting that they felt less willing to have intercourse. It was found that the relationship with the partner was affected in 27.43% ($n = 79$) of the cases, leading to a decline in self-esteem in 21.18% ($n = 61$) of the women. Despite these percentages, they did not consider that the symptoms were sufficiently bothersome as to prompt them to seek medical help.

DISCUSSION

This research found a GSM prevalence of 51.61% in the study group; vaginal dryness accounted for 84%, followed by dyspareunia in 57% of cases. A significant impact on the sexuality of these women was also found, characterised by a 67.2% prevalence of sexual dysfunctions (desire, 67.2%; arousal, 45.16%; orgasm, 44.08%; lubrication, 32.25%, and pain, 13.97%), which is higher than reported by Espitia in a population of women from the same region of Colombia (14). Likewise, the presence of a single sexual dysfunction was found to be uncommon (7.73%).

The prevalence of GSM in this research is consistent with the prevalence described by other authors, (10, 12, 15) but it is lower than the 70% prevalence reported by Moral *et al.* (16). Other studies show a lower prevalence in similar populations, ranging between 30.8% (17) and 39% (18).

As to vaginal dryness as the most frequent symptom, our results are higher than those reported in the study by Chua *et al.*, which reports a frequency of 57% (19), and in other studies, with frequencies

ranging between 27 and 55% in similar populations (20-23).

Regarding the proportion of women with three of the vulvovaginal and lower urinary tract symptoms, our findings are higher (71.87%) than those reported by Pastore *et al.* (24), and by Espitia in a similar population of women in the city of Armenia (25).

The sexual dysfunction results in this study are also higher than those described previously by our group at 42.9% (14). This might be explained on the grounds that the majority of women have a low level of education and belong to a low-medium socioeconomic bracket, factors that may determine inequalities at the time of requiring timely medical care, increasing the number and severity of the symptoms.

Regarding the FSFI domains, altered sexual desire was the most commonly reported disorder, higher than what has been described in another Colombian population (38.4%) (8), which could be explained by the type of population, patient age, as well as the study inclusion criteria. When comparing the impact of GSM symptoms on sexual function found in this study with the reports from other authors in different countries, the impact is equally deleterious as was found in Spanish women by Moral *et al.* (16), in European women by Nappi *et al.* (26) and in Canada by Labrie *et al.* (27).

In the study on Vaginal Health: Insights Views & Attitudes (VIVA) (28) American women were asked through an on-line survey whether vaginal discomfort affected their lives, and 80% responded affirmatively; 75% reported negative consequences for their sexual lives, 33% for the relationship with their partners, and 26% for their self-esteem. These percentages are higher than those found in our study, although impact on daily life, and sexual function was not lower among the surveyed women. The difference between the results of this research and studies by other authors may be due to disparities in terms of race, the fact that the majority were

in a stable relationship, sociocultural aspects, the older age of the women, and time of menopause.

In terms of GSM symptoms and impact on sexuality, the women with the largest number of symptoms had a higher percentage of sexual disorders, similar to the finding by Kagan *et al.* (29). However, despite the high prevalence of sexual dysfunctions, the negative impact on sexuality was not considered by the women as a bothersome symptom that required medical care. This is consistent with other studies that report that only 25% of the women sought help because of the feeling of shame and the belief that the symptoms were a normal consequence of ageing (28, 30-32).

As shown in other studies, female sexuality is negatively affected by menopause (8, 19). Consequently, GSM is found to be related with serious repercussions on desire, orgasm and increased pain, as confirmed in this study.

The non-probabilistic sample selection is a limitation of this study because it does not allow generalisation. However, a significant population of women was achieved, given that 90% of the women available for the research were included. Strengths include the fact that this is the first study on the prevalence of GSM conducted in the region, and one of the few that focuses on the Colombian population. Moreover, it is the first study to consider the impact of GSM on the sexual health of Colombian women.

CONCLUSIONS

A high prevalence of GSM was found in the women included in the study, and the associated symptoms have a negative effect on sexuality given the frequent association between GSM and sexual dysfunction.

Population studies are needed in the region in order to describe the importance of GSM as a health problem in our population, and to define the priority of implementing strategies that can impact the quality of life of these women.

ACKNOWLEDGEMENTS

I wish to thank doctor David Vásquez Awad, my great friend and mentor, not only for his teachings but for the generosity with which he shares the wealth of his knowledge. This research would not have been possible without his insights.

FUNDING

No financial support was received for this study. The entire research was conducted with the author's own resources.

REFERENCES

1. Portman DJ, Gass ML. Vulvovaginal Atrophy Terminology Consensus Conference Panel. Genitourinary syndrome of menopause: New terminology for vulvovaginal atrophy from the International Society for the Study of Women's Sexual Health and the North American Menopause Society. *Menopause*. 2014;21:1063-8. <https://doi.org/10.1097/GME.0000000000000329>
2. Gandhi J, Chen A, Dagar G, Suh Y, Smith N, Cali B, et al. Genitourinary syndrome of menopause: An overview of clinical manifestations, pathophysiology, etiology, evaluation and management. *Am J Obstet Gynecol*. 2016;215:704-11. <https://doi.org/10.1016/j.ajog.2016.07.045>
3. Espitia-De La Hoz FJ, Orozco Gallego H. Abordaje diagnóstico y terapéutico del síndrome genitourinario en la menopausia; actualización. *Rev Med UCR*. 2017;117:67-84. <https://doi.org/10.15517/rmucr.v11i2.34580>
4. Nappi RE, Lachowsky M. Menopause and sexuality: Prevalence of symptoms and impact on quality of life. *Maturitas*. 2009;63:138-41. <https://doi.org/10.1016/j.maturitas.2009.03.021>
5. Cumming GP, Currie HD, Moncur R, Lee AJ. Web-based survey on the effect of menopause on women's libido in a computer-literate population. *Menopause Int*. 2009;15:8-12. <https://doi.org/10.1258/mi.2009.009001>
6. Espitia-De La Hoz FJ. Prevalence and characterization of sexual dysfunctions in women, in 12 Colombian cities, 2009-2016. *Rev Colomb Obstet Ginecol*. 2018;69:9-21. <https://doi.org/10.18597/rcog.3035>
7. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther*. 2000;26:191-208. <https://doi.org/10.1080/009262300278597>
8. Vallejo-Medina P, Pérez-Durán C, Saavedra-Roa A. Translation, adaptation, and preliminary validation of the female sexual function index into Spanish (Colombia). *Arch Sex Behav*. 2017;1-14. <https://doi.org/10.1007/s10508-017-0976-7>
9. Palacios S, Mejía A, Neyro JL. Treatment of the genitourinary syndrome of menopause. *Climacteric*. 2015;18:23-9. <https://doi.org/10.3109/13697137.2015.1079100>
10. Golmakani N, Parnan Emamverdikhan A, Zarifian A, Sajadi Tabassi SA, Hassanzadeh M. Vitamin E as alternative local treatment in genitourinary syndrome of menopause: A randomized controlled trial. *Int Urogynecol J*. 2018. <https://doi.org/10.1007/s00192-018-3698-z>
11. Portman D, Palacios S, Nappi RE, Mueck AO. Ospemifene, a non-oestrogen selective oestrogen receptor modulator for the treatment of vaginal dryness associated with postmenopausal vulvar and vaginal atrophy: A randomised, placebo-controlled, phase III trial. *Maturitas*. 2014;78:91-8. <https://doi.org/10.1016/j.maturitas.2014.02.015>
12. Bruyniks N, Nappi RE, Castelo-Branco C, de Villiers TJ, Simon J. Effect of ospemifene on moderate or severe symptoms of vulvar and vaginal atrophy. *Climacteric*. 2016;19:60-5. <https://doi.org/10.3109/13697137.2015.1113517>
13. Rabley A, O'Shea T, Terry R, Byun S, Louis Moy M. Laser Therapy for Genitourinary Syndrome of Menopause. *Curr Urol Rep*. 2018;19:83. <https://doi.org/10.1007/s11934-018-0831-y>

14. Espitia-De La Hoz FJ. Prevalencia de disfunción sexual en mujeres del Eje Cafetero. *Rev Cienc Biomed.* 2016;7:15-23.
15. Nappi RE, Kingsberg S, Maamari R, Simon J. The CLOSER (CLarifying Vaginal Atrophy's Impact On SEx and Relationships) survey: Implications of vaginal discomfort in postmenopausal women and in male partners. *J Sex Med.* 2013;10:2232-41. <https://doi.org/10.1111/jsm.12235>
16. Moral E, Delgado JL, Carmona F, Caballero B, Guillán C, González PM, et al., as the writing group of the GENISSE study. Genitourinary syndrome of menopause. Prevalence and quality of life in Spanish postmenopausal women. The GENISSE study. *Climacteric.* 2018;21:167-73. <https://doi.org/10.1080/13697137.2017.1421921>
17. Geng L, Zheng Y, Zhou Y, Li C, Tao M. The prevalence and determinants of genitourinary syndrome of menopause in Chinese mid-life women: A single-center study. *Climacteric.* 2018;21:478-82. <https://doi.org/10.1080/13697137.2018.1458832>
18. Nappi RE, Kokot-Kierepa M. Women's voices in the menopause: Results from an international survey on vaginal atrophy. *Maturitas.* 2010;67:233-8. <https://doi.org/10.1016/j.maturitas.2010.08.001>
19. Chua Y, Limpaphayom KK, Cheng B, Ho CM, Sumapradja K, Altomare C, et al. Genitourinary syndrome of menopause in five Asian countries: Results from the Pan-Asian REVIVE survey. *Climacteric.* 2017;20:367-73. <https://doi.org/10.1080/13697137.2017.1315091>
20. van Geelen JM, van de Weijer PH, Arnolds HT. Urogenital symptoms and resulting discomfort in non-institutionalized Dutch women aged 50-75 years. *Int Urogynecol J Pelvic J.* 2000;11:9-4. <https://doi.org/10.1007/PL00004023>
21. Hutchinson-Colas J, Segal S. Genitourinary syndrome of menopause and the use of laser therapy. *Maturitas.* 2015;82:342-5. <https://doi.org/10.1016/j.maturitas.2015.08.001>
22. Jackson SL, Boyko EJ, Scholes D, Abraham L, Gupta K, Fihn SD. Predictors of urinary tract infection after menopause: A prospective study. *Am J Med.* 2004;117:903-11. <https://doi.org/10.1016/j.amjmed.2004.07.045>
23. Oskay UY, Beji NK, Yalcin O. A study on urogenital complaints of postmenopausal women aged 50 and over. *Acta Obstet Gynecol Scand.* 2005;84:72-8. <https://doi.org/10.1111/j.0001-6349.2005.00645.x>
24. Pastore LM, Carter RA, Hulka BS, Wells E. Self-reported urogenital symptoms in postmenopausal women: Women's Health Initiative. *Maturitas.* 2004;10:292-303. <https://doi.org/10.1016/j.maturitas.2004.06.01>
25. Espitia-De La Hoz FJ, Orozco-Gallego H. Estríol vs estrógenos conjugados de origen equino en el tratamiento del síndrome genitourinario de la menopausia. *Ginecol Obstet Mex.* 2018;86:117-126. <https://doi.org/10.24245/gom.v86i2.1881>
26. Nappi RE, Palacios S, Panay N, Particco M, Krychman ML. Vulvar and vaginal atrophy in four European countries: Evidence from the European REVIVE Survey. *Climacteric.* 2016;19:188-97. <https://doi.org/10.3109/13697137.2015.1107039>
27. Labrie F, Archer DF, Koltun W, Vachon A, Young D, Frenette L, et al. Efficacy of intravaginal dehydroepiandrosterone (DHEA) on moderate to severe dyspareunia and vaginal dryness, symptoms of vulvovaginal atrophy, and of the genitourinary syndrome of menopause. *Menopause.* 2016;23:243-56. <https://doi.org/10.1097/GME.0000000000000571>
28. Nappi RE, Kokot-Kierepa M. Vaginal Health: Insights, Views & Attitudes (VIVA) - Results from an international survey. *Climacteric.* 2012;15:36-44. <https://doi.org/10.3109/13697137.2011.647840>
29. Kagan R, Rivera E. Restoring vaginal function in postmenopausal women with genitourinary syndrome of menopause. *Menopause.* 2018;25:106-8. <https://doi.org/10.1097/GME.0000000000000958>

30. Ibe C, Simon JA. Vulvovaginal atrophy: Current and future therapies (CME). *J Sex Med.* 2010;7:1042-50. <https://doi.org/10.1111/j.1743-6109.2009.01692.x>
31. Huang KE. Menopause perspectives and treatment of Asian women. *Semin Reprod Med.* 2010;28:396-403. <https://doi.org/10.1055/s-0030-1262899>
32. Espitia-De La Hoz FJ, Orozco Gallego H, Echeverri Ocampo LM. Terapia hormonal y no hormonal en la vaginitis atrófica posmenopáusica: cura y satisfacción a mediano y a largo plazo de los síntomas. *Rev Col Men.* 2016;22:8-17.

Conflict of interest: None declared.