

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20241607>

Review Article

Genitourinary syndrome of menopause exploring the history, updates and treatment

Sara H. Elfaki*

Department of Obstetrics and Gynecology, Ain Alkhaleej Hospital, Al Ain, United Arab Emirates

Received: 24 May 2024

Revised: 02 June 2024

Accepted: 03 June 2024

*Correspondence:

Dr. Sara H. Elfaki,

E-mail: elfakisara@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

The biological factors and physiological functions fundamental to the female anatomy delineate the complexity of reproductive phenomenon in this population. When women experience menopausal transition, genital, sexual, and urinary signs and symptoms materialize often. These longstanding signs and symptoms, presently referred to as the genitourinary syndrome (GUS) of menopause, a relatively new term, impact their quality of life and sexual health with the emergence of vulvovaginal and urogenital atrophy, typical of irritation, soreness, dryness, dyspareunia, and itching. Despite its prevalence, GUS of menopause often goes unreported due to embarrassment, leading to underdiagnoses, diminished intervention, and under-treatment. Moreover, the rising life expectancy is also emerging as a contributing factor to the increasing prevalence of GUS of menopause, directly affecting women's health. While there are notable awareness, education, and healthcare frameworks in place aimed at addressing the unique needs of menopausal women, there is a need to explore further GUS' prevalence, pathophysiology, risk factors, clinical features, diagnosis, and treatment to understand, diagnose, and effectively manage this condition.

Keywords: GUS, Vulvovaginal atrophy, Urogenital atrophy, Menopausal symptoms, Vaginal health index, Vaginal maturity index

INTRODUCTION

The biological factors and physiological functions fundamental to the female anatomy delineate the complexity of reproductive phenomenon in this population. When women experience menopausal transition, genital, sexual, and urinary signs and symptoms materialize often. These longstanding signs and symptoms, presently referred to as the genitourinary syndrome (GUS) of menopause, a relatively new term, impact their quality of life and sexual health with the emergence of vulvovaginal and urogenital atrophy, typical of irritation, soreness, dryness, dyspareunia, and itching.¹ Despite its prevalence, GUS of menopause often goes unreported due to embarrassment, leading to underdiagnoses, diminished intervention, and under-treatment.² Moreover, the rising life expectancy is also emerging as a contributing factor to the increasing

prevalence of GUS of menopause, directly affecting women's health. While there is notable awareness, education, and healthcare frameworks in place aimed at addressing the unique needs of menopausal women, there is a need to explore further GUS' prevalence, pathophysiology, risk factors, clinical features, diagnosis, and treatment to understand, diagnose, and effectively manage this condition.

METHODOLOGY

A two-fold methodology was used, reviewing the literature on GUS of menopause and analyzing studies on prevalence, pathophysiology, clinical features, diagnosis, and treatment. The method further incorporated "genitourinary syndrome of menopause," "GUS," "vulvovaginal atrophy," "urogenital atrophy," and "menopausal symptoms" as key terms in PubMed,

PsycINFO, and Cochrane Library databases. At the same time, the search criteria primarily focused on peer-reviewed journals, randomized controlled trials, and systematic reviews, with the research repeatedly consulting grey literature to gather insights into GUS prevalence, pathophysiology, clinical features, diagnosis, risk factors, and treatment.

PREVALENCE

The prevalence rates of GUS of menopause vary globally, with studies indicating significant numbers of menopausal women experiencing related symptoms (Table 2). According to Wasnik et al GUS of menopause in premenopausal women stands at 15%, with a 40% to 50%

occurrence in postmenopausal women.³ The author further projects a considerable increase in hypoestrogenism by 2030, given that at least 17% of the population will be above 65, an effect common among postmenopausal women.³ These statistics are alarming because they depict the impending healthcare crisis as women transition through menopause. Moreover, despite its widespread occurrence,^{4,5} GUS remains a highly underdiagnosed condition since women are reluctant to seek help for fear of prejudice, embarrassment, and the misconception that the symptoms and signs are a natural aspect of aging.^{6,7} In this regard, various factors, including prejudice, embarrassment, misconceptions, and reluctance of healthcare professionals, constitute major hindrances to proper awareness, reporting, and intervention regarding this syndrome.

Table 1: A presentation of the prevalence of different symptoms of GUS of menopause across various studies and populations.

Study/population	Vaginal dryness (%)	Dyspareunia (%)	Urinary symptoms (%)
British women (55-85 years) (n=2045)	50	50	50
Pan-European study (55-75 years)	30	30	30
All postmenopausal women	45	45	45
Spanish postmenopausal women	27-55	40-77	6-36
Reported prevalence ranges	27-55	40-77	6-50
The North American Menopause Society	Statement: Up to 84% of postmenopausal women have symptoms associated with GUS of menopause, but only a minor part of this population accesses any treatment.		

PATHOPHYSIOLOGY

During embryonic development, the external genitalia and urinary system share a common origin from the urogenital ridge, a structure formed from intermediate mesoderm. According to Libretti and Aeddula, the internal genital and urinary systems originate from a common starting point, predominantly resulting from the middle tissues of the embryo.⁸ The authors further allude that differentiation processes occur around the fifth to the sixth weeks of gestation, leading to the development of distinct structures, from which the genital tubercle gives rise to either male or female genitalia, depending on the hormonal signaling.⁸ Similarly, the cloaca, which initially receives the urinary and reproductive ducts, undergoes partitioning to form separate urogenital and anorectal passages.⁹ Despite their eventual specialization into distinct systems, their shared origin underscores the potential for developmental interrelations and occasionally shared pathological conditions.

The pathophysiology of menopause and related GUS signs and symptoms further delineate biological and hormonal changes. Hormonal changes drive the pathophysiological changes in the genitourinary tract that menopausal women experience, particularly when estrogen levels begin to decline. During the menopausal transition, estrogen receptors and estrogen decrease directly, allowing epithelial cell proliferation and reducing the vascularity of

the female genital and the lower urinary tract.^{3,9} The emerging hypoestrogenic state results in decreased vaginal blood flow, thinning of the vaginal epithelium, and reduced lubrication, contributing to symptoms like dryness, irritation, and dyspareunia. Moreover, the diminished estrogen levels sustain the GUS symptoms exacerbating, in particular, the urinary symptoms, such as urgency and frequency due to the elevated atrophy levels (Figure 1) of the urogenital tissues characterized by vaginal mucosa and loss of elasticity.¹⁰ Similarly, hormonal alterations contribute to the pathophysiology of GUS of menopause.

Estrogen is responsible for the proper functioning of the vaginal rugae, which controls expansion, enlargement, and lubrication. According to Sarmiento et al, menopausal and postmenopausal women presenting classic GUS symptoms present compromised hormonal levels, which decrease the number of epithelial cells and collagen degeneration, consequently diminishing the thickness of the epithelium, which results in mucosal fragility and flaccid tissues (Figure 1).⁹ These developments provoke and culminate in various GUS symptoms with hypoestrogenism leading to reduced vaginal epithelium glycogen levels, a substrate for lactobacilli, subsequently compromising the vaginal microbiome composition. Therefore, the structural and hormonal changes delineate the disturbance of normal, mechanical, and biological functioning of the genitourinary system and the resultantly

deteriorated quality of life and sexual health in menopausal women attributed to the lack of estrogen typical of this population. The World Health Organization (WHO) has also described a continuum of aspects during menopausal transition.

As menopause marks the end of a woman's reproductive years, typically at the ages of 45 to 55, estrogen levels begin to decrease, with women experiencing irregular menstrual cycles, physical changes, and emotional volatilities. The cessation of ovarian follicular function, the decline in estrogen levels, the gradual onset of perimenopause, and the potential impacts on physical, emotional, and mental well-being are the prevalent biological and hormonal changes that occur during the menopausal transition (World Health Organization).¹¹ The organization alludes that menopause can result from medical procedures, such as surgery.¹¹ Nonetheless, WHO underscores the availability of non-hormonal and hormonal interventions as potent options for alleviating and managing GUS.¹¹ The organization firmly advocates for an inclusive approach to the discourse on the GUS of menopause, emphasizing inclusivity. Acknowledging cisgender women, transgender men, and non-binary individuals is critical in addressing the unique health needs of gender-diverse individuals battling menopause-related signs and symptoms.

RISK FACTORS

Risk factors for GUS of menopause encompass behavioral, physiological, demographic, and environmental variables. Based on various scholars and researchers on this topic, a two-fold set delineates the risk factors associated with GUS. On the one hand, Wasnik et al, Zhu et al, and Angelou et al allude that among the several risk factors associated with developing GUS, sexual dysfunction, radiation treatment, alcohol abuse, smoking, vaginal childbirth, bilateral oophorectomy, and ovarian failure are among the lead risk factors.^{3,5,6} On the other, induced hypoestrogenic states, menopause, endocrinal agents, age, and the lack of exercise are also potent risk factors for developing the GUS of menopause.^{6,12} In this regard, age is a significant risk factor, with GUS prevalence increasing as women progress through menopause. The menopausal status, particularly in the onset, correlates with hormonal changes, such as declining estrogen levels, which contribute to GUS symptoms, including vaginal inflammation.¹⁰ There is also the risk of developing this condition for sedentary women, among women boasting compromised lifestyles, including tobacco and alcohol use, and those who have taken medical treatments such as radiation.

CLINICAL FEATURES

The diagnosis of GUS of menopause primarily relies on clinical evaluation, although it presents mild and non-specific symptoms. In this regard, the clinical features of GUS of menopause encompass vulvovaginal symptoms,

such as itching, irritation, and dryness; sexual dysfunction symptoms, such as dyspareunia, decreased lubrication, and post-coital bleeding; and lower urinary tract symptoms, such as dysuria, incontinence, and recurrent urinary tract infections (Table 1).^{3,9,10,13} Dysuria refers to the painful process of passing urine that often arises from irritation, while urge incontinence results from decreased estrogen levels, which commonly leads to bladder instability.¹⁰ Conversely, recurrent urinary tract infections occur due to vaginal changes in flora and the potential of hydrogen (pH), which make the lower urinary tract susceptible to infections, particularly when the typical premenopausal pH levels of 4.0 and 4.7, increase, causing a hypoestrogenic state.^{3,9,10} In contrast, stress urinary incontinence occurs when pelvic muscles weaken. Lastly, voiding issues, such as incomplete emptying, stem from urethral and bladder dysfunction due to compromised tissue integrity.¹⁰ The vulvovaginal symptoms impair sexual health as they cause discomfort and pain during intercourse due to compromised arousal capability and decreased libido.¹⁰ At the same time, lower urinary tract symptoms contribute to functional impairment, such as the inability to empty the bladder and quick filling, resulting in psychological distress.¹⁰ The clinical features of GUS of menopause are further indicative of high severity and increased frequency of symptoms, superseding typical menopause disturbances, such as night sweats.

Table 2: Categorized symptoms of GUS of menopause according to the genital, urinary, and sexual systems.

System	Symptoms
Genital	Vaginal dryness
	Vaginal itching
	Burning sensation
	Dyspareunia
	Decreased vaginal lubrication
	Vaginal irritation
Urinary	Urinary urgency
	Urinary frequency
	Urinary incontinence
	Recurrent urinary tract infections
	Painful urination
Sexual	Decreased libido
	Arousal difficulties
	Pain during sexual intercourse
	Problematic relationship

Based on the findings of various surveys, including GENISSE, CLOSER, and REVIVE, on the interrelation of GUS of menopause, sexual dysfunction, and the quality of life aimed at determining the impact of the GUS of menopause, women experience a moderate effect on sexual functioning, self-perception, sleep, relationships, and everyday functioning. While GENISSE revealed that the prevalence and severity of GUS of menopause increase with the menopause duration, specifically among women that have been postmenopausal for more than five years, a majority of the studies conducted purposely to quantify the

impact of GUS of menopause on the quality of life have concluded that postmenopausal women often fail to recognize the symptoms associated with this condition or discuss them with healthcare providers.¹⁴⁻¹⁷ These findings underscore the significant burden of GUS of menopause on sexual health and quality of life, depicting the complex clinical manifestation of GUS of menopause.

DIAGNOSIS AND INVESTIGATIONS

With the fact that GUS of menopause clinical manifestations are mild and non-specific, the diagnosis of genitourinary syndrome of menopause has proven to be challenging. Nonetheless, various tools and indices, such as the vaginal health index (VHI) scoring and the vaginal maturation index (VMI), have been employed to assess

vagina health and hormonal status.¹⁸ According to Wasnik et al, the diagnosis of GUS of menopause is primarily clinical, where the healthcare provider performs a history and pelvic examination to diagnose.³ While these aspects are enough to deduce an outcome given that at least two symptoms or one symptom and one sign associated with menopause and considered troublesome without any connection to other pathologies, VHI and the VMI diagnostic parameters can determine atrophy (Figure 1) of the genitourinary tract and vaginal cytology respectively.³ The VHI scoring criteria ranging between 5, the lowest, and 25, the highest, provides that a score below 15 indicates vaginal atrophy. In contrast, the VMI percentage score of less than 5 for the total superficial cells due to impaired maturation of parabasal cells indicates vaginal atrophy.

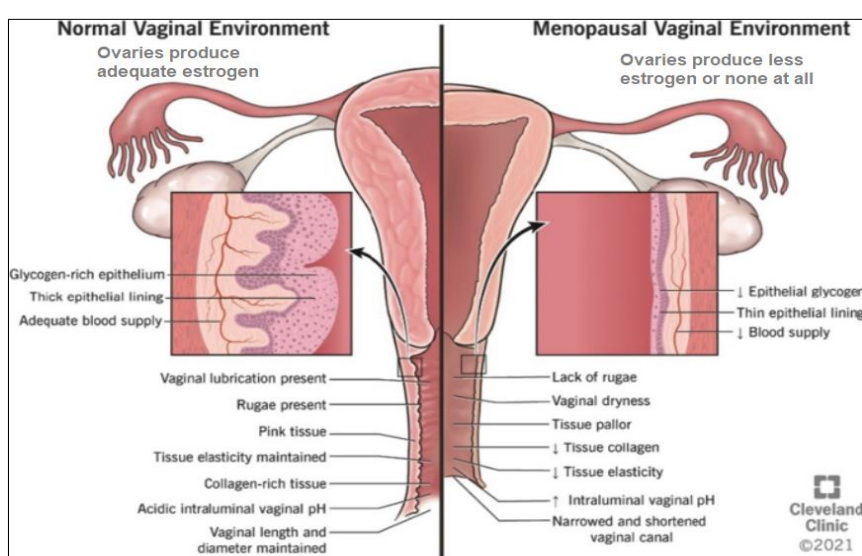


Figure 1: An illustration of vaginal atrophy.¹⁹

TREATMENT

Treatment options for GUS of menopause encompass various modalities tailored to symptom severity and individual patient preferences. According to Angelou et al, non-hormonal therapies are the first line of treatment, while hormonal therapies primarily emerge as the “gold standard”.⁶ Despite these treatment developments, the North American Menopause Society's position statement reiterates that only a minor part of the 84% of postmenopausal women diagnosed with GUS of menopause receive treatment despite the high prevalence.²⁰ Although some women prefer local non-hormonal therapies, such as moisturizers, vaginal lubricants, and non-hormonal topical creams to provide symptomatic relief, energy-based devices (EBD), such as radiofrequency and laser treatments are proving viable in managing GUS of menopause symptoms by promoting tissue regeneration and collagen synthesis in the vaginal mucosa.^{3,7,21,22} Meanwhile, systemic estrogen therapies in the form of injections and tablets and topical estrogen therapies, such as vaginal creams, rings, and pessaries, are

recommended for moderate to severe cases of GUS of menopause as they have been effective therapeutic options.²³ However, lifestyle modification and these non-hormonal are the first lines of treatment for cancer survivors.²⁴ Local non-hormonal treatments are applied directly to the affected genitourinary area. In contrast, local hormonal treatments containing hormones, typically estrogen, are also used in the affected area, and systemic hormonal options involve the administration of hormones in the form of tablets and injections.

The treatment and management of GUS of menopause also encompasses a wide range of contraindications, given that individuals presenting the condition's signs and symptoms might also be battling or undergoing treatment for other ailments. For example, vaginal dehydroepiandrosterone (DHEA) is an alternative for patients with contraindications to estrogen therapy. In contrast, ospemifene, a selective estrogen receptor modulator, improves vaginal lubrication and reduces dyspareunia.¹ Under hypoactive sexual desire disorder, systemic transdermal testosterone and vaginal estrogen therapy can

help manage only this condition in postmenopausal women.⁵ Treatments, such as DHEA supplements, are effective for the treatment of peri- and postmenopausal women with arousal and satisfaction challenges.²⁵ Further, platelet-rich plasma (PRP) injections and off-label use of botulinum toxin are also being explored for their potential to improve vaginal health and sexual function, with the former capable of relieving symptoms and restoring the labia contour, and the latter administered into the pelvic floor muscles managing the refractory and lessening pain due to vaginal dilation.^{5,26} Finally, managing urinary symptoms includes lifestyle modifications and medications, such as smoking cessation.^{3,21} In some cases, surgical interventions, with physical therapy interventions, including pelvic floor exercises and biofeedback, play a crucial role in alleviating GUS of menopause-related urinary symptoms. Some conditions inhibit specific treatment modalities and necessitate different approaches that suit individual preferences and clinical viability in the management of GUS of menopause. For instance, perimenopausal women with prolapse of the genitals cannot use vaginal rings because this modality predisposes them to potential worsening of the pelvic organ prolapse and discomfort.²⁷ Sometimes, the rings are ejected due to the weakened pelvic floor muscles, making it an impracticable treatment option. Conversely, the use of lubricants as a first-line treatment is recommended for careful dilation of the vagina in the treatment and management of vaginismus, with the goal being to restore normal functioning.²⁴ The authors, however, sound caution that lubricants, which may be silicone, oil, and water-based, are strictly for short-term relief and are only applicable before sexual intercourse. Despite the remedial impact of lubricants, users occasionally experience side effects related to the motility of spermatozoa and the risk of developing bacterial vaginosis.²⁷ Water-based lubricants possess the fewest side effects of these medications.

Further, in the treatment and management of GUS of menopause, healthcare providers can recommend the use of gels, creams, and pills, depending on the presenting signs and symptoms. For instance, applying hyaluronic acid vaginal gel at three-day intervals can improve vaginal dryness symptoms, as excellent as estrogen therapy.²⁷ The types of cream and tablets used include vaginal cream, vaginal tablets, vaginal capsules, and oral tablets, all of which are hormonal-specific treatments. The vaginal cream has a maintenance dosage of applied once to thrice a week to provide a moisturizing effect, with potential side effects, such as discomfort, in case users exceed the recommended quantities. According to Naumova and Castelo-Branco, vaginal tablets of 10 milligrams of estradiol are the ideal route of administration in the treatment and management of GUS of menopause, once or twice a week, where more controlled estrogen dosing is required.²⁷ The rings release a set daily dosage for up to 90 days. These treatment modalities replenish estrogen levels, effectively managing a broader range of menopausal symptoms.

EBD and PRP

On the one hand, EBDs, such as laser and radiofrequency (RF), have gained significant attention in treating GUS of menopause but still lack long-term data to back their effectiveness. On the other hand, PRP therapies have emerged as a potential treatment for GUS of menopause, harnessing the regenerative properties of platelets to enhance tissue repair and lubrication. According to Naumova and Castelo-Branco, laser vaginal therapy used to stimulate collagen synthesis and replenish vaginal epithelium glycogen to improve atrophy symptoms are effective and have proven satisfactory among clinicians and patients.²⁷ EBDs mechanism of action involves targeted energy delivery to specific and unwanted tissues, leading to ablation or stimulation of biological processes, such as collagen synthesis. Conversely, PRP induces angiogenesis and promotes tissue repair and regeneration, which is applicable in the GUS of menopause treatment, where tissue restoration improves vaginal atrophy.²⁸ The mechanism of action of PRP involves concentrating platelets from a patient's blood in a specific area to trigger cell proliferation, angiogenesis, and tissue repair. Therefore, the role of PRP is to manage GUS of menopause signs and symptoms by initiating regenerative properties through which urinary and vaginal tissue rejuvenation occurs.

CONCLUSION

Based on this literature analysis, the prevalence of GUS during menopause is on the rise, given that the condition is highly underdiagnosed and undertreated due to the lack of not only proactive intervention measures but also to the fear of prejudice, embarrassment, and misconceptions. GUS of menopause significantly affects the quality of life, sexual functioning, and overall well-being of menopausal women. In this regard, there is an urgent need to raise awareness through patient education and healthcare training. While topical estrogen is the most effective, tailoring treatment strategies to individual patient preferences is critical, although challenges, such as noncompliance, are inevitable. Even though EBD has shown promising intervention results, there is a need for further investigation. Finally, understanding the embryonic origin during the fetal development of the lower urinary tract and the external genital tract can explain the pathophysiologic effects of GUS during menopause.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Gandhi J, Chen A, Dagur G, Smith N, Cali V. Genitourinary Syndrome of Menopause: An Overview of Clinical Manifestations, Pathophysiology, Etiology, Evaluation, and

- Management. *Am J Obstet Gynecol.* 2016;215(6):704-11.
2. Phillips NA, Bachmann GA. The Genitourinary Syndrome of Menopause. *Menopause.* 2021;28(5):579-88.
3. Wasnik VB, Acharya N, Mohammad S. Genitourinary Syndrome of Menopause: A Narrative Review Focusing on Its Effects on the Sexual Health and Quality of Life of Women. *Cureus.* 2023;15(11):1-10.
4. Singh A, Srivastava R, Aditya V. Prevalence and Determinants of Genitourinary Syndrome among Postmenopausal Women of Eastern UP: A Cross Sectional Study. *Int J Health Sci Res.* 2021;11(5):1-7.
5. Zhu Y, Wei J, Yang X, Zhu W, Zhang W. Investigation on Prevalence and Risk Factors Associated with Genitourinary Syndrome of Menopause in Middle-Aged and Older Women in Beijing Community: A Cross Sectional Study. *BMC Women's Health.* 2022;22(558):1-8.
6. Angelou K, Grigoriadis T, Diakosavvas M, Zacharakis D, Athanasiou S. The Genitourinary Syndrome of Menopause: An Overview of the Recent Data. *Cureus.* 2020;12(4):1-9.
7. Christmas M, Huguenin A, Iyer S. Clinical Practice Guidelines for Managing Genitourinary Symptoms Associated with Menopause. *Clin Obstet Gynecol.* 2023;67(1):101-14.
8. Libretti S, Aeddula NR. Embryology, Genitourinary. PubMed. StatPearls Publishing. 2021.
9. Sarmiento ACA, Costa APF, Vieira-Baptista P, Giraldo PC, Eleutério J, Gonçalves AK. Genitourinary Syndrome of Menopause: Epidemiology, Physiopathology, Clinical Manifestation and Diagnostic. *Front Reprod Health.* 2021;3:1-6.
10. Kim HK, Kang SY, Chung YJ, Kim JH, Kim MR. The Recent Review of the Genitourinary Syndrome of Menopause. *J Menopausal Med.* 2015;21(2):65-71.
11. World Health Organization. Menopause. Available at: <https://www.who.int/news-room/fact-sheets/detail/menopause#Public%20Health%20Challenges%20Related%20to%20Menopause>. Accessed on 12 April 2024.
12. Nik Hazlina NH, Norhayati MN, Shaiful Bahari I, Nik Muhammad Arif NA. Prevalence of Psychosomatic and Genitourinary Syndrome among Menopausal Women: A Systematic Review and Meta-Analysis. *Front Med.* 2022;9:1-11.
13. Marino JM. Genitourinary Syndrome of Menopause. *J Midwifery Women's Health.* 2021;66(6):65-71.
14. Moral E, Delgado JL, Carmona F. Genitourinary Syndrome of Menopause. Prevalence and Quality of Life in Spanish Postmenopausal Women. The GENISSE Study. *Climacteric.* 2018;21(2):167-73.
15. Ojha N, Bista KD, Bajracharya S, Katuwal N. Genitourinary Syndrome of Menopause among Postmenopausal Women in a Tertiary Care Centre: A Descriptive Cross-sectional Study. *J Nepal Med Assoc.* 2022;60(246):126-31.
16. Hassanein MM, Huri HZ, Baig K, Abduelkarem AR, Al-Momani M. Development and Validation of the Genitourinary Syndrome of Menopause Symptoms and Vaginal Treatments Acceptability Questionnaire (GSM-SVTAQ): An Electronic Patient-Reported Outcomes Measure. *Int J Gynaecol Obstet.* 2023;164(2):613-23.
17. Tariq B, Phillips S, Biswakarma R, Talaulikar V, Harper J. Women's Knowledge and Attitudes to the Menopause: A Comparison of Women over 40 Who Were in the Perimenopause, Post Menopause and Those Not in the Peri or Post Menopause. *BMC Women's Health.* 2023;23(1):1-16.
18. Gabrieli D, Suissa-Cohen Y, Jaber S, Lev-Sagie A. "Modified Schirmer Test" as an Objective Measurement for Vaginal Dryness: A Prospective Cohort Study. *Diagnostics.* 2022;12(3):1-8.
19. Iyer TK, Thacker HL. Menopause. In Falcone T, Hurd WW, Editors. *Clinical reproductive medicine in surgery.* Springer. 2022;201-33.
20. North American Menopause Society. The 2020 Genitourinary Syndrome of Menopause Position Statement of the North American Menopause Society. *Menopause.* 2020;27(9):976-92.
21. Da Silva AS, Baines G, Araklitis G, Robinson D, Cardozo L. Modern Management of Genitourinary Syndrome of Menopause. *Faculty Rev.* 2021;10(25):1-11.
22. Kagan R, Kellogg-Spadt S, Parish SJ. Practical Treatment Considerations in the Management of Genitourinary Syndrome of Menopause. *Drugs Aging.* 2019;36(10):897-908.
23. Palacios S, Combalia J, Emsellem C, Gaslain Y, Khorsandi D. Therapies for the Management of Genitourinary Syndrome of Menopause. *Post Reprod Health.* 2019;26(1):32-42.
24. López DML. Management of Genitourinary Syndrome of Menopause in Breast Cancer Survivors: An Update. *World J Clin Oncol.* 2022;13(2):71-100.
25. McAdams E, Cross Z, Bosch C, Rodriguez JE, Nashelsky J. Treatments for Postmenopausal Hypoactive Sexual Desire Disorder. *Am Fam Physician.* 2020;101(3):182-3.
26. Kim SH, Park ES, Kim TH. Rejuvenation Using Platelet-rich Plasma and Lipofilling for Vaginal Atrophy and Lichen Sclerosus. *J Menopausal Med.* 2017;23(1):63.
27. Naumova I, Castelo-Branco C. Current Treatment Options for Postmenopausal Vaginal Atrophy. *Int J Women's Health.* 2018;10:387-95.
28. Waghe T, Acharya N, Karnik M, Mohammad S, Patel NA, Gemnani R. Role of Platelet-Rich Plasma in Genitourinary Syndrome of Menopause. *Curēus.* 2024;16(1):1-6.

Cite this article as: Elfaki SH. Genitourinary syndrome of menopause exploring the history, updates and treatment. *Int J Reprod Contracept Obstet Gynecol* 2024;13:1891-6.