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GENITOURINARY SYNDROME OF MENOPAUSE: PREVALENCE, SYMPTOM BURDEN, AND IMPACT ON HEALTH-RELATED QUALITY OF LIFE AMONG POSTMENOPAUSAL WOMEN AT A TERTIARY CARE CENTRE IN WESTERN INDIA

KEY WORDS: Genitourinary Syndrome of Menopause; Vulvovaginal Atrophy; Postmenopausal Women; Menopause Rating Scale; Female Sexual Distress Scale-Revised; India; Quality of Life; Sexual Health

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ABSTRACT

Background: Genitourinary Syndrome of Menopause (GSM) is a chronic, progressive hypoestrogenic condition encompassing vulvovaginal and lower urinary tract symptoms that remain considerably underdiagnosed in low- and middle-income country settings. Data on its burden within the Indian postmenopausal population and its downstream effects on health-related quality of life (HRQL) are sparse. **Objective:** To determine the prevalence of GSM among postmenopausal women aged 45-55 years and to quantify its impact on vulvovaginal health and sexual HRQL using validated instruments. **Methods:** A cross-sectional, observational study was conducted at a semi-urban tertiary care hospital in Maharashtra, India. A total of 150 postmenopausal women (12 months of amenorrhoea, aged 45-55 years) were enrolled by purposive sampling. Genitourinary symptoms were assessed using the Vulvovaginal Symptom Questionnaire (VSQ). Sexual distress was quantified with the Female Sexual Distress Scale-Revised (FSDS-R). The Menopause Rating Scale (MRS) captured overall menopausal symptom severity across somatic, psychological, and urogenital domains. Inferential statistics included independent-samples t-test, chi-square test, and Kruskal-Wallis test. A p-value of <0.05 was considered statistically significant. **Results:** GSM was present in 92 of 150 women (61.3%, 95% CI: 53.1-69.1%). Vaginal dryness was the most prevalent genital symptom (40.7%), followed by urinary urgency (38.7%) and loss of libido (53.5% of sexually active women). The mean MRS Total Score was 16.49 (SD 4.36), with 98% of participants reporting moderate-to-severe menopausal symptom burden. Women with GSM had significantly higher MRS Total Scores (17.91 vs 14.24; $p < 0.001$) and FSDS-R scores (27.11 vs 14.07; $p < 0.001$) compared with those without GSM. GSM prevalence increased significantly with longer postmenopausal duration (46.3% at 1-3 years to 72.5% at 7-10 years; $p = 0.015$). MRS Total Score correlated positively with FSDS-R ($r = 0.321$; $p = 0.003$). **Conclusions:** GSM affects nearly two-thirds of postmenopausal women in this semi-urban Indian cohort and is strongly associated with impaired sexual wellbeing and overall menopausal HRQL. Its progressive nature with postmenopausal duration underscores the need for routine, systematic screening within primary and secondary care gynaecological practice in India.

INTRODUCTION

Menopause, the permanent cessation of menstruation resulting from the loss of ovarian follicular activity, marks a pivotal transition in a woman's life. Globally, more than one billion women were estimated to have entered the postmenopausal phase by 2025, and the number is projected to rise steeply over the coming decades [1]. In India, where the mean age at natural menopause is approximately 46-47 years, significantly earlier than the global average, this transition is experienced by hundreds of millions of women who will spend one-third or more of their lives in the postmenopausal state [2]. The demographic significance of this phenomenon is amplified by India's rapidly ageing population structure.

Among the constellation of menopausal consequences, Genitourinary Syndrome of Menopause represents a particularly underappreciated yet highly prevalent condition. The term GSM, coined in 2014 by the International Society for the Study of Women's Sexual Health (ISSWSH) and the North American Menopause Society (NAMS), replaced the earlier, narrower designations of vulvovaginal atrophy and urogenital atrophy. GSM encompasses a broad range of chronic, progressive signs and symptoms arising from the hypoestrogenic state, affecting the labia majora and minora, clitoris, vestibule, vaginal introitus, vagina, urethra, and bladder [1,3]. International Menopause Society (IMS) recommendations recognise GSM as a distinct, progressive entity requiring proactive identification and management across postmenopausal care pathways [4].

Epidemiological data indicate that between 27% and 84% of postmenopausal women worldwide experience at least one symptom attributable to GSM [3,5]. A systematic review and meta-analysis examining menopausal symptom prevalence

found that genitourinary syndrome was highest in the postmenopausal phase, affecting approximately 55.1% of such women compared with 31.9% of perimenopausal and 19.2% of premenopausal women [6]. Despite this substantial burden, GSM remains chronically underdiagnosed and undertreated, with estimates suggesting that fewer than 25% of affected women ever consult a healthcare provider about these symptoms, often owing to embarrassment, social taboo, or the mistaken belief that symptoms represent an inevitable and irreversible consequence of ageing [5,7].

The clinical impact of GSM extends well beyond physical discomfort. Vulvovaginal symptoms including dryness, itching, irritation, and dyspareunia directly impair sexual function, frequently leading to avoidance of intercourse, reduced libido, and sexual distress in affected women and their partners [8]. A cross-sectional study among postmenopausal women in Brazil found a GSM prevalence of 74.4%, with vaginal dryness and dyspareunia associated with significantly higher rates of female sexual dysfunction and avoidance of sexual activity [9]. Similarly, lower urinary tract manifestations including urgency, frequency, dysuria, stress urinary incontinence, and recurrent urinary tract infections collectively impair daily functioning, sleep quality, and psychological wellbeing [3,10]. Evidence further indicates that symptom severity does not plateau after menopause but continues to worsen with increasing postmenopausal duration as progressive tissue atrophy deepens in the absence of adequate estrogen stimulation [7].

Validated, multi-domain instruments are essential for comprehensively quantifying the symptom and quality-of-life burden of GSM. The Vulvovaginal Symptom Questionnaire (VSQ) captures the full breadth of genital and urinary symptom experiences. The Menopause Rating Scale (MRS)

offers a standardised, multi-domain assessment of somatic, psychological, and urogenital symptoms across Asian and global populations [11,12]. The Female Sexual Distress Scale-Revised (FSDS-R) provides a validated index of the emotional and psychological distress arising from sexual problems, a dimension frequently overlooked in routine clinical encounters [13].

Despite the global burden of GSM and its recognised adverse effects on HRQL, robust prevalence data from Indian populations remain scarce. Existing Indian studies have primarily examined menopausal symptoms in broad terms without specifically characterising the genitourinary domain or its interplay with sexual distress and overall menopausal quality of life [11]. Studies conducted in comparable semi-urban and rural Indian settings consistently reveal a significant treatment gap: women in these settings have limited health literacy, minimal awareness of GSM as a treatable medical condition, and suboptimal access to specialised care [14]. This epidemiological and clinical void constitutes a critical need gap that impedes evidence-informed policy development and healthcare planning for postmenopausal women in India.

The present study was therefore designed to determine the prevalence of GSM among postmenopausal women aged 45-55 years attending a tertiary care centre in western India, and to systematically evaluate the impact of GSM on vulvovaginal health, sexual quality of life, and overall menopausal symptom burden using validated, internationally recognised instruments. The findings are intended to generate locally anchored prevalence data that can inform clinical screening practices, guideline adaptation, and public health messaging within the Indian context.

METHODOLOGY

Study Design and Setting

This was a cross-sectional, observational, descriptive study conducted at the Department of Obstetrics and Gynaecology, Krishna Institute of Medical Sciences (KIMS), Karad, a tertiary care teaching hospital affiliated with Krishna Vishwa Vidyapeeth (Deemed to be University), Maharashtra, India. The setting represents a semi-urban and rural catchment area where postmenopausal women often have limited awareness of, and access to, dedicated care for genitourinary symptoms. The study adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist for cross-sectional studies.

Study Duration

Data collection was carried out over a three-year period spanning 2022 to 2025. This extended timeline was intentional, allowing adequate time for participant identification, recruitment, and verified data collection while ensuring that all instruments were administered uniformly across the cohort.

Study Population

The study population comprised postmenopausal women attending the gynaecology outpatient department of KIMS, Karad. Inclusion criteria required women to have attained postmenopausal status, defined as the absence of menstruation for at least 12 consecutive months; to be aged between 45 and 55 years; and to provide written informed consent prior to enrolment. Participants were excluded if they had abnormal uterine bleeding attributable to uterine fibroids or endometrial hyperplasia, active urinary tract infection or any gynaecological condition independently capable of producing genitourinary symptoms, or if they were unwilling or unable to participate in the interview process. These criteria ensured that observed genitourinary symptoms were attributable to the menopausal hypo-estrogenic state rather than intercurrent pathology.

Sample Size and Sampling Strategy

The sample size was calculated using the formula $n = (Z1 -$

$\alpha/2)^2 \times p \times q / d^2$, where Z at 95% confidence interval equals 1.96, p represents the estimated GSM prevalence, $q = 1 - p$, and d denotes the allowable margin of error. Based on published prevalence estimates for genitourinary symptoms in postmenopausal women, the calculated minimum sample size was 154. For practical feasibility and to mitigate the risk of selection bias, a final sample of 150 postmenopausal women was enrolled using a purposive sampling strategy. Participants fulfilling the eligibility criteria were consecutively approached in the outpatient setting, and those providing written consent were included.

Data Collection and Assessment Instruments

Data were collected through structured, face-to-face interviews conducted in the participant's primary language (Marathi or Hindi) by trained study personnel. Socio-demographic information including age, marital status, occupation, educational level, and socioeconomic status was recorded. Menopausal history, particularly age at menopause and duration since menopause, was documented. Comorbidities including diabetes mellitus were noted. Three validated instruments were employed.

The Vulvovaginal Symptom Questionnaire (VSQ) comprised 21 items assessing genital and urinary symptoms experienced within the preceding week. Symptom severity was scored on a Likert scale from 0 (no complaint) to 4 (very severe). The presence or absence of individual symptoms including vaginal dryness, itching, irritation, burning, and discharge, and urinary symptoms including urgency, frequency, stress urinary incontinence, dysuria, and recurrent urinary tract infection, was recorded.

The Female Sexual Distress Scale-Revised (FSDS-R) measured the frequency of distress related to sexual problems over the preceding 30 days. A total FSDS-R score of 11 or greater was used as the threshold for clinically significant sexual distress. The instrument was administered only to sexually active participants ($n=86$; 57.3% of the total cohort).

The Menopause Rating Scale (MRS) is an 11-item self-rating scale evaluating menopausal symptom severity across three subscales: somatic (items 1-4, maximum 16 points), psychological (items 5-8, maximum 16 points), and urogenital (items 9-11, maximum 12 points), yielding a total score of up to 44 points. Severity categories were defined as mild (0-10), moderate (11-20), and severe (21-44). A urine routine and microscopy examination was performed for all participants to rule out active urinary tract infection that could confound genitourinary symptom reporting.

Ethical Considerations

The study was conducted in strict accordance with the Declaration of Helsinki and applicable institutional guidelines. Ethical approval was obtained from the Institutional Ethics Committee of KIMS, Karad, prior to commencement. Written informed consent was obtained from all participants before any study procedure was initiated. Participants were assured of complete confidentiality and were informed of their right to withdraw at any time without consequence. All interviews were conducted in a private setting to ensure participant comfort when discussing sensitive topics including sexual health.

Statistical Analysis

Data were entered and analysed using IBM SPSS Statistics (version appropriate to the study period). Categorical variables were summarised as frequencies and percentages. Continuous variables were reported as mean with standard deviation or as median with range, as appropriate for distributional characteristics. Group comparisons for continuous outcomes (MRS scores, FSDS-R scores) by GSM status were performed using the independent-samples t-test.

The chi-square test was applied to assess associations between categorical variables including GSM status and MRS severity category. Kruskal-Wallis testing was used to compare MRS Total Scores across postmenopausal duration groups. Pearson's and Spearman's correlation coefficients were calculated to evaluate the relationship between MRS subscale and total scores and FSDS-R scores. A two-tailed p-value of less than 0.05 was considered statistically significant.

RESULTS

Participant Characteristics and Clinical Profile

A total of 150 postmenopausal women with a mean age of 49.4 years (SD 2.6; range 45-55 years) were included (Table 1). The majority belonged to the 48-50-year age group (49.3%), and 36.0% had been postmenopausal for 1-3 years, 30.0% for 4-6 years, and 34.0% for 7-10 years. Diabetes mellitus was present as a comorbidity in 28 women (18.7%).

Table 1. Sociodemographic and Clinical Characteristics of Study Participants (N=150)

Characteristic	Frequency (n)	Percentage (%)
Age Group (Years)		
45-47	28	18.7
48-50	74	49.3
51-53	39	26.0
54-55	9	6.0
Mean Age: 49.4 ± 2.6 years		
Years Since Menopause		
1-3 years	54	36.0
4-6 years	45	30.0
7-10 years	51	34.0
Diabetes Status		
Diabetic	28	18.7
Non-Diabetic	122	81.3

Data presented as frequency (n) and percentage (%).

Prevalence of GSM and Genitourinary Symptom Profile

GSM was identified in 92 of 150 participants, yielding a prevalence of 61.3% (95% CI: 53.1-69.1%). Among genital symptoms, vaginal dryness was the most frequently reported complaint, affecting 40.7% of the total cohort, followed by vaginal itching (30.0%) and vaginal irritation (28.0%; Table 2). Within the urinary domain, urgency was the predominant symptom (38.7%), followed by urinary frequency (31.3%) and stress urinary incontinence (21.3%). Among the 86 sexually active women (57.3% of the total sample), loss of libido was the most common sexual symptom (53.5%), followed by dyspareunia (51.2%) and lack of lubrication (48.8%).

Table 2. Prevalence of Genitourinary and Sexual Symptoms Among Postmenopausal Women

Symptom Domain	Present n (%)	Absent n (%)
GENITAL SYMPTOMS (N=150)		
Vaginal Dryness	61 (40.7)	89 (59.3)
Vaginal Itching	45 (30.0)	105 (70.0)
Vaginal Irritation	42 (28.0)	108 (72.0)
Vaginal Burning	37 (24.7)	113 (75.3)
Vaginal Discharge	30 (20.0)	120 (80.0)
URINARY SYMPTOMS (N=150)		
Urinary Urgency	58 (38.7)	92 (61.3)
Urinary Frequency	47 (31.3)	103 (68.7)
Stress Urinary Incontinence	32 (21.3)	118 (78.7)
Dysuria	26 (17.3)	124 (82.7)
Recurrent UTI	18 (12.0)	132 (88.0)
SEXUAL SYMPTOMS* (n=86)		
Loss of Libido	46 (53.5)	40 (46.5)
Dyspareunia	44 (51.2)	42 (48.8)
Lack of Lubrication	42 (48.8)	44 (51.2)

*Percentages for sexual symptoms calculated among sexually active women (n=86; 57.3% of total cohort).

GSM = Genitourinary Syndrome of Menopause; UTI = Urinary Tract Infection.

Overall Menopausal Symptom Burden (MRS)

The mean MRS Total Score for the entire cohort was 16.49 (SD 4.36), with the Psychological subscale recording the highest mean (5.93 ± 2.63), followed by the Somatic (5.59 ± 2.18) and Urogenital subscales (4.97 ± 2.51; Table 3). Severity stratification revealed that 51.3% of women had moderate menopausal symptoms (MRS 11-20) and 46.7% had severe symptoms (MRS 21-44), with only 3 women (2.0%) recording mild scores, collectively indicating a high overall symptomatic burden in this population.

Table 3. MRS Subscale and Total Scores, and Severity Distribution Among Postmenopausal Women (N=150)

MRS Component	Mean ± SD	Median	Range	Severity Distribution
Somatic Subscale (0-16)	5.59 ± 2.18	5.0	1-12	--
Psychological Subscale (0-16)	5.93 ± 2.63	6.0	0-14	--
Urogenital Subscale (0-12)	4.97 ± 2.51	5.0	0-10	--
MRS Total Score (0-44)	16.49 ± 4.36	16.0	7-27	--
MRS Severity: Mild (0-10)	--	--	--	3 (2.0%)
MRS Severity: Moderate (11-20)	--	--	--	77 (51.3%)
MRS Severity: Severe (21-44)	--	--	--	70 (46.7%)

MRS = Menopause Rating Scale; SD = Standard Deviation; Subscale ranges: Somatic 0-16, Psychological 0-16, Urogenital 0-12, Total 0-44.

Severity categories: Mild = 0-10; Moderate = 11-20; Severe = 21-44.

Impact of GSM on Quality of Life: MRS and FSDS-R Comparison by GSM Status

Women with GSM demonstrated significantly higher MRS Total Scores compared with GSM-absent women (17.91 ± 4.00 vs. 14.24 ± 3.96; t=5.496, p<0.001; Table 4). Among subscales, the Somatic and Urogenital subscales were significantly elevated in the GSM-present group (p<0.001 for each), while the Psychological subscale difference did not reach statistical significance (p=0.088). Among sexually active women, FSDS-R scores were markedly higher in those with GSM than in those without (27.11 ± 8.33 vs. 14.07 ± 5.44; t=7.628, p<0.001), reflecting a profound impact of genitourinary symptoms on sexual wellbeing. Additionally, MRS severity category was strongly associated with GSM status (chi-square=19.257, df=2, p<0.001), with 59.8% of GSM-present women classified in the severe MRS category compared with only 25.9% of those without GSM.

Table 4. Comparison of MRS Scores and FSDS-R Scores by GSM Status

Parameter	GSM Present Mean ± SD	GSM Absent Mean ± SD	t / chi2	p-value
MRS Total Score	17.91 ± 4.00	14.24 ± 3.96	t = 5.496	<0.001*
Somatic Subscale	6.14 ± 2.09	4.72 ± 2.05	t = 4.069	<0.001*
Psychological Subscale	6.22 ± 2.58	5.47 ± 2.66	t = 1.717	0.088 (NS)
Urogenital Subscale	5.55 ± 2.50	4.05 ± 2.26	t = 3.719	<0.001*
FSDS-R Total Score (n=86)	27.11 ± 8.33	14.07 ± 5.44	t = 7.628	<0.001*

*p<0.05, statistically significant (Independent-samples t-test).

GSM = Genitourinary Syndrome of Menopause; MRS = Menopause Rating Scale; FSDS-R = Female Sexual Distress Scale-Revised; NS = Not Significant; SD = Standard Deviation. FSDS-R scores applicable to sexually active women only (GSM present n=57; GSM absent n=29).

Effect of Postmenopausal Duration on GSM Prevalence, MRS Scores, and MRS-FSDS-R Correlation

A statistically significant positive association was observed between postmenopausal duration and GSM prevalence: 46.3% in women with 1-3 years since menopause, rising to 66.7% at 4-6 years and 72.5% at 7-10 years (chi-square=8.393, p=0.015; Table 5). MRS Total Scores similarly increased with postmenopausal duration, from a mean of 15.44 (SD 4.13) at 1-3 years to 17.13 (SD 4.67) at 4-6 years and 17.04 (SD 4.18) at 7-10 years (Kruskal-Wallis H=6.179, p=0.046). Correlation analysis between MRS and FSDS-R scores revealed a statistically significant positive association for MRS Total Score (Pearson r=0.321, p=0.003) and the Somatic subscale (Spearman rho=0.314, p=0.003), indicating that greater menopausal symptom burden is meaningfully linked to higher sexual distress.

Table 5. GSM Prevalence and MRS Scores by Postmenopausal Duration, and Correlation of MRS with FSDS-R Scores

Variable	1-3 Years (n=54)	4-6 Years (n=45)	7-10 Years (n=51)	p-value
GSM Prevalence, %	46.3%	66.7%	72.5%	0.015*
MRS Total Score (Mean ± SD)	15.44 ± 4.13	17.13 ± 4.67	17.04 ± 4.18	0.046*
Correlation: MRS vs FSDS-R (n=86)	r / rho	p-value	Significance	
MRS Total Score (Pearson r)	r = 0.321	0.003*	Significant	
Somatic Subscale (Spearman rho)	rho = 0.314	0.003*	Significant	
Psychological Subscale (Spearman rho)	rho = 0.074	0.500	NS	
Urogenital Subscale (Spearman rho)	rho = 0.182	0.094	NS	

*p<0.05, statistically significant. Chi-square test used for GSM prevalence; Kruskal-Wallis test used for MRS Total Score by menopausal duration; Pearson's and Spearman's correlations used for MRS vs FSDS-R.

MRS = Menopause Rating Scale; FSDS-R = Female Sexual Distress Scale-Revised; GSM = Genitourinary Syndrome of Menopause; NS = Not Significant; n/a = not applicable. Correlation analyses performed in sexually active women only (n=86).

DISCUSSION

The present study provides a comprehensive, multi-domain characterisation of the GSM burden and its relationship with health-related quality of life among postmenopausal women in a semi-urban tertiary care setting in western India. Our central finding that GSM was prevalent in 61.3% of participants contributes meaningfully to the currently sparse Indian evidence base and aligns with the global range of 27-84% reported in the literature [3]. This figure is consistent with the 47.2% prevalence reported among Thai postmenopausal women [15] and the 79% incidence documented in a central Indian study that also used clinical confirmation with the Vaginal Health Index [16]. The inter-study variability in reported prevalence is attributable to differences in case definition, study setting, instruments used, and participant characteristics, and underscores the necessity of locally validated, context-specific data.

The high overall GSM prevalence observed in our cohort is biologically plausible given the progressive nature of

hypoestrogenic vulvovaginal and lower urinary tract changes. The tissue atrophy, loss of mucosal rugae, reduced vaginal secretions, elevated pH, and compromise of urethral mucosal integrity that characterise GSM are known to deepen progressively with increasing postmenopausal duration [3,7]. Our data robustly confirm this temporal trajectory: GSM prevalence rose from 46.3% at 1-3 years postmenopause to 72.5% at 7-10 years (p=0.015), in keeping with published descriptions of GSM as a self-perpetuating, non-remitting condition in the absence of hormonal or non-hormonal therapeutic intervention [4,7]. The IMS 2025 recommendations explicitly identify GSM as a condition that worsens without treatment, reinforcing the importance of early identification to prevent symptomatic progression [4].

Vaginal dryness was identified as the most prevalent individual genital symptom (40.7%), a finding mirrored in multiple international series. The hypoestrogenic state reduces the production of glycogen by vaginal epithelial cells, diminishing lactobacillary colonisation, raising pH, and impairing the transudate-mediated lubrication mechanism, thereby producing the characteristic dryness, irritation, and burning reported by our participants [3]. The similarly high prevalence of dyspareunia and lack of lubrication among sexually active women (51.2% and 48.8%, respectively) reflects the compounding impact of vulvar and vaginal atrophy on intercourse. The mechanistic basis for dyspareunia in GSM involves thinning and friability of vaginal epithelium, reduced vaginal elasticity, narrowing of the introitus, and reduced natural lubrication, collectively rendering sexual intercourse painful and psychologically aversive [8,17]. These biological mechanisms translate directly into the markedly elevated FSDS-R scores observed in GSM-positive women (27.11 vs. 14.07; p<0.001) and explain why loss of libido was the leading sexual complaint in our cohort.

The urinary manifestations of GSM observed in our study, particularly urinary urgency (38.7%), frequency (31.3%), and stress urinary incontinence (21.3%), are direct consequences of estrogen-receptor-mediated physiological changes in the lower urinary tract. Estrogen receptors are abundantly expressed in the urethra, bladder neck, trigone, and pelvic floor musculature. Estrogen withdrawal leads to atrophy of urethral mucosal folds, loss of urethral coaptation pressure, thinning of the bladder trigone epithelium, and weakening of pelvic floor support structures, culminating in both storage and voiding dysfunction [3,10]. Mercier et al. have further advocated for pelvic floor muscle rehabilitation as a complementary, low-risk management strategy precisely because of these underlying neuromusculoskeletal mechanisms [18]. The relatively high prevalence of recurrent urinary tract infection (12.0%) in our cohort is similarly explicable: loss of lactobacillary colonisation in a high-pH vaginal environment facilitates uropathogen ascent, and atrophic urethral mucosa lacks its normal barrier function [17].

The mean MRS Total Score of 16.49 (SD 4.36), with 98.0% of women manifesting moderate or severe menopausal symptom burden, confirms the substantial overall impact of the postmenopausal transition on HRQL in this population. Cross-sectional data from Singaporean midlife women reported that 62.6% had at least one moderate-to-severe MRS symptom, with higher total MRS scores strongly associated with disability and poorer self-rated health [12]. Our Indian cohort demonstrated an even higher burden, likely reflecting the earlier average age at menopause, lower baseline healthcare utilisation for gynaecological concerns, and limited awareness of symptom manageability in this setting. The Psychological subscale recorded the highest mean score (5.93), suggesting that the emotional and mood-related consequences of menopausal transition deserve as much clinical attention as the more commonly discussed physical

symptoms, a finding supported by Logan et al. in their analysis of Asian menopausal women [12].

The demonstration that GSM-positive women had significantly higher MRS Total Scores (17.91 vs 14.24; $p < 0.001$), higher Somatic subscale scores (6.14 vs 4.72; $p < 0.001$), and higher Urogenital subscale scores (5.55 vs 4.05; $p < 0.001$) establishes a clear and statistically robust link between genitourinary symptomatology and overall menopausal HRQL. Notably, the Psychological subscale difference did not reach statistical significance ($p = 0.088$), suggesting that the mood and anxiety dimensions of menopausal HRQL are less specifically tied to the genitourinary domain and may be driven by other physiological and psychosocial determinants including vasomotor symptoms, sleep disturbance, and personal or social stressors, independent of GSM status [12].

The positive and statistically significant correlation between the MRS Total Score and FSDS-R scores ($r = 0.321$, $p = 0.003$), and between the Somatic subscale and FSDS-R ($\rho = 0.314$, $p = 0.003$), confirms that menopausal symptom severity in general, and somatic symptom burden in particular, translates into measurable sexual distress. This bidirectional relationship between somatic symptoms and sexual wellbeing is well documented in the literature. Somatic symptoms such as hot flushes and night sweats disrupt sleep and elevate physiological arousal that negatively influences sexual desire and responsiveness, while genitourinary symptoms directly impair the mechanics of sexual function [8,13]. The fact that 89.5% of sexually active GSM-positive women in our cohort met the clinical threshold for significant sexual distress (FSDS-R greater than or equal to 11) is a finding of considerable clinical magnitude, particularly given that fewer than 25% of women globally seek care for sexual symptoms despite this burden [7,15].

The treatment implications of these findings are far-reaching. Low-dose local estrogen therapy remains the most effective pharmacological option for reversal of GSM-related genitourinary changes, including restoration of vaginal pH, improvement of the vaginal maturation index, and reduction in vulvovaginal symptoms, dyspareunia, and urinary symptoms [17,19]. Data from large real-world analyses, however, indicate that more than 71% of diagnosed GSM cases receive no treatment at all, and newer non-hormonal agents including prasterone and ospemifene remain severely underutilised [20]. Beyond pharmacological management, energy-based devices including fractional CO₂ laser therapy have demonstrated sustained improvements in GSM symptoms and FSDS-R-assessed sexual distress [21], offering additional options for women in whom systemic or topical hormonal therapy is contraindicated. Non-hormonal conservative options including hyaluronic acid vaginal preparations and pelvic floor muscle rehabilitation also provide meaningful symptom relief with favourable safety profiles [18,22,23]. Synthesising these options, the 2025 IMS recommendations advocate a tailored, patient-centred approach to GSM management that is sensitive to symptom severity, comorbidities, patient preferences, and contraindication profiles [4].

Several study limitations require acknowledgement. The cross-sectional design precludes causal inference and temporal assessment of symptom progression beyond the associations we have documented. The sample was drawn from a single tertiary care centre, and purposive sampling may introduce selection bias toward women with more pronounced symptoms or greater health-seeking behaviour, potentially overestimating prevalence relative to the broader postmenopausal community. The exclusion of postmenopausal women above 55 years of age, while methodologically deliberate, limits generalisability to older cohorts where GSM prevalence and severity may be even

higher. The diagnosis of GSM was based on clinical history and symptom questionnaires rather than supplementary objective assessments such as the Vaginal Health Index, vaginal maturation index, or vaginal pH measurement, which could have strengthened the diagnostic precision of the case definition. Finally, the study did not capture data on prior or current hormone therapy, parity, body mass index, or dietary patterns that may independently influence GSM symptom burden.

CONCLUSION

This study establishes that GSM is highly prevalent among postmenopausal women in a semi-urban tertiary care setting in Maharashtra, India, affecting 61.3% of participants and escalating progressively with postmenopausal duration. GSM exerts a substantial, quantifiable adverse impact on vulvovaginal and sexual health-related quality of life, as evidenced by significantly higher MRS and FSDS-R scores in affected women. The near-universal moderate-to-severe menopausal symptom burden in this cohort and the high rate of clinically significant sexual distress among sexually active women with GSM collectively underscore a critical unmet need for systematic, proactive screening of genitourinary symptoms within routine postmenopausal care in India. Clinicians, particularly those practising in resource-limited or semi-urban settings, should adopt structured communication tools and validated instruments such as the MRS, VSQ, and FSDS-R to facilitate early identification and timely, evidence-based management of GSM, thereby meaningfully improving health outcomes and quality of life for postmenopausal women.

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