



Original Article

Exploring Genitourinary Syndrome of Menopause: Analysis of Prevalence, Determinants, and Health Impacts in Pakistani Women

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ABSTRACT

The genitourinary syndrome of menopause (GSM) is a common and complicated medical illness suffered by females after menopause. The current study studied its clinical manifestations, etiological factors, and their impact on the quality of life. **Objective:** To evaluate the prevalence of GSM in Pakistani women of Rural Health Centre, Kangra, District Haripur and the causes associated with the symptoms and play a role in the worsening of disease. **Methods:** An observational cross-sectional study was conducted in Rural Health Center, Kangra, District Haripur, Khyber Pakhtunkhwa, Pakistan, from 1 January 2023 to 30 June 2023, for six months. It involved 202 women aged 35-55 years. **Results:** The observations involved the variables, including demographics of patients, clinical parameters associated with GSM and medical comorbidities. Hypertension and diabetes mellitus were identified as the most prevalent diseases in GSM-suffering females. **Conclusions:** The variables strongly impact women's health and quality of life after menopause. The prevalence of certain comorbidities and their pattern related to GSM shed light on the importance of targeted healthcare strategies and preventive measures for females.

INTRODUCTION

The genitourinary syndrome of menopause (GSM) is a term that describes various menopausal clinical manifestations associated with physiological changes of the vulva, vagina, and lower urinary tract [1]. The symptoms like dryness, burning or little inflamed skin and irritation not only remain up to genital organs, but the patient also suffers difficulty in having a relationship with a partner. This pain and discomfort is because of less lubrication or impaired function of organs. The patient also suffers urgency in urine, most often bacterial or sometimes fungal/viral infection in the urinary tract [2]. The incidence of GSM was approximately 5 million in the 20th century, but the prevalence is increasing daily, reaching up to 13.5 million people, which can be nearly one-third of the entire female

population in the world [3]. The diagnostic procedures are based on the family history and physical examination of the pelvis of the patients, the pH of the vagina, and invasive screening of the vagina [4]. The pervasiveness of GSM among postmenopausal females is approximately 27-84% [5]. However, 13-87% of menopausal females have at least one symptom correlated with GSM [6]. The genitourinary system of females undergoes significant physiological and structural changes due to the depletion of endogenous sex hormones during menopause [7]. GSM occurs before or after menopause due to estrogen scarcity, which results in dysfunctional connective tissues along with sphincter muscle dysfunction, leading to urinary incontinence, which is the ultimate cause of UTI [8]. During menopause, the

anatomy of the ovaries is altered, which results in the lesser secretion of estrogen, which increases gonadotropins. The lower levels of steroid hormones cause thinning of epithelium and degenerating collagen in the connective tissues. These changes lead to the development of vaginal atrophy [9]. In addition, age, menopause, fecal incontinence (FI), smoking, lack vaginal delivery, alcohol addiction, bilateral oophorectomy, lack of sexual intercourse, lack of physical activity, lower education, urogynecological diseases, and Primary ovarian insufficiency (POI) are the possible determinants for the development of GSM [10]. Although the symptoms of GSM are not fatal, they have a significant effect on the quality of life, lowering the confidence in postmenopausal females [11]. According to NAMS, vaginal therapy is the foremost treatment for GSM, during which a low dose of estrogen is used. In addition, vaginal moisturizers, hormonal therapies, intravaginal prasterone, and non-hormonal vaginal emollients during intercourse can be used to ameliorate the symptoms of GSM [12]. In the long run, laser treatments are also available, which can enhance the thickness of the epithelium and enhances blood flow in the vagina. Moreover, a change of lifestyle, quitting smoking and alcohol also aid in the reduction of symptoms [13]. Postmenopausal females suffering from GSM may find that speaking with their physician helps them understand the condition better and lessen its effects by implementing timely, effective preventive measures. Early identification of GSM helps reduce long-term dangers and problems that could seriously impair a woman's sexuality and quality of life [5].

This study examined the pervasiveness and possible GSM in middle-aged and older females. We hypothesized that demographics like age, BMI, smoking, physical activity, family history of GSM, lack of vaginal delivery, and lack of sexual intercourse could be the factors responsible for the occurrence of GSM among females during menopause. We also hypothesized that GSM could considerably negatively impact quality of life.

METHODS

This cross-sectional study was conducted at the Rural Health Centre Kangra, District Haripur, Khyber Pakhtunkhwa, from 1 January 2023 to 30 June 2023, for six months. Consent was obtained from the participant women (35–55 years of age) who voluntarily participated in this study after being informed of its content and significance. In total, 202 female outpatients of reproductive age were included in the study by convenience sampling [10]. The inclusion criteria included the women aged 35 to 55 with consent of participation in the study. The exclusion criterion included patients who

could not complete the questionnaire because of lack of ability to read or write and psychological issues. Written consent was obtained from all study participants before the questionnaire's completion [11]. The information was analyzed after completing questionnaires about the socio-demographic characteristics of females, including age, weight, body mass index (BMI), physical activity per day, educational level, and monthly income. Along with these parameters, comorbidities parameters data like high blood pressure, heart disease, diabetes mellitus, arthritis, dyslipidemia, hyperthyroidism, hypothyroidism, and tumor (any) were also collected. An understandable, validated questionnaire was used to assess GSM. The information related to GSM, including hormone replacement therapy (HRT), number of pregnancies, gynaecological surgery, family history of GSM, menstrual status, and menopause duration (years), was added to the questionnaire. The 'menopause' defined for the current research is 12 months of amenorrhea (without any other explanations). The sample size was calculated to be $n=170$ by using the WHO sample size calculator with 95% confidence interval, 4.14% anticipated population proportion for perinatal death and absolute precision was 3%. The categorical variables were summarized using mean, standard deviation (SD), and proportions/percentages. A significance level of $p<0.05$ was employed to determine statistical significance. The Bonferroni method was applied to adjust for multiple comparisons. The statistical analysis of the data was conducted using SPSS 19.0 software.

RESULTS

A total of 202 women participated in this survey and completed the questionnaire. Table 1 presents the mean values of various demographic variables for the participants in the study. The average age of the participants falls within the range of 35 to 50 years. The mean height is 155 cm, while the average weight is 79 kg. The BMI indicates that, on average, the participants fall into the "Overweight" category. Additionally, the mean duration of physical activity per day is reported to be 18 minutes. These mean values provide a snapshot of the demographic characteristics of the study participants, offering insights into their age range, physical measurements, and activity levels.

Table 1: Mean value of demographic variables of participants

Variables	Mean
Age (years)	35-50
Height (cm)	155
Weight (Kg)	79
Body mass index	Overweight
Physical activity per day	18 min/day

Table 2 provides a comprehensive overview of the study participants' comorbidities, encompassing the number of individuals affected (n) and the corresponding percentages. High blood pressure emerged as the most prevalent comorbidity, affecting 65% of the 131 participants. Diabetes Mellitus followed closely, with 44% of the 89 participants reporting its presence. The data also revealed relatively lower percentages for conditions such as hyperthyroidism (7%), hypothyroidism (10%), and heart disease (9.4%). Arthritis exhibited a notable presence, impacting 23% of the 47 participants. Dyslipidemia was observed in 48% of the 98 participants, suggesting a significant prevalence. Conversely, tumors exhibited the lowest prevalence, affecting only 1% of the 2 participants.

Table 2: Comorbidities (Risk factors) with GSM and their percentages

Comorbidities	Frequency (%)
High blood pressure	131(65)
Diabetes Mellitus	89(44)
Hyperthyroidism	14(7)
Hypothyroidism	21(10)
Heart disease	19(9.4)
Arthritis	47(23)
Dyslipidemia	98(48)
Tumor	2(1)
Smoking	0

Table 3 presents percentages related to parameters associated with GSM and the number of participants involved. Hormone replacement therapy was reported by 11% of the 22 participants, indicating a relatively low prevalence among the study population. On the other hand, gynaecological surgery was more common, with 30% of the 61 participants having undergone such procedures. Menstrual status was divided into regular and irregular categories, with 14.5% and 85.5% of the 171 participants falling into each respective group. These percentages provide insights into the distribution of specific factors related to GSM within the surveyed population.

Table 3: Parameters related to GSM and their percentages

Parameters	Frequency (%)
Hormone replacement therapy	22(11)
Gynaecological surgery	61(30)
Menstrual status	
Regular	31(14.5)
Irregular	171(85.5)

Table 4 presents the mean values and their standard deviations (SD) for parameters associated with GSM among the study participants. The mean number of pregnancies is reported as 3 + 1, indicating a relatively consistent average among the participants. Family history of mean GSM was 14

+ 3, providing an average occurrence within the participants' families. The menopause duration was reported as a mean of >5 + 1 year, reflecting some variability in the duration among the participants.

Table 3: Mean values of parameters related to GSM

Parameters	Mean + SD
Number of Pregnancies	3 ± 1
Family History of GSM	14 ± 3
Menopause Duration (years)	>5 ± 1

DISCUSSION

The current cross-sectional study was conducted to evaluate the prevalence and risk factors associated with symptoms of GSM in Pakistani women of Rural Health Center Kangra and Kot Najibullah, District Haripur, KPK. The comprehensive data from this survey involving 202 women provides a detailed snapshot of the participants' demographic characteristics, comorbidities, and parameters related to Genitourinary Syndrome of Menopause (GSM) [11]. The findings, including demographic profile, reveal an average age within the 35 to 50-year range, indicating a relatively mature study population. The mean height, weight, and BMI suggest that, on average, the participants fall into the "Overweight" category, underscoring the importance of understanding the health implications associated with body weight. Furthermore, the reported mean duration of physical activity per day at 18 minutes emphasizes the need for attention to physical well-being and the potential impact on overall health [12, 13]. The prevalence of comorbidities among the participants was significant in the observations. High blood pressure is the most prevalent comorbidity, affecting 65% of the participants, indicating a substantial cardiovascular health concern within the studied group. Diabetes Mellitus follows closely, with 44% of participants reporting its presence, emphasizing the importance of metabolic health [13, 14]. The lower percentages for conditions such as hyperthyroidism, hypothyroidism, heart disease, arthritis, and dyslipidemia indicate a varied landscape of health concerns within the population. The remarkably low prevalence of tumors (1%) is noteworthy but requires further investigation to understand the underlying factors [15, 16]. The results of the current study provided insights into factors associated with GSM. Hormone replacement therapy is reported by a relatively low 11% of participants, suggesting either limited utilization or specific preferences within the study population. In contrast, gynaecological surgery is more common, with 30% of participants having undergone such procedures, indicating a notable aspect of GSM management [17]. The division of menstrual status into regular and irregular categories highlights the prevalence

of irregular menstrual cycles among the participants, which is relevant to GSM considerations [18, 19]. The consistent mean number of pregnancies indicates a stable reproductive history among the participants. The mean family history of GSM suggests a significant familial association with the syndrome. The reported menopause duration, with a mean of more than 5 years and associated variability, underscores the diverse experiences of menopause within the study population [20, 21]. The current findings are aligned with the study population data collected from different regions of Pakistan related to the prevalence of GSM. Nappi, with co-workers, conducted a structured online questionnaire recruiting approximately 3 thousand women in the age group of 55-65 years. They reported a 45% prevalence of GSM in respective populations [22]. A retrospective study was conducted by another researcher also involving 3 thousand women moving towards menopause and reported the prevalence of GSM as 12.4% [23]. So, our current findings showed a higher prevalence of GSM in the Pakistani population compared to previously conducted research conducted by females of comparatively higher age groups. Besides, this finding could be attributed to those women unable to discuss GSM because of personal embarrassment and cultural reasons. Further, in the current study, we have found that postmenopausal women were more likely to develop GSM, which may be due to the different composition of the vaginal microbiota in the vagina [24]. Overall, this dataset contributes valuable information for healthcare professionals, researchers, and policymakers, enabling the development of targeted interventions and healthcare strategies tailored to the specific needs and health challenges of women within this demographic. The prevalence of particular comorbidities and patterns related to GSM underscore the importance of ongoing research and healthcare initiatives focused on women's health in the context of reproductive and menopausal experiences. The study's findings are a foundation for further investigations and interventions to promote women's well-being in this age group.

CONCLUSIONS

Finally, it concluded that demographics, especially age, weight, body mass index (BMI) and daily physical activity, strongly impact women's health after menopause. The hormones remain balanced, and the quality of life improves. After that, the prevalence of metabolic disorders comorbidities and their pattern related to GSM shed light on the importance of targeted healthcare strategies and preventive measures for females. The variables associated with the present or past pregnancies of females are also considered while treating GSM.

Authors Contribution

Conceptualization: AI

Methodology: IB, AI

Formal analysis: IB

Writing-review and editing: AI

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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