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Menopausal Health and Associated Factors among Postmenopausal Women: A Cross-sectional Study in Koraput District, Odisha

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ABSTRACT

Background: Menopause marks the permanent cessation of menstruation and is associated with diverse physical, psychological, and urogenital changes that can significantly affect quality of life. Despite its growing public health importance, menopausal health remains under-recognized in rural India, particularly in underserved districts such as Koraput, Odisha.

Methods: A community-based cross-sectional study was conducted from March to May 2025 among 384 postmenopausal women aged ≥40 years residing in the field practice area of SLN Medical College, Koraput. Participants were selected using a multistage random sampling method. Data were collected through face-to-face interviews using a pretested semi-structured questionnaire based on the Menopause Rating Scale (MRS). Descriptive and inferential analyses were performed using Jamovi 1.6, with $p<0.05$ considered significant.

Results: The mean age of participants was 53.46±5.24 years, and the mean age at menopause was 47.74±2.33 years. Most participants were married (71.9%) and from lower socioeconomic classes (78.4%). Overall, 92.7% reported at least one menopausal symptom. The most frequent were joint and muscle pain (79.2%), fatigue (51.3%), and sleep disturbances (34.1%). Somatic symptoms predominated (82%), followed by psychological (56 %) and urogenital (31.5%) complaints. Symptom severity was significantly associated with age, education, and BMI ($p<0.05$).

Conclusion: Menopausal symptoms are highly prevalent among rural women in Koraput, Odisha, and are influenced by sociodemographic and lifestyle factors. Integrating menopausal health into primary care through community education and targeted counseling is essential to improve women's midlife health.

Key-words: Dr. Swamy SVN, Senior Resident, Department of Community Medicine, SLN Medical College and Hospital, Koraput, Odisha, India

INTRODUCTION

Menopause is defined as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity and has significant implications for women's health during midlife and beyond [1].

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With increasing life expectancy globally, women now spend a substantial proportion of their lives in the postmenopausal period, making menopausal health a significant public health concern [2]. The menopausal transition is associated with a wide range of physiological, psychological, and social changes. Declining estrogen levels and alterations in the endocrine milieu contribute to vasomotor symptoms such as hot flushes and night sweats, urogenital atrophy, musculoskeletal pain, sleep disturbances, mood changes, and increased cardiovascular and skeletal risks [3].

In India, population ageing is occurring rapidly, and menopausal health issues remain largely under-

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recognized, particularly in rural settings where access to healthcare services is limited [4]. Cultural perceptions often normalize menopausal symptoms, leading to underreporting and delayed health-seeking behavior among women [5]. Rural women, especially those from socioeconomically disadvantaged and tribal communities, face additional barriers such as low literacy, poor awareness, and limited availability of specialized healthcare services [6].

Studies from India and other low- and middle-income countries have consistently reported a high prevalence of menopausal symptoms with a significant impact on quality of life among postmenopausal women [1,2]. A community-based study from rural Haryana reported that nearly 88 % of women experienced at least one menopausal symptom, with anxiety, physical exhaustion, sleep disturbances, and musculoskeletal discomfort being the most common [1]. Similar findings have been reported from rural West Bengal, where hot flushes, anxiety, fatigue, and sexual problems were frequently observed among postmenopausal women [2]. Rural–urban comparative studies from Kerala demonstrated a high prevalence of menopausal symptoms in both settings, highlighting the widespread burden of menopausal morbidity [3].

Evidence from Odisha indicates that the mean age at menopause among rural and tribal women ranges between 46 and 47 years, with joint and muscle pain and vasomotor symptoms being commonly reported [4]. Reviews exploring determinants of menopausal quality of life have emphasized the role of sociodemographic factors, lifestyle behaviors, nutritional status, body mass index, and cultural context in shaping symptom severity and health outcomes [5].

Despite available evidence, important gaps persist. Data from underserved inland tribal districts such as Koraput, Odisha, remain scarce. Many existing studies combine rural and urban populations, limiting localized understanding of symptom patterns and associated factors. Furthermore, fewer studies comprehensively explore the relationship between menopausal symptoms and sociodemographic, reproductive, and lifestyle determinants in purely rural and tribal populations [6]. Addressing these gaps is essential for developing region-specific interventions and integrating menopausal health into primary healthcare services.

The present study was therefore undertaken to assess the prevalence and pattern of menopausal symptoms among postmenopausal women residing in rural Koraput district, Odisha, and to examine their association with sociodemographic and reproductive factors.

MATERIALS AND METHODS

Study design and setting- A community-based cross-sectional study was conducted to assess the prevalence, pattern, and determinants of menopausal symptoms among postmenopausal women. The study was carried out in the field practice area of the Department of Community Medicine, SLN Medical College and Hospital (SLNMCH), Koraput, Odisha. The area predominantly comprises rural and tribal populations with limited access to healthcare and varying literacy levels. The study was conducted over three months, from March 2025 to May 2025.

Study population- The study population included postmenopausal women aged 40 years and above residing permanently in the selected villages of the SLNMCH field practice area. Postmenopausal status was defined as cessation of menstruation for at least 12 consecutive months.

Sample size and sampling technique- The sample size was calculated as 384 using the formula $n = Z^2p(1-p)/d^2$, assuming a prevalence of menopausal symptoms of 50%, a 95% confidence level (Z= 1.96), and an absolute precision of 5%. A multistage random sampling technique was employed. In the first stage, villages were selected by simple random sampling. In the second stage, eligible postmenopausal women were identified through household listing and chosen using systematic random sampling until the desired sample size was achieved.

Inclusion and Exclusion criteria- Women aged≥40 years who had attained natural menopause, were permanent residents of the study area for at least six months, and were willing to provide informed consent were included. Women with surgical menopause, those on hormone replacement therapy or medications affecting menstruation, and women with severe illness or cognitive impairment limiting participation were excluded.

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Data collection tool and procedure- Data were collected through face-to-face interviews using a pretested semi-structured questionnaire based on the Menopause Rating Scale. The questionnaire captured sociodemographic characteristics, reproductive and menstrual history, menopausal symptoms, lifestyle factors, and health-seeking behavior. Anthropometric measurements, including height, weight, and body mass index, were recorded using standard procedures. Interviews were conducted by trained female investigators familiar with the local language and culture. Each interview lasted approximately 30–40 minutes, and privacy and confidentiality were ensured.

Outcome measures- The primary outcome was the prevalence of menopausal symptoms categorized into somatic, psychological, and urogenital domains. Secondary outcomes included mean age at menarche and menopause and associations between menopausal symptoms and selected sociodemographic and reproductive variables.

Statistical analysis- Data were entered into Microsoft Excel and analysed using Jamovi version 1.6. Descriptive statistics were expressed as mean, standard deviation, frequencies, and percentages. Inferential statistics included the chi-square test, independent t-test, and ANOVA as appropriate. Multivariate logistic regression analysis was performed to identify independent predictors of severe menopausal symptoms. A p-value < 0.05 was considered statistically significant.

Ethical considerations- Ethical approval was obtained from the Institutional Ethics Committee of SLN Medical College and Hospital, Koraput. Written informed consent was obtained from all participants before data collection. Confidentiality, anonymity, and voluntary participation were ensured. Participants were informed of their right to withdraw from the study at any stage, and women identified with health concerns were referred to nearby primary health centres for appropriate management.

RESULTS

A total of 384 postmenopausal women participated in the study, yielding a response rate of 96%. The mean age of the respondents was 53.46±5.24 years (range= 41–68 years). Most participants (71.9%) were currently married, while 28.1% were widowed. Regarding education, 42.2% were illiterate, 36.7% had primary education, and 21.1% had secondary or higher education. The majority (65.1%) were housewives, and 78.4 % belonged to lower socioeconomic classes as per the modified BG Prasad classification (Table 1).

Table 1: Socio-demographic profile of postmenopausal women in Koraput, Odisha (n = 384)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	40-49	108	28.1
	50-59	194	50.5
	>=60	82	21.4
Education	Illiterate	162	42.2
	Primary	141	36.7
	Secondary+	81	21.1
Marital status	Married	276	71.9
	Widowed	108	28.1
Occupation	Housewife	250	65.1
	Labourer	88	22.9
	Others	46	12
Socioeconomic status	Lower	301	78.4
	Middle	71	18.5
	Upper	12	3.1

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The mean age at menarche was 12.94±1.51 years, while the mean age at menopause was 47.74±2.33 years. The mean reproductive span (difference between menopause and menarche) was 34.80±2.95 years. The majority (82.3%) had experienced natural menopause, whereas 17.7% reported induced menopause (hysterectomy or other causes). The average parity was 3.12±1.49 children per woman (Table 2).

Table 2: Reproductive and menstrual characteristics of participants

Parameter	Mean±SD	Range
Age at menarche (years)	12.94±1.51	10–16
Age at menopause (years)	47.74±2.33	43–54
Reproductive span (years)	34.80±2.95	30–41
Parity (number of children)	3.12±1.49	0–7

Total 92.7% of participants reported at least one menopausal symptom. The most reported symptoms were joint and muscle pain (79.2%), fatigue (51.3%), sleep disturbances (34.1%), and memory issues (34.1%). Other prevalent symptoms included vaginal dryness (29.4%), mood swings (21.9%), hot flashes (20.8%), and night sweats (4.7%) (Fig. 1).

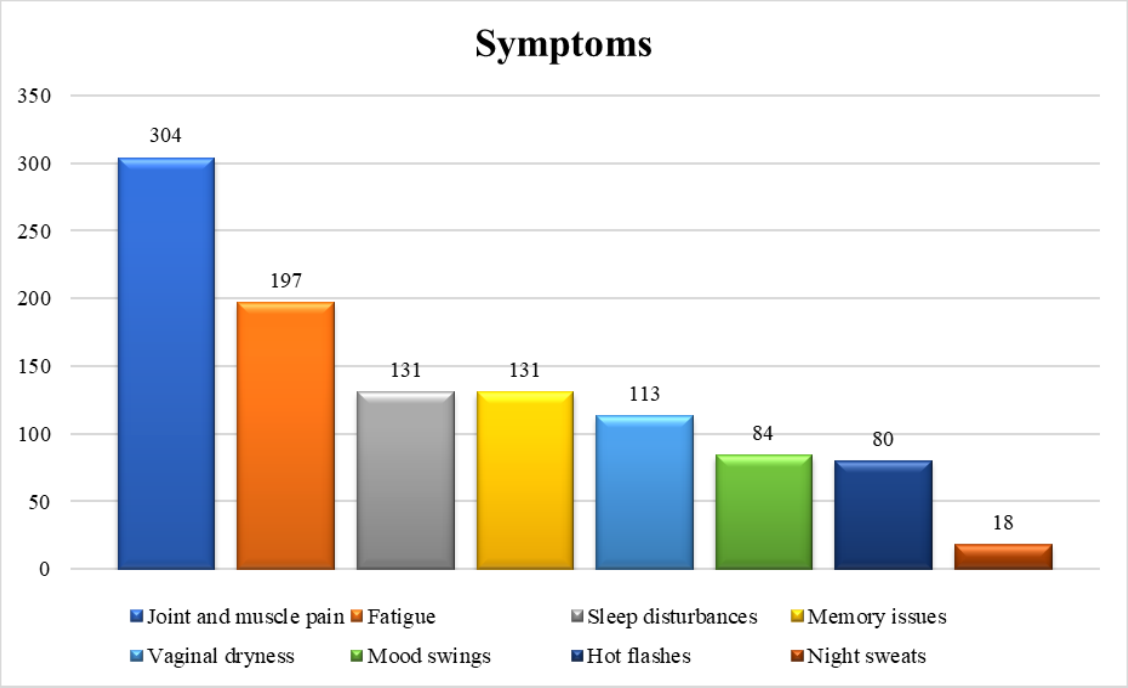

Fig. 1: Bar chart showing distribution of menopausal symptoms among participants

Based on the Menopause Rating Scale (MRS) classification (Fig. 2), somatic symptoms were most prevalent (82%), followed by psychological symptoms (56%), and urogenital symptoms (31.5%). Approximately 42.9 % of women experienced moderate to severe symptom burden (MRS>16).

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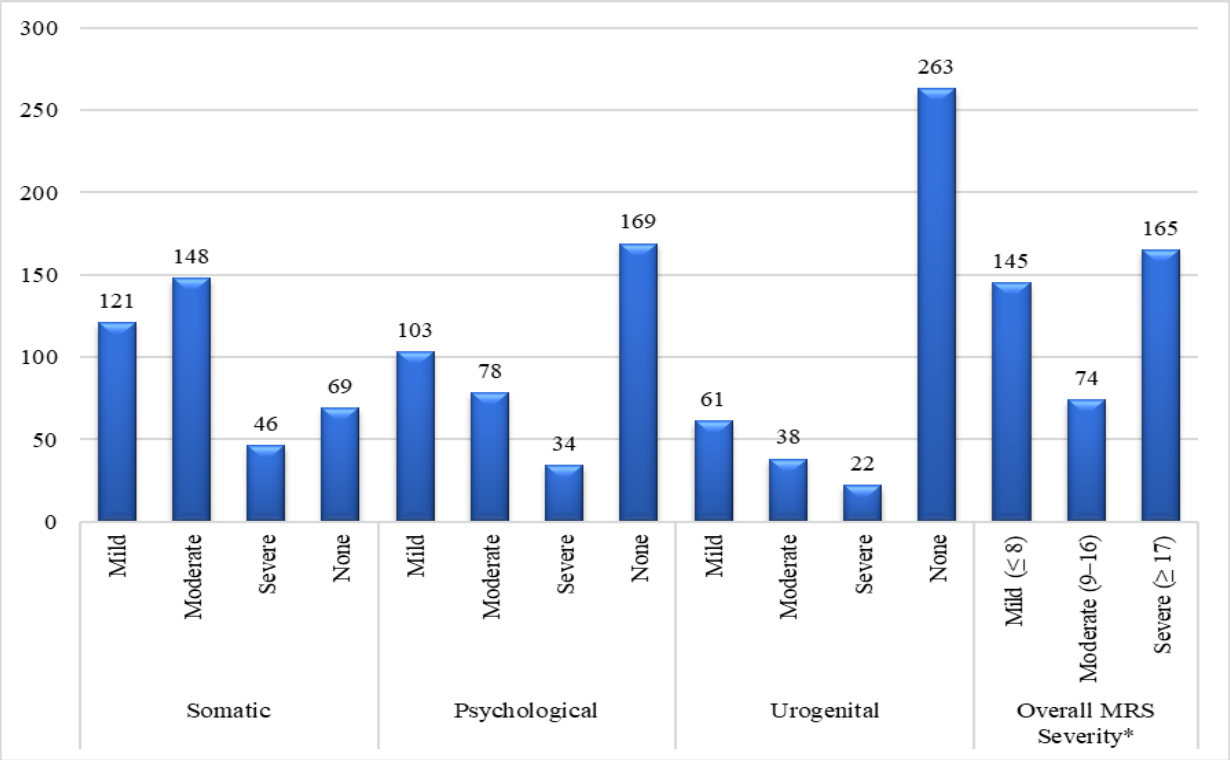

Fig. 2: Proportion of women by severity of menopausal symptoms (MRS categories)

Bivariate analysis revealed significant associations between menopausal symptom severity and age group ($p<0.05$), educational status ($p<0.05$), and BMI ($p<0.01$). Women aged≥50 years, with lower education, and overweight BMI reported higher symptom scores. No significant associations were found between parity or marital status and overall symptom burden (Table 3). This highlights the influence of demographic and lifestyle factors on menopausal health in this rural population.

Table 3: Association of Menopause Rating Scale (MRS) Scores with Sociodemographic and Anthropometric Variables

Variable	Category	Mean MRS Score±SD	p-value
Age group (years)	40-49	13.2±4.1	0.03*
	50-59	15.9±4.6	
	>=60	16.3±4.8	
Education	Literate	13.7±4.3	0.02*
	Illiterate	16.1±4.9	
BMI (kg/m²)	Normal	14.2±3.9	0.01*
	Overweight	17.0±4.7	
	Obese	17.4±4.5	
Marital status	Married	15.3±4.5	0.41
	Widowed	15.9±4.8	

DISCUSSION

This community-based study assessed the prevalence, patterns, and determinants of menopausal symptoms among postmenopausal women in rural Koraput district, Odisha. The high response rate reflects good community participation and highlights the relevance of menopausal health concerns in this rural population.

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The mean age of participants in this study was comparable to findings reported from rural Haryana and West Bengal [1,2]. The predominance of married women and those belonging to lower socioeconomic classes reflects the typical demographic profile of rural Indian communities. A substantial proportion of illiterate women observed in this study is consistent with findings from rural Odisha and Bihar, where low literacy has been identified as a key determinant of poor awareness and suboptimal health-seeking behavior related to menopause [4,6]. Similar observations have been reported in narrative reviews highlighting the influence of education and occupation on menopausal experiences [5].

The mean age at menarche and menopause observed in the present study aligns with national and regional estimates from India, which report menopause occurring between 46 and 48 years of age [4,7,8]. Comparable findings have been reported from Western Odisha and rural Kerala, suggesting relative consistency across different regions of India [4,8]. Variations in menopausal age have been attributed to genetic, nutritional, reproductive, and lifestyle factors [10]. The higher parity observed among participants reflects typical reproductive patterns in rural India and has been previously associated with altered hormonal exposure and symptom perception during menopause [11].

An overwhelming majority of women reported at least one menopausal symptom, reaffirming menopause as a multidimensional transition affecting physical, psychological, and urogenital health. Musculoskeletal pain emerged as the most common symptom, consistent with findings from Haryana, West Bengal, Maharashtra, and Tamil Nadu [1,2,15]. Estrogen deficiency–related changes in bone metabolism and increased inflammatory activity have been proposed as key mechanisms underlying musculoskeletal symptoms in postmenopausal women [12].

Psychological symptoms such as fatigue, sleep disturbances, and memory problems were also highly prevalent, echoing observations from rural Indian studies reporting psychological symptom prevalence ranging from 30% to 55% [2,5]. In contrast, vasomotor symptoms were reported less frequently than in Western populations, where prevalence rates of 60–80% have been documented [13]. Cultural differences, dietary patterns, climatic conditions, and underreporting may account for this variation [14].

Urogenital symptoms, particularly vaginal dryness, were reported by nearly one-third of participants, comparable to findings from studies conducted in Maharashtra and Tamil Nadu [1,15]. Somatic symptoms predominated overall, followed by psychological and urogenital domains, a pattern consistent with studies from Kerala and Gujarat using the Menopause Rating Scale [16,17]. Occupational strain, nutritional deficiencies, and limited access to healthcare may further contribute to the predominance of somatic complaints in rural populations [18].

Symptom severity showed significant associations with age, educational status, and BMI. Increasing age has been consistently associated with greater symptom burden in Indian studies, particularly for somatic and urogenital symptoms [10,19]. Lower educational attainment was linked to higher symptom severity, supporting evidence that education enhances awareness, coping ability, and healthcare utilization during menopause [20,21]. Higher BMI was also significantly associated with more severe symptoms, a finding supported by studies demonstrating links between obesity, thermoregulatory instability, and inflammatory changes during menopause [22,23]. Parity and marital status did not show significant associations, consistent with observations from Haryana and Gujarat [1,17].

Overall, the findings underscore the substantial burden of menopausal symptoms among rural women in Odisha and highlight the influence of sociodemographic and lifestyle factors. Limited awareness and low health-seeking behavior reported in similar rural settings emphasize the need for integrating menopausal health services into primary healthcare. Community-based education, counseling, and screening services at primary health centers could significantly improve the quality of life among midlife women.

CONCLUSIONS

The present study highlights a high prevalence of menopausal symptoms among postmenopausal women in rural Koraput, Odisha, with somatic and psychological complaints being the most predominant. The mean age at menopause (47.7 years) observed in the study was consistent with national estimates reported from different parts of India. The severity of menopausal symptoms showed a significant association with

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increasing age, lower educational status, and higher body mass index, underscoring the important influence of socio-demographic and lifestyle factors on menopausal health. Despite the considerable burden of symptoms, awareness regarding menopause and appropriate health-seeking behavior among women remained low in this rural setting.

There is an urgent need to integrate menopausal health services into existing primary healthcare programs, particularly in rural and tribal areas. Regular health education sessions, community awareness activities, and inclusion of midlife women's health services within the existing reproductive and child health framework can facilitate early recognition and management of menopausal symptoms. Training primary healthcare providers and Accredited Social Health Activists to offer counseling, screening, and lifestyle guidance may further improve the quality of life of women in the post-reproductive phase.

CONTRIBUTION OF AUTHORS

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Literature search- Sujata Sethi, Suchitra Rani Halder
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Critical review- Swamy SVN, Madhumita Bhakta
Article editing- Swamy SVN, Madhumita Bhakta

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