ORIGINAL ARTICLE

Assessment of menopausal symptoms across MENQOL domains and their associated factors among middle-aged rural women of Western Uttar Pradesh: A community-based cross-sectional study

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Abstract

Background: Menopause, occurring between 45-55 years, marks the permanent cessation of menstruation due to declining ovarian function. Reduced oestrogen disrupts the hypothalamic-pituitary-ovarian axis, causing vasomotor, urogenital, psychogenic, cardiovascular, and bone health issues. This study aims to assess menopausal symptoms and associated factors among middle-aged women. **Material & Methods:** This community based cross-sectional study was conducted in rural area of District Saharanpur, among 280 middle-aged women (40-60 years) for a period of 12 months. The Menopause-Specific Quality of Life (MENQOL) questionnaire was used to gather data, and participants were chosen using a multistage random sampling technique. Collected data was analysed and appropriate statistical tests were applied. Fisher's exact test and the Chi-square test were used to analyse the data using SPSS version 26. A statistically significant p-value was defined as ≤0.05. **Result:** Among 280 study participants, physical symptoms (97.9%) were most common, followed by psychosocial (83.6%), vasomotor (74.3%), and sexual (48.9%) symptoms. Women with lower socioeconomic status significantly suffered more vasomotor symptoms (91.8%), while symptoms of the physical domain of MENQOL were more common among those who smoked (98.4%). While all other sociodemographic factors weren't found to have a significant effect on various menopausal symptoms. **Conclusion:** Physical and psychosocial symptoms were most prevalent among middle-aged women. The results highlight the need for holistic interventions to improve women's well-being.

Key-words: Menopause, middle aged women, MENQOL, symptoms

Introduction

Menopause is a physiological milestone in a woman's life characterized by the permanent cessation of menstruation, confirmed after 12 consecutive months of amenorrhea, and generally occurring between 45 and 55 years of age. It results from a gradual decline in ovarian follicular function, leading to reduced secretion of key hormones such as estrogen and inhibin. This hormonal depletion disrupts the hypothalamic-pituitary-ovarian axis, causing a compensatory rise in follicle-stimulating hormone (FSH) and luteinizing hormone (LH), ultimately resulting in the cessation of ovulation and menstrual cycles.[1]

The menopausal transition is often accompanied by a wide range of symptoms that can adversely affect a woman's physical, psychological, and social well-being. Commonly reported symptoms include vasomotor disturbances such as hot flashes and night sweats, sleep disturbances, musculoskeletal complaints, and psychological issues like anxiety, irritability, and depressive symptoms.[2-4] These manifestations vary in intensity and duration across individuals but can significantly impair quality of life. Standardized tools such as the Menopause-Specific Quality of Life (MENQOL) questionnaire are widely used to assess the impact of these symptoms across different domains, including vasomotor, psychosocial, physical, and sexual aspects.

Middle-aged Indian women have a significant prevalence of menopausal symptoms, according to recent studies. According to a community-based study conducted in Hyderabad, 88.7% of postmenopausal women had at least one menopausal symptom. Physical symptoms were the most prevalent, followed by psychological and vasomotor symptoms.[5] Similarly, a South Indian study found that menopausal symptoms negatively impacted the quality of life for almost 87.7% of women.[6] Another recent study conducted in India found that weariness, sleep problems, and musculoskeletal discomfort were among the most commonly reported symptoms, underscoring the significant impact of menopause on women's physical and mental health.[2] Menopausal health is still a neglected aspect of women's health services in India despite its significant prevalence, especially in rural areas where healthcare utilization and knowledge are still low.

With increasing life expectancy worldwide, women now spend a substantial proportion of their lives in the postmenopausal

period. This demographic shift has led to a growing burden of chronic health conditions such as cardiovascular diseases, osteoporosis, and metabolic disorders, which are further influenced by menopausal changes.[7] In low- and middle-income countries like India, menopausal health remains under-recognized, as public health programs largely focus on reproductive and maternal health, with limited attention given to the needs of ageing women.[8]

The situation is particularly challenging in rural areas, where limited awareness, sociocultural barriers, and restricted access to healthcare services often result in poor health-seeking behavior. Women in these settings may normalize menopausal symptoms as a part of aging and therefore do not seek timely care, leading to a hidden burden of morbidity. Understanding the pattern, severity, and determinants of menopausal symptoms in such populations is essential for planning appropriate interventions and improving overall quality of life. Therefore, the present study aims to assess the menopausal symptoms among middle-aged women (40-60 years) and to determine the various sociodemographic and lifestyle factors influencing these symptoms.

Aim & Objective

1. To assess the menopausal symptoms among middle aged women (40-60 years).
2. To find out various sociodemographic and lifestyle factors affecting these menopausal symptoms.

Material & Methods:

Between December 2023 and December 2024, a community-based cross-sectional study was carried out among women aged 40 to 60 in rural regions of District Saharanpur, Uttar Pradesh. Women who gave informed consent and were in the perimenopausal, menopausal, and postmenopausal stages were included in the study. Excluded were women with chronic systemic illnesses, those who were pregnant, nursing, had had a hysterectomy, or were on hormone replacement treatment. The sample size was calculated using the formula:

$$n = \left(\frac{Z_{1-\alpha/2}^2 \times p(1-p)}{d^2}\right) \times DEFF$$

where $Z_{1-\alpha/2} = 1.96$, $p = 0.877$, $q = 0.123$, $d = 0.05$, and $DEFF = 1.5$.

$$n = \left(\frac{(1.96)^2 \times 0.877 \times 0.123}{(0.05)^2}\right) \times 1.5 = 248.63 \approx 249$$

After adding 10% fc $249 \times 1.10 = 273.9 \approx 274$e:

Therefore, the final sample size was rounded to 280 participants.[9,10]

The study units were chosen using a multistage random sampling process. One block, Sarsawa, was chosen by simple random sampling out of the eleven blocks in the Saharanpur district. Twenty villages were chosen by systematic random sampling from the 145 villages that made up the chosen block. Following the selection of the villages, a landmark (Anganwadi centre, school, or temple) was selected in each village, and the pencil/pen-tip approach was used to define the beginning point for data collection. We visited the first home in the direction shown by the pencil tip.

To reach the overall sample size of 280, an equal number of 14 participants were assigned to each of the chosen villages. In order to collect the necessary number of participants from each village, eligible women were recruited by visiting consecutive households. If more than one eligible woman was present in a household, one participant was selected using the lottery method. Equal allocation was chosen to guarantee representation from all chosen villages and for operational feasibility during field data collection, To reach the required sample size, an equal number of 14 participants were assigned to each chosen village.

Face-to-face interviews were used to gather data using a semi-structured, pretested questionnaire. Hindi was used to translate the questionnaire. It included sociodemographic characteristics, behavioural factors, and menopausal symptoms assessed using the Menopause-Specific Quality of Life (MENQOL) questionnaire. The 29-item MENQOL tool, created by Hilditch et al., assesses symptoms over the past month and is divided into four domains: psychosocial (7 items), physical (16 items), sexual (3 items), and vasomotor (3 items).[11] With a high degree of internal consistency (Cronbach's alpha >0.8), it is a validated and reliable tool.[1]

IBM SPSS Statistics version 26 was used for data entry and analysis. Frequencies, percentages, averages, and standard deviations were used to express descriptive statistics. The Chi-square test or Fisher's exact test, depending on the situation, were used to evaluate associations between categorical variables. A statistically significant p-value was defined as ≤0.05. The Institutional Ethics Committee granted ethical permission before the study started.

Recall bias and reporting bias resulting from self-reported symptoms were examples of potential biases. By employing a structured, validated questionnaire and guaranteeing privacy and confidentiality throughout data collection, attempts were taken to reduce these biases. Multistage random sampling was used to reduce selection bias when choosing study locations; nonetheless, recruiting participants within villages required a series of family visits, which could have introduced some selection bias.

Results

Among the 280 study participants, when menopausal symptoms were assessed based on MENQOL domains it was observed maximum number of females experienced physical symptoms (97.9%), followed by the psychosocial symptoms (83.6%), vasomotor domain (74.3%) and sexual symptoms (48.9%) (figure 1).

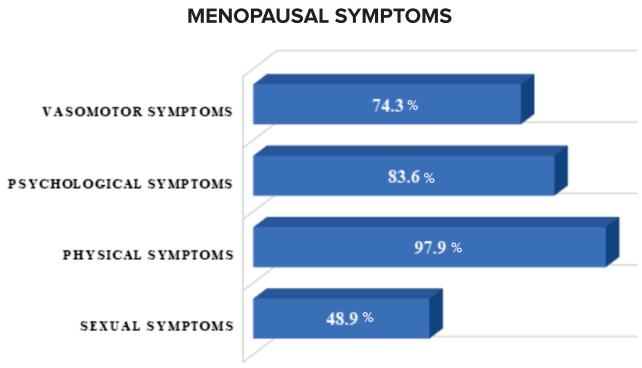

Figure 1: Distribution of study participants according to various symptoms of MENQOL domain (n=280)

Mean symptom score was as follows physical domain (2.15 ± 0.78), psychosocial domain (2.01 ± 1.05), vasomotor domain (1.95 ± 0.97) and sexual domain (1.77 ± 1.16). Vasomotor symptoms were more among perimenopausal and menopausal women (84% and 76.4% respectively). Similarly psychosocial symptoms also showed a higher prevalence among perimenopausal and postmenopausal women (92% and 84% respectively). Both these associations were found to be statistically significant. Although physical symptoms were more in perimenopausal and menopausal women but these associations were not significant (Table 1).

Table 1: Association of symptoms of various domains with menopausal status of study participants (N=280)

	Menopausal status			
MENQOL Domain wise symptoms	**Premenopausal 61 (21.8)**	**Perimenopausal 75 (26.8)**	**Postmenopausal 144 (51.4)**	**P value**
Vasomotor symptoms	35 (57.4)	63 (84.0)	110 (76.4)	**p = 0.001**
Psychosocial symptoms	44 (72.1)	69 (92.0)	121 (84.0)	**p = 0.008**
Physical symptoms	59 (96.7)	72 (96.0)	143 (99.3)	p= 0.168
Sexual symptoms	25 (41.0)	40 (53.3)	72 (50.0)	p= 0.335

In the vasomotor domain, symptoms faced by participants were hot flushes, night sweats and sweating and among these majority of study participants faced problems of excessive sweating (50.7). In psychosocial domain, participants experienced anxiety, depression, nervousness, feeling of dissatisfaction with their personal life, poor memory, being impatient and feeling of spending alone time. Among these symptoms maximum number of women faced anxiety or nervousness (46.8).

In physical domain, symptoms faced by women were increased flatulence/ gas pains, muscles and joints pains, decreased physical strength and lack of energy, difficulty in sleeping, weight gain, feeling bloated and increased facial hair, skin changes such as (drying skin, change in appearance, texture, or tone of skin and increased urgency and frequency of urination. Among these symptoms the most common symptoms faced by participants was muscles and joint pain (76.1). In sexual domain symptoms faced by women were vaginal dryness, change in sexual desire, avoiding intimacy. Participants reported vaginal dryness (45.0) as most common symptom experienced by them.

Table 2 shows association between menopausal symptoms in different MENQOL domains and sociodemographic factors. Regarding age, although the prevalence of vasomotor symptoms ranged from 74% in the 40-50 years group to 75% in 51-60 years groups, the association was not statistically significant (p=0.833). Similar non-significant results were observed for psychosocial (p = 0.760), physical (p = 0.057), and sexual domains (p = 0.783) across age groups. Likewise, no significant associations were found for religion across vasomotor (p = 0.784), psychosocial (p = 0.669), physical (p = 0.669), and sexual domains (p = 0.654). Marital status and caste also did not show a statistically significant association with symptoms in any domain. Among family types, a statistically significant association was observed only for the psychosocial domain (p = 0.008), with symptoms being more prevalent among women from joint family (88.7%) compared to nuclear family (76.9%). Educational status and occupation did not show significant associations with symptoms in any domain. Importantly, socioeconomic status showed a statistically significant association with vasomotor symptoms (p = 0.002). Women from lower socioeconomic classes had a higher prevalence (91.8%) compared to those from upper (50.0%) and upper-middle classes (66.7%). However, no significant associations were observed between socioeconomic status and psychosocial (p = 0.762), physical (p = 0.926), or sexual symptoms (p = 0.322).

Table 2: Association of symptoms of various domains with menopausal status of study participants (N=280)

Sociodemographic factors	Total n (%)	Vasomotor Domain	Psychosocial Domain	Physical Domain	Sexual Domain
Age group					
4050	176 (62.9)	130 (73.9)	148 (84.1)	170 (96.6)	85 (48.3)
5160	104 (37.1)	78 (75.0)	86 (82.7)	104 (100.0)	52 (50.0)
p value		p= 0.833	p= 0.760	p= 0.057	p= 0.783
Marital Status					
Married	228 (81.4)	167(73.2)	189 (82.9)	222 (97.4)	116 (50.9)
Others (Unmarried, widow, divorced)	52 (18.6)	41 (78.8)	45 (86.5)	52 (100.0)	21 (40.4)
p value		p= 0.404	p= 0.522	p= 0.237	p= 0.172
Educational Status					
Illiterate/just literate	206 (73.6)	157 (76.2)	168(81.6)	202 (98.1)	95 (46.1)
Primary	33 (11.8)	27 (81.8)	31 (93.9)	32 (97.0)	22 (66.7)
Secondary	12 (4.3)	8 (66.7)	12 (100.0)	12 (100.0)	6 (50.0)
High school	15 (5.4)	9 (60.0)	4 (26.7)	14 (93.3)	6 (40.0)
Intermediate	7 (2.5)	4 (57.1)	5 (71.4)	7(100.0)	4 (57.1)
Graduation	7 (2.5)	3 (42.9)	7 (100.0)	7 (100.0)	4 (57.1)
p value		p= 0.154	p= 0.116	p= 0.821	p= 0.340
Occupational status					
Cook	5 (1.8)	4 (80.0)	5 (100.0)	5 (100.0)	3 (60.0)
Laborer	17 (6.1)	12 (70.6)	15 (88.2)	17 (100.0)	10(58.8)
Job	7 (2.5)	5 (71.4)	6 (85.7)	7 (100.0)	3 (42.9)
Homemaker	240 (85.7)	179 (74.6)	198 (82.5)	234 (97.5)	114 (47.5)
Tailor/shopkeeper	11 (3.9)	8 (72.7)	10 (90.9)	11 (100.0)	7 (63.6)
p value		p= 0.992	p= 0.753	p= 0.906	p= 0.706

Socioeconomic status					
Upper	16 (5.7)	8 (50.0)	13 (81.3)	16 (100.0)	11 (68.8)
Upper Middle	81 (28.9)	54 (66.7)	69 (85.2)	80 (98.8)	43 (53.1)
Middle	62 (22.1)	47 (75.8)	54 (87.1)	60 (96.8)	30 (48.4)
Lower Middle	72 (25.7)	54 (75.0)	57 (79.2)	70(97.2)	30 (41.7)
Lower	49 (17.5)	45 (91.8)	41 (83.7)	48 (98.0)	23 (46.9)
p value		p= 0.002	p= 0.762	p = 0.926	p = 0.322

When behavioural factors were assessed, it was found that vasomotor symptoms were more among those who consumed smokeless tobacco (81.8). Similarly psychosocial symptoms were more among those who consumed alcohol (100.0), smokeless tobacco (90.9) and those who were not physically active (87.2). Also, sexual symptoms were more among those smoked (52.2), consuming non veg diet (49.7) and physically inactive (52.6). All these associations were not found to be statistically significant. Whereas physical symptoms were more among those who were addicted especially significant association was seen with those who smoked (91.3%) (Table 3).

Table 3: Association of behavioral factors of study participants with MENQOL domain symptoms (N=280)

Behavioural factors	Total n (%)	Vasomotor symptoms	Psychosocial symptoms	Physical symptoms	Sexual symptoms
Alcohol intake					
Yes	3 (1.1)	2 (66.7)	3 (100.0)	3 (100.0)	1 (33.3)
No	277 (98.9)	206 (74.4)	231 (83.4)	271 (97.8)	136 (49.1)
p value		p= 0.761	p= 0.440	p= 0.797	p = 0.587
Smoking					
Yes	23 (8.2)	15 (7.2)	18 (78.3)	21 (91.3)	12 (52.2)
No	257 (91.8)	193 (75.1)	216 (84.0)	253 (98.4)	125(48.6)
p value		p= 0.299	p= 0.473	**p= 0.023**	p = 0.745
Consumption of smokeless tobacco					
Yes	22 (7.9)	18 (81.8)	20 (90.9)	22 (100.0)	9 (40.9)
No	258 (92.1)	190 (73.6)	214 (82.9)	6 (2.3)	128 (49.6)
p value		p= 0.400	p= 0.333	p= 0.470	p= 0.433
Type of diet					
Vegetarian	92 (32.9)	73 (79.3)	77 (83.7)	91 (98.9)	43 (46.7)
Eggetarian	33 (11.8)	24 (72.7)	28 (84.8)	31 (93.9)	17 (51.5)
Mixed	155 (55.3)	111 (71.6)	129 (83.2)	152 (98.1)	77 (49.7)
p value		p= 0.395	p= 0.973	p= 0.252	p = 0.861
Physical activity					
Yes	124 (44.3)	96 (77.4)	98 (79.0)	120 (96.8)	55 (44.4)
No	156 (55.7)	112 (71.8)	136 (87.2)	154 (98.7)	82 (52.6)
p value		p= 0.285	p= 0.068	p= 0.265	p= 0.172

Discussion

The present study assessed menopausal symptoms among 280 women using the MENQOL questionnaire and found that the majority of participants experienced symptoms in the physical domain (97.9%), followed by the psychosocial (83.6%), vasomotor (74.3%), and sexual (48.9%) domains. These findings are consistent with existing literature that highlights the predominance of physical complaints during menopause as seen in a study from Karnataka, where 74.6% of participants reported physical symptoms as most prevalent.[6] Similarly, a study in Hyderabad showed the highest mean score in the physical domain, emphasizing the impact of somatic symptoms on quality of life.[12] These symptoms may be attributed to declining oestrogen levels, age-related physiological changes, and lifestyle factors common in midlife. The psychosocial domain was the second most affected in our study, with 83.6% of participants reporting symptoms such as mood swings, anxiety, and irritability. Emotional distress during menopause has been widely documented and is often linked to hormonal fluctuations, family responsibilities, and societal expectations.[13] Our findings are comparable to those reported in Maharashtra, where 63.9% of women experienced symptoms in the psychosocial domain.[13] Vasomotor symptoms such as hot flushes and night sweats were reported by 74.3% of participants in our study, aligning with the prevalence reported in other Indian studies.[13,14] The sexual domain, while least reported (48.9%), still reflects a significant concern among nearly half of the participants due to cultural taboos and hesitancy in discussing sexual health openly, especially in Indian society. Similar trends were observed in studies conducted in Karnataka and Maharashtra, where sexual symptoms were the least prevalent, reported by 26.4% and 36.2% of women, respectively. [6,13] In the present study, the highest mean symptom score was observed in the physical domain (2.15±0.78), followed by the psychosocial domain (2.01±1.05) and the vasomotor domain (1.95±0.97). The sexual domain had the lowest mean score (1.77±1.16). A study conducted in Hyderabad, India, also reported the highest scores in the physical domain, followed by vasomotor and psychosocial symptoms, indicating the prominence of somatic complaints among postmenopausal women.[12] In the present study, most sociodemographic factors-including age, marital status, religion, caste, education, and occupation-did not show statistically significant associations with menopausal symptoms across the MENQOL domains. However, significant associations were observed for family type (psychosocial domain, p = 0.012) and socioeconomic status (vasomotor domain, p = 0.002). These findings align with several studies. For instance, a study in Hyderabad reported that women with no formal education and higher socioeconomic status had significantly higher vasomotor domain scores, indicating more severe symptoms.[12] Similarly, a study in Kochi found significant associations between MENQOL scores and educational status, socioeconomic status, and marital status, suggesting that these factors influence the quality of life during menopause[15] Women in joint families reported higher psychosocial symptoms, possibly due to increased responsibilities and interpersonal dynamics. The association between lower socioeconomic status and higher vasomotor symptoms underscores the need for targeted interventions in economically disadvantaged groups. Limited access to healthcare resources and increased stress levels may contribute to the severity of symptoms in these populations. The current study found no statistically significant correlations between menopausal symptoms and behavioral characteristics such alcohol use, smokeless tobacco use, food type, and physical activity. Nonetheless, there was a statistically significant correlation (p = 0.023) between smoking

and physical complaints. It's interesting to note that compared to non-smokers (98.4%), smokers had a lower prevalence of physical symptoms (91.3%). Because only 23 participants (8.2%) smoked, the comparison group was substantially smaller, which may have affected the statistical significance, so this conclusion should be considered cautiously. Consequently, the lower prevalence among smokers does not justify a higher burden of physical symptoms in this group, even though a statistically significant link was found. On contrary, a study carried out in Belgrade, Serbia, found that longer smoking duration was linked to worse physical domain and overall MENQOL scores, indicating that smoking negatively impacts menopause-related quality of life.[16] In the present study, a significant association was observed between menopausal status and both vasomotor (p = 0.001) and psychosocial symptoms (p = 0.008), with a higher prevalence among perimenopausal and postmenopausal women. Vasomotor symptoms were present in 84.0% of perimenopausal and 76.4% of postmenopausal women compared to 57.4% in premenopausal women. Psychosocial symptoms were reported by 92.0% of perimenopausal and 84.0% of postmenopausal women versus 72.1% in premenopausal women. No statistically significant association was observed for physical (p = 0.168) or sexual symptoms (p = 0.335) with menopausal status. These findings align with previous studies conducted in Karnataka[17] and West Bengal.[18] As women experience a considerable part of their lives after menopause, it is crucial to recognise and tackle the symptoms associated with menopause, making it a vital public health concern. Such studies can help identify factors (e.g., sociodemographic, lifestyle, genetics) that increase the likelihood and severity of menopausal symptoms.

Conclusion

Middle-aged women frequently have menopausal symptoms; perimenopausal women are more likely to experience vasomotor, psychosocial, and sexual problems, whereas postmenopausal women are more likely to experience physical symptoms.

Recommendation: Menopausal health needs to be better understood and given more attention in health care. Quality of life may be enhanced by encouraging stress reduction, excellent standard of living habits, adequate medical treatment, and family support. The results highlight the necessity of including menopausal health in primary care. Early detection and treatment of menopausal issues may be facilitated by routine screening for menopausal symptoms at Health and Wellness Centres, counselling on healthy lifestyle choices, psychological support, and capacity building of frontline healthcare professionals like ASHAs and ANMs. Programs for raising community knowledge may also enhance middle-aged women's health-seeking habits and dispel myths, improving their quality of life.

Strengths of the study: The current study has a number of advantages. It is one of the few community-based studies from rural Western Uttar Pradesh that uses the validated Menopause-Specific Quality of Life (MENQOL) questionnaire to measure menopausal symptoms. The methodological rigor and generalizability of the results to comparable rural settings were improved by the use of a multistage random sample strategy, consistent data collection processes, and the inclusion of women in various menopausal phases.

Limitation of the study: Causal inference between risk variables and menopausal symptoms is limited by the cross-sectional methodology. Recall and reporting bias may have been induced by using self-reported data. The findings may not be as broadly applicable if women with chronic conditions are excluded. Additionally, under reporting of symptoms in the sexual domain may have resulted from cultural sensitivity toward sexual health. Instead of using probability proportional to size (PPS) sampling, an equal distribution of participants from each chosen village may have led to an over representation of smaller villages and an under representation of bigger villages, which would have limited the research population's representativeness.

Relevance of the study: The burden and pattern of menopausal symptoms in rural women-a demographic that has received little attention and research-are highlighted in this study. The results support the inclusion of menopausal health in basic healthcare services and can help policymakers create focused awareness campaigns and interventions to enhance middle-aged women's quality of life.

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