



Symptom Burden and Its Determinants Across Premenopause, Perimenopause, and Natural Menopause: A Cross-Sectional Study Using the Menopausal Rating Scale

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Abstract

Background: Menopause represents a major physiological transition, often accompanied by diverse somatic, psychological, and urogenital symptoms. Despite its impact, comparative data across menopausal stages in Nepal remain limited.

Objective: To assess and compare symptom burden across premenopausal, perimenopausal, and postmenopausal women using the Menopausal Rating Scale (MRS), and to identify independent determinants of total and domain specific symptom scores.

Methods: A cross-sectional study was conducted among 348 women aged 40-65 years attending menopause clinic at Dhulikhel Hospital, Nepal (August 2025-February 2026). Sociodemographic, reproductive, and lifestyle data were collected, and menopausal stage classified using STRAW+10 criteria. Symptom burden was assessed with MRS. Multivariable linear regression was applied to identify independent predictors of total and domain specific scores.

Results: The average age at menopause was 47.7±4.70 years. Muscle and joint pain were the most common symptom (75.6%), followed by physical and mental exhaustion (69.0%) and sexual problems (59.2%), while depressive mood was least common (47.4%). Somatic complaints dominated (91.1%), with psychological (85.6%) and urogenital (77.6%) symptoms also prevalent. Total MRS scores rose across menopausal stages, with somatic symptoms peaking at perimenopause, while psychological and urogenital issues escalated sharply in post-menopause. Multivariable analysis confirmed age, menopausal stage, and parity as independent predictors of symptom burden. Somatic symptoms were driven mainly by menopausal stage, psychological symptoms by occupation and physical activity, and urogenital complaints by age, parity, and marital status. Unmarried women reported fewer urogenital problems. Other factors such as BMI, education, residence, smoking, and alcohol showed no significant associations.

Conclusion: Symptom burden intensifies across menopausal stages, with distinct determinants for somatic, psychological, and urogenital domains. These findings underscore the need for stage and domain specific counselling and interventions tailored to Nepali women's.

Keywords: Pre-Menopause; Perimenopause; Menopause; Menopausal Rating Scale; Somatic Symptoms; Psychological Symptoms; Urogenital Symptoms

Abbreviations

BMI: Body Mass Index; MRS: Menopausal Rating Scale; STRAW: Staging of Reproductive Ageing Workshop

Introduction

Menopause marks a significant physiological transition in a woman's life, characterized by the cessation of ovarian function and a decline in estrogen levels. This hormonal shift leads to a spectrum of symptoms - vasomotor, urogenital, psychosomatic, psychological as well as sexual dysfunction [1]. In Nepal, the life expectancy of the female has increased from 37.9 years in 1950 to 72.4 years

in 2025 and is expected to rise 79 years by 2050 [2]. The average age at onset of natural menopause among Nepali women ranges from 47.0 to 50.2 [3-9] making one third of their life in this phase. With an increasing population of menopausal women, menopausal health and related issues will become a major responsibility of any nation.

The transition from the reproductive phase to the menopause phase is gradual. There are different stages of menopausal transition defined by Staging of Reproductive Ageing Workshop (STRAW) + 10 classification: pre-menopause, perimenopause, menopause and post-menopause [10]. While some women experience mild discomfort, others report severe symptoms that interfere with daily functioning, relationships, and mental health. Importantly, the nature and severity of these symptoms vary not only between individuals but also across different phases of menopause.

Many symptoms remain underrecognized or normalized, leading to delayed care-seeking. This underscores the need for structured symptom assessment tools like the Menopause Rating Scale (MRS) to improve symptom recognition, their severity and intervention. MRS is a validated and widely used instrument, enables standardized assessment of symptom - somatic, psychological, and urogenital domains, quantification of symptom severity and facilitates cross-group comparisons between different menopausal phases. Despite its utility, few studies have systematically compared symptom profiles among these subgroups using MRS. Such comparative analyses are essential to understand phase-specific symptom burdens and tailor interventions accordingly. To address these gaps, our study aims: To assess and compare the prevalence, severity and pattern of menopausal symptoms among pre-menopause, perimenopausal and naturally postmenopausal women in Nepal using MRS. Furthermore, we want to identify independent determinants of menopausal symptom burden, as measured by MRS, by evaluating the role of menopausal stage, age, parity, and sociodemographic factors, and to explore whether these associations differ across somatic, psychological, and urogenital domains. Hence, this study aims to generate more nuanced insights into the menopausal experience and inform targeted, context-specific interventions for midlife women in Nepal.

Materials and Methods

This is a prospective cross-sectional analytical study, conducted from August 2025 to February 2026 in the outpatient department “women wellness clinic”, of Obstetrics and Gynecology, Dhulikhel hospital, Kavre, Nepal. In partnership with UNFPA, Dhulikhel Hospital, inaugurated Nepal's first dedicated menopause clinic- “women wellness clinic”, in 2025. This multi-specialty clinic is designed to offer holistic, respectful care for women experiencing premenopausal, perimenopause and menopause. The study was approved by the Institutional Ethics Committee IRC-KUSMS 210/25.

The inclusion criteria were women willing to participate in the study with informed consent, aged between 40-65 years old. The study was explained, and informed consent was obtained from all participants. A total of 400 patients were randomly selected. But due to incomplete data, exclusion criteria there were 348 patients. Patient with diagnosed case of depression, thyroid disorder, mentally retarded, history of cancer in remission or under current treatment, premature ovarian failure, known genital malformations, history of hormone replacement therapies in the last 12 months, current

use of herbal medication or any other supplement for menopausal symptoms, surgical menopause were excluded from this study.

Instrument and data collection

The pretested questionnaire consisted of three sections: A, B, and C. Section A consisted of sociodemographic data which included age, age of menarche, parity, body mass index, ethnicity, demographic (urban vs rural), Social characteristics (education, marital status), Behavioral characteristics (smoking, alcohol intake, physical activity) and occupational background.

Section B dealt with detailed menstrual history and included assessment of menopausal status of the patient according to the STRAW + 10 classification which divided menopausal staging into: premenopausal (had regular cycle in last two months); early perimenopausal (irregular menses without skipping cycles and more than 7-day difference in length of consecutive cycles); late perimenopausal (amenorrhea ≥ 60 days); and Postmenopausal (no menstrual bleeding in the last 12 months) [10]. The late and early perimenopausal patients were clubbed as the perimenopausal group for ease of statistical analysis.

In section C, a validated MRS questionnaire was used as a tool for assessing menopausal symptoms. The MRS questionnaire includes 11 symptoms on a scoring scale from “0” (none) to “4” (very severe symptoms). Thus, the total score would range from zero to 44 [11]. A previous study validated the MRS among Nepali menopausal women. MRS was reported to have a sensitivity of 69.3% and specificity of 76.9% at the cut-off score [12]. The symptoms were further grouped into three subscales: somatic (hot flashes, heart discomfort, sleep problem and joint pain), psychological (depressive mood, irritability, anxiety, and physical and mental exhaustion), and urogenital (sexual problems, bladder problems, and vaginal dryness). The questionnaire was administered by face-to-face interview in the local language.

Statistical analysis

All data were analyzed using Stata version 17. Continuous variables were expressed as mean $\pm$ standard deviation and compared across menopausal groups using one-way ANOVA; where the assumption of normality was not met (assessed via the Shapiro-Wilk test), the Kruskal-Wallis test was used instead, with pairwise post-hoc comparisons performed using the Mann-Whitney/Wilcoxon rank-sum test and a Bonferroni-corrected significance threshold. Categorical variables were expressed as number and percentage and compared using the Pearson chi-square test. Multivariable linear regression was used to examine the independent association between candidate determinants (age of menarche, parity, body mass index, ethnicity, area of residence, education, marital status, smoking, alcohol intake, physical activity, and menopausal status) and MRS symptom scores, both for the total score and for each of the three symptom subscales separately. Robust (Huber-White) standard errors were used following a significant Breusch-Pagan test for heteroskedasticity. Variance inflation factors were examined to rule out multicollinearity among predictors. $P < 0.05$ was considered statistically significant throughout.

Results

A total of 348 participated in the study. 105 (30.17%) belonged to premenopausal state, 139 (39.94%) to perimenopausal state, and 104 (29.89%) were postmenopausal. The mean ages of patients in the premenopausal, perimenopausal, and postmenopausal groups were 44.53 ± 3.25 , 47.27 ± 3.80 , and 56.13 ± 7.70 , respectively. The average age

Table 1: Sociodemographic and behavioral characteristics of participants by menopausal status.

Characteristic	Category	Pre-menopausal (n=105)	Peri-menopausal (n=139)	Post-menopausal (n=104)	p-value
Current age, years (SD)	—	44.53 (3.25)	47.27 (3.80)	56.13 (7.70)	<0.001
Age at menarche, years (SD)	—	13.90 (1.54)	14.44 (1.71)	14.86 (2.20)	0.001
Parity, mean (SD)	—	2.41 (1.35)	2.60 (1.55)	3.22 (1.84)	<0.001
BMI, kg/m ² (SD)	—	27.38 (4.56)	27.50 (3.95)	26.99 (5.01)	0.666
BMI category, n (%)	Underweight	4 (3.8)	0 (0.0)	3 (2.9)	0.224
	Normal	26 (24.8)	40 (28.8)	36 (34.6)	
	Overweight	43 (41.0)	63 (45.3)	40 (38.5)	
	Obese	32 (30.5)	36 (25.9)	25 (24.0)	
Ethnicity, n (%)	Brahmin/Chhetri	49 (46.7)	76 (54.7)	49 (47.1)	0.663
	Newar	25 (23.8)	30 (21.6)	27 (26.0)	
	Hill Janajati	18 (17.1)	21 (15.1)	13 (12.5)	
	Others	13 (12.4)	12 (8.6)	15 (14.4)	
Area of residence, n (%)	Urban	87 (82.9)	101 (72.7)	69 (66.3)	0.023
	Rural	18 (17.1)	38 (27.3)	35 (33.7)	
	None	27 (25.7)	31 (22.3)	53 (51.0)	<0.001
Education level, n (%)	Preprimary/Primary	39 (37.1)	49 (35.3)	37 (35.6)	
	Secondary	31 (29.5)	49 (35.3)	9 (8.7)	
	Bachelor and above	8 (7.6)	10 (7.2)	5 (4.8)	
Marital status, n (%)	Married	102 (97.1)	128 (92.1)	94 (90.4)	0.129
	Divorced/widowed/separated	3 (2.9)	11 (7.9)	10 (9.6)	
Smoking status, n (%)	Current	5 (4.8)	4 (2.9)	7 (6.7)	0.019
	Former	5 (4.8)	7 (5.0)	15 (14.4)	
	Never	95 (90.5)	128 (92.1)	82 (78.8)	
Alcohol intake, n (%)	Never	79 (75.2)	110 (79.1)	78 (75.0)	0.685
	Occasional/Daily	26 (24.8)	29 (20.9)	26 (25.0)	
Employment status, n (%)	Housewife	41 (39.0)	57 (41.0)	53 (51.0)	0.077
	Retired	0 (0.0)	3 (2.2)	2 (1.9)	
	Job holder	25 (23.8)	24 (17.3)	9 (8.7)	
	Farmer	25 (23.8)	39 (28.1)	30 (28.8)	
	Shopkeeper	10 (9.5)	15 (10.8)	6 (5.8)	
	Others	4 (3.8)	1 (0.7)	4 (3.8)	
Physical activity, n (%)	Moderate	55 (52.4)	77 (55.4)	49 (47.1)	0.576
	Sedentary	46 (43.8)	54 (38.8)	51 (49.0)	
	Vigorous	4 (3.8)	8 (5.8)	4 (3.8)	

One-way ANOVA (F-test) for continuous variables, except parity (Kruskal-Wallis, non-normally distributed). Pearson chi-square for categorical variables. SD = Standard Deviation.

of menopause in women was 47.70 ± 4.70 (with a minimum age of 37 and a maximum of 58 years old). Table 1 shows, Menarche occurred slightly later in perimenopausal (14.44 ± 1.71) and postmenopausal (14.86 ± 2.20) women compared to premenopausal (13.90 ± 1.54) which was statistically significant ($P=0.001$). Parity increased across groups: 2.4 ± 1.35 children in premenopausal, 2.6 ± 1.55 in perimenopausal, and 3.2 ± 1.84 in postmenopausal women. Premenopausal women were more urban, and better educated. Postmenopausal women had higher parity, more rural residence, and lower education. Basal Metabolic Index (BMI) patterns were similar across groups, but lifestyle differences emerged - postmenopausal women were more likely to be sedentary and former smokers.

All 11 individual menopausal symptoms, and all three symptom subscales in aggregate, showed a significant increase in prevalence across the menopausal transition (Table 2), with the exception of irritability ($p=0.078$). The largest absolute increase was observed for vaginal dryness (36.2% to 65.4%) and difficulty falling asleep (38.1% to 64.4%). Overall muscle and joint problems were the most common symptom 263 (75.6%), followed by physical and mental exhaustion 240 (69.0%), and sexual problem 206 (59.2%). The least common symptom is depressive mood 165 (47.4%). Symptoms belonging to the somatic subscale were a total of 317 (91.1%), followed by psychological 298 (85.6%) and urogenital was 270 (77.6%).

The proportion of women with no complaints declined from

Table 2: Comparison of symptoms in different phases among study participants.

Subscale and symptoms	Pre-menopausal (n=105), n (%)	Peri-menopausal (n=139), n (%)	Post-menopausal (n=104), n (%)	Total, n (%)	P
Somatic subscale					
Hot flushes	44 (41.9)	84 (60.4)	66 (63.5)	194 (55.7)	0.003
Heart discomfort	48 (45.7)	91 (65.5)	66 (63.5)	205 (58.9)	0.004
Difficulty falling asleep	40 (38.1)	73 (52.5)	67 (64.4)	180 (51.7)	0.001
Muscle and joint problem	67 (63.8)	107 (77.0)	89 (85.6)	263 (75.6)	0.001
Total (any somatic symptom)	87 (82.9)	130 (93.5)	100 (96.2)	317 (91.1)	0.001
Psychological subscale					
Depressive mood	39 (37.1)	66 (47.5)	60 (57.7)	165 (47.4)	0.012
Irritability	55 (52.4)	79 (56.8)	70 (67.3)	204 (58.6)	0.078
Anxiety	44 (41.9)	63 (45.3)	62 (59.6)	169 (48.6)	0.023
Physical and mental exhaustion	67 (63.8)	87 (62.6)	86 (82.7)	240 (69.0)	0.001
Total (any psychological symptom)	84 (80.0)	116 (83.5)	98 (94.2)	298 (85.6)	0.009
Urogenital subscale					
Sexual problems	49 (46.7)	83 (59.7)	74 (71.2)	206 (59.2)	0.002
Bladder problems	40 (38.1)	62 (44.6)	64 (61.5)	166 (47.7)	0.002
Dryness of vagina	38 (36.2)	62 (44.6)	68 (65.4)	168 (48.3)	<0.001
Total (any urogenital symptom)	71 (67.6)	104 (74.8)	95 (91.3)	270 (77.6)	<0.001

P values from Pearson chi-square test. "Total" rows within each subscale indicate the proportion of women reporting at least one symptom in that domain, at any severity.

Table 3: Menopause Rating Scale severity category by menopausal status.

MRS severity category	Pre-menopausal n (%)	Peri-menopausal n (%)	Post-menopausal n (%)	Total n (%)
No complaints	38 (36.2)	33 (23.7)	9 (8.7)	80 (23.0)
Mild	35 (33.3)	44 (31.7)	19 (18.3)	98 (28.2)
Moderate	31 (29.5)	46 (33.1)	56 (53.8)	133 (38.2)
Severe	1 (1.0)	15 (10.8)	17 (16.3)	33 (9.5)
Very severe	0 (0.0)	1 (0.7)	3 (2.9)	4 (1.1)
Total	105 (100.0)	139 (100.0)	104 (100.0)	348 (100.0)

Table 4: Severity of menopausal symptoms (MRS domain and total scores) by menopausal status.

MRS domain (range)	Pre-menopausal median (IQR)	Peri-menopausal median (IQR)	Post-menopausal median (IQR)	p-value
Somatic (0–16)	2 (1–3)	3 (2–5)	4 (2–6)	<0.001
Psychological (0–16)	2 (1–4)	3 (1–4)	4 (2–5)	<0.001
Urogenital (0–12)	1 (0–3)	2 (0–3)	4 (2–5)	<0.001
Total MRS (0–44)	6 (3–9)	8 (5–12)	11.5 (8–14.5)	<0.001

Kruskal-Wallis test across the three menopausal status groups. IQR = Interquartile Range (25th–75th percentile).

36.2% (premenopausal) to 8.7% (postmenopausal), while moderate-or-worse symptom burden rose from 30.5% to 72.1% over the same span (Table 3).

Total MRS score increased significantly at every stage of the menopausal transition (Table 4 and 4a). However, the domains diverged in pattern: somatic symptoms rose significantly from pre-menopausal to perimenopause but plateaued thereafter (perimenopausal vs. post-menopausal, $p=0.0394$), whereas psychological and urogenital symptoms did not differ significantly between pre-menopausal and perimenopausal women but rose sharply by postmenopausal (both $p<0.001$ for perimenopausal vs postmenopausal).

In multivariable analysis adjusting for menopausal status, age, and all other candidate determinants simultaneously, current age

Table 4a: Pairwise comparisons (Mann-Whitney/Wilcoxon rank-sum), Bonferroni-corrected $\alpha = 0.0167$.

Domain	Pre vs. Peri	Pre vs. Post	Peri vs. Post
Total MRS	0.0012*	<0.0001*	<0.0001*
Somatic	<0.0001*	<0.0001*	0.0394
Psychological	0.2526	<0.0001*	0.0006*
Urogenital	0.0392	<0.0001*	<0.0001*

*Statistically significant at the Bonferroni-corrected threshold ($p<0.0167$).

($b=0.17$, 95% CI 0.06–0.29, $p=0.003$) and menopausal stage remained independently associated with total MRS score, with perimenopausal ($b=2.01$, $p=0.002$) and postmenopausal women ($b=3.62$, $p<0.001$) scoring significantly higher than premenopausal women. Parity was also independently associated with total symptom score ($b=0.36$,

Table 5: Determinants of menopausal symptom scores: multivariable linear regression (robust standard errors) Unstandardized regression coefficients (b) with 95% confidence intervals; reference categories: Premenopausal (menopausal status), Brahmin/Chhetri (ethnicity), Rural (residence), None (education), Married (marital status), Current smoker (smoking), Never (alcohol), Moderate (physical activity), Farmer (employment).

Predictor	Total MRS b (95% CI)	Somatic b (95% CI)	Psychological b (95% CI)	Urogenital b (95% CI)
Perimenopausal vs. Premenopausal	2.01 (0.77, 3.25) $p=0.002^*$	1.38 (0.82, 1.93) $p<0.001^*$	0.24 (-0.32, 0.80) $p=0.406$	0.40 (-0.11, 0.90) $p=0.126$
Postmenopausal vs. Premenopausal	3.62 (1.75, 5.49) $p<0.001^*$	1.63 (0.68, 2.59) $p=0.001^*$	0.92 (0.09, 1.75) $p=0.031^*$	1.06 (0.34, 1.79) $p=0.004^*$
Current age, per year	0.17 (0.06, 0.29) $p=0.003^*$	0.05 (-0.00, 0.11) $p=0.058$	0.04 (-0.01, 0.10) $p=0.126$	0.08 (0.03, 0.13) $p=0.002^*$
Age at menarche, per year	-0.17 (-0.45, 0.12) $p=0.257$	-0.12 (-0.26, 0.02) $p=0.102$	0.00 (-0.12, 0.12) $p=0.963$	-0.05 (-0.16, 0.06) $p=0.360$
Parity, per birth	0.36 (0.02, 0.69) $p=0.037^*$	0.07 (-0.10, 0.23) $p=0.406$	0.08 (-0.06, 0.22) $p=0.266$	0.21 (0.03, 0.39) $p=0.023^*$
Body mass index, per kg/m ²	0.02 (-0.11, 0.15) $p=0.753$	0.01 (-0.05, 0.07) $p=0.786$	0.02 (-0.04, 0.07) $p=0.536$	-0.00 (-0.06, 0.05) $p=0.845$
Ethnicity: Newar vs. Brahmin/Chhetri	-0.77 (-2.34, 0.80) $p=0.334$	-0.32 (-1.10, 0.46) $p=0.417$	-0.05 (-0.76, 0.65) $p=0.887$	-0.40 (-0.94, 0.14) $p=0.150$
Ethnicity: Hill Janajati vs. Brahmin/Chhetri	0.09 (-1.59, 1.77) $p=0.916$	-0.33 (-1.06, 0.41) $p=0.382$	0.08 (-0.69, 0.84) $p=0.845$	0.34 (-0.38, 1.06) $p=0.353$
Ethnicity: Others vs. Brahmin/Chhetri	-0.26 (-2.11, 1.60) $p=0.786$	0.15 (-0.69, 0.99) $p=0.722$	-0.31 (-1.06, 0.45) $p=0.428$	-0.10 (-0.89, 0.69) $p=0.799$
Urban vs. rural residence	0.30 (-1.00, 1.59) $p=0.655$	-0.06 (-0.64, 0.53) $p=0.852$	-0.11 (-0.69, 0.47) $p=0.717$	0.46 (-0.07, 0.98) $p=0.088$
Education: Pre-primary/Primary vs. None	0.22 (-1.19, 1.63) $p=0.760$	-0.17 (-0.83, 0.48) $p=0.603$	0.18 (-0.44, 0.81) $p=0.569$	0.21 (-0.38, 0.81) $p=0.487$
Education: Secondary vs. None	0.04 (-1.72, 1.81) $p=0.960$	0.10 (-0.72, 0.92) $p=0.811$	0.05 (-0.70, 0.80) $p=0.892$	-0.11 (-0.79, 0.58) $p=0.758$
Education: Bachelor+ vs. None	-0.75 (-3.50, 2.00) $p=0.592$	-0.72 (-2.03, 0.58) $p=0.277$	-0.14 (-1.45, 1.16) $p=0.831$	0.12 (-0.87, 1.10) $p=0.815$
Not currently married vs. married	-1.11 (-3.07, 0.84) $p=0.265$	-0.83 (-1.73, 0.06) $p=0.068$	0.60 (-0.33, 1.54) $p=0.205$	-0.88 (-1.66, -0.10) $p=0.028^*$
Smoking: Former vs. Current	0.87 (-1.85, 3.59) $p=0.532$	0.37 (-0.93, 1.68) $p=0.577$	0.48 (-0.71, 1.68) $p=0.428$	0.01 (-1.21, 1.24) $p=0.984$
Smoking: Never vs. Current	1.72 (-0.79, 4.23) $p=0.178$	0.74 (-0.36, 1.84) $p=0.189$	0.35 (-0.72, 1.42) $p=0.519$	0.63 (-0.20, 1.46) $p=0.137$
Alcohol: Occasional/Daily vs. Never	0.81 (-0.76, 2.39) $p=0.310$	0.15 (-0.59, 0.89) $p=0.686$	0.34 (-0.33, 1.01) $p=0.322$	0.32 (-0.23, 0.87) $p=0.253$
Physical activity: Sedentary vs. Moderate	-0.34 (-1.54, 0.86) $p=0.574$	-0.18 (-0.73, 0.38) $p=0.530$	0.01 (-0.54, 0.57) $p=0.962$	-0.18 (-0.69, 0.33) $p=0.492$
Physical activity: Vigorous vs. Moderate	2.79 (-0.52, 6.09) $p=0.098$	0.44 (-0.94, 1.81) $p=0.531$	2.17 (0.84, 3.49) $p=0.001^*$	0.18 (-0.84, 1.20) $p=0.727$
Employment: Housewife vs. Farmer	0.94 (-0.45, 2.33) $p=0.186$	0.11 (-0.53, 0.74) $p=0.743$	0.57 (-0.01, 1.16) $p=0.055$	0.26 (-0.26, 0.77) $p=0.323$
Employment: Job holder vs. Farmer	2.20 (0.26, 4.13) $p=0.026^*$	0.78 (-0.07, 1.62) $p=0.071$	1.29 (0.34, 2.23) $p=0.008^*$	0.13 (-0.54, 0.81) $p=0.699$
Employment: Others vs. Farmer	3.69 (-0.39, 7.76) $p=0.076$	1.67 (-0.09, 3.42) $p=0.063$	1.59 (-0.21, 3.39) $p=0.084$	0.43 (-0.84, 1.71) $p=0.504$
Employment: Retired vs. Farmer	-1.03 (-4.42, 2.37) $p=0.553$	-1.71 (-3.41, -0.01) $p=0.049^*$	0.15 (-0.96, 1.26) $p=0.791$	0.53 (-2.21, 3.27) $p=0.703$
Employment: Shopkeeper vs. Farmer	1.77 (-0.22, 3.76) $p=0.082$	0.12 (-0.76, 1.00) $p=0.791$	1.16 (0.28, 2.05) $p=0.010^*$	0.49 (-0.37, 1.35) $p=0.265$

* $p<0.05$. All four models adjusted for all variables listed, including employment status. Robust (Huber-White) standard errors used throughout, following a significant Breusch-Pagan test ($\chi^2=4.62$, $p=0.032$) for the total MRS score model. Mean VIF = 1.66 (max 2.63) - no multicollinearity concerns. Employment status was included as an additional exploratory covariate beyond the determinants specified in the original study aims, given its known association with lifestyle and psychosocial stress.

$p=0.037$). Age at menarche, BMI, ethnicity, area of residence, education, marital status, smoking, and alcohol intake showed no significant independent association with total symptom expression (Table 5).

Domain-specific models revealed that these associations were not uniform across symptom types. Somatic symptoms were determined primarily by menopausal stage alone (perimenopausal $b=1.38$, $p<0.001$; postmenopausal $b=1.63$, $p=0.001$). Psychological symptoms, in contrast, were more strongly associated with occupation and physical activity than with menopausal stage: women engaging in vigorous physical activity scored 2.17 points higher than those with moderate activity ($p=0.001$), and job holders and shopkeepers scored significantly higher than farmers ($b=1.29$, $p=0.008$ and $b=1.16$, $p=0.010$, respectively). Urogenital symptoms were independently predicted by current age ($b=0.08$, $p=0.002$), parity ($b=0.21$, $p=0.023$), and marital status, with unmarried women reporting significantly lower urogenital scores than married women ($b=-0.88$, $p=0.028$).

Discussion

The menopausal transition begins when ovarian hormone estrogen level start to fluctuate and progesterone production

gradually declines [13]. This phase, which can extend up to nearly ten years, is marked by a wide spectrum of symptoms that evolve across stages. Symptoms often begin during perimenopause, with vasomotor complaints such as hot flashes and sleep disturbances reaching their peak in the late perimenopause. In contrast, sexual and urogenital problems tend to become more pronounced after menopause and may persist beyond few decades of life [14, 15].

Hot flashes are particularly distressing when they occur at night, as they frequently disrupt sleep. It is a well-recognized feature of the menopausal transition [16]. Interestingly, many peri- and postmenopausal women often report sleep disturbances even in the absence of hot flashes [17]. In Western countries, hot flashes, sweating, vaginal dryness, and sleep problems are considered the hallmark climacteric complaints [18], whereas studies from Asia consistently report a lower prevalence of these classical symptoms [19-22]. Comparative reports highlight that Asian women generally experience fewer somatic and psychological disturbances than their Caucasian counterparts [23, 24].

Our findings align more closely with the Asian pattern. In our study, muscle and joint problems was the most frequent complaint (75.6%), followed by physical and mental exhaustion (69.0%), and

sexual difficulties (59.2%). Hot flashes were seen in 55.7%, difficulty in falling asleep 51.7%, and dryness of vagina was the least seen complaint, only 48.6%.

Similarly, a study conducted on 442 Chinese women aged 40-60 years by Chou *et al.*, [25] reported the four most common symptoms experienced by their women were physical and mental exhaustion (90.3%), joint and muscle discomfort (88.5%), irritability (78.1%), and sleep problems (77.1%).

When looking at the symptoms and its distribution across different stages; Studies demonstrate that perimenopausal and postmenopausal women have more menopausal complaints compared to premenopausal women. They were noted to complain significantly more of vasomotor, sexual and psychological symptoms compared to premenopausal women [26, 27]. Other studies have observed post-menopause present with higher symptoms than their counterparts in perimenopause [28]. Where as in certain studies, menopausal symptoms are exacerbated in perimenopause and tend to decrease in the post-menopause and only vasomotor symptoms are more in post-menopause [29, 30].

Beyond the overall rise in symptom burden across the menopausal transition, our multivariable analysis identified reproductive history and, notably, occupational and lifestyle factors as independent contributors to specific symptom domains. The association between parity and urogenital symptoms is biologically plausible, as pregnancy and childbirth, particularly vaginal delivery, have been associated with pelvic-floor dysfunction, including urinary incontinence and pelvic-organ prolapse [31, 32]. The association of occupation with psychological symptoms is also consistent with evidence suggesting that work-related factors, including job strain, psychological stress, workload, and work environment, may influence menopausal symptoms and quality of life [33, 34]. Similarly, physical activity has been linked to psychological health during the menopausal transition, although the direction and magnitude of this association may vary according to the type and intensity of activity [35, 36]. In our study, the associations of occupation and physical activity with psychological symptoms persisted after adjustment for menopausal stage, suggesting that contextual and lifestyle factors may contribute to differences in symptom expression beyond the biological transition itself. These findings suggest that the determinants of menopausal symptoms vary meaningfully by domain, highlighting the potential value of stage- and domain-specific approaches to counselling and intervention for midlife women in this population.

Our findings highlight progressive rise in symptom burden across menopausal stages - especially vaginal dryness and sexual dysfunction - intensifying after menopause. When symptom severity was assessed using the MRS total scores, the differences became even more pronounced, with 36.2% of premenopausal women reporting no complaints, compared with only 8.7% of postmenopausal women (Table 3). Mild and moderate symptoms were both common in perimenopause (31.7% and 33.1%, respectively), whereas moderate, severe, and very severe complaints together predominated in post-menopause (73.1% combined). Overall, perimenopause marks the onset and peak of vasomotor and sleep disturbances, whereas post-menopause is characterized by persistent, often severe urogenital and psychological symptoms.

Similar findings were seen with the study by Chuni N *et al.*, [12], which also observed a progressive rise in symptom burden across

menopausal stages, with all differences being statistically significant. Somatic symptoms such as hot flushes affect only about 23% of premenopausal women but nearly all postmenopausal women (98%). Depressive mood is lowest in pre-menopause (42%) but increases to around 60% in later stages. Vaginal dryness is relatively uncommon before menopause but showed dramatic increase rising from 23% in pre-menopause to 87% in post-menopause.

Limitations

In this study, several limitations should be acknowledged. This study was done in a clinic especially dedicated to menopausal issues, self-selected meaning not randomized and who were willing to engage in study, as a result the sample may not represent the general population. The cross-sectional design provides only a snapshot and cannot capture how symptoms progress over time. As participants were required to recall and grade their own symptoms, and individual subjectivity while assessing the severity of symptoms may differ considerably causing Information bias Reporting bias may also influence the findings, since women could underreport sensitive issues such as sexual dysfunction or emotional instability due to stigma or cultural norms.

Conclusion

The menopausal transition represents a dynamic period in a woman's life, characterized by progressive but domain-specific changes in symptom burden: somatic symptoms such as joint and muscular discomfort and physical and mental exhaustion the leading complaints in our sample, consistent with the Asian rather than Western symptom pattern intensified early and plateaued by perimenopause, whereas psychological and urogenital symptoms remained largely unchanged until post-menopause, when they rose sharply alongside independent contributions from parity, occupation, and physical activity level. These findings support stage- and domain-targeted, rather than uniform, approaches to menopausal symptom counselling and intervention in this population.

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