Climacteric symptoms among women residing in a rural area of Kerala state – A cross-sectional study

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ABSTRACT

Introduction: Menopause is considered as a clinical marker of cessation of ovarian function. Some of menopausal symptoms, also known as climacteric symptoms experienced by these women can be severe enough to affect their normal daily activities. It is well documented that climacteric symptoms experienced by women affect their quality of life.

Objective: To find out the prevalence and factors associated with climacteric symptoms among women residing in a rural area of Kerala.

Methodology: This is a cross sectional study, which was conducted among 400 women residing in a rural area of South Kerala by house to house survey using a semi structured questionnaire.

Results: Among the women surveyed 79.9% (n = 318) had at least one symptom out of the 23 symptoms studied, the most frequent symptoms being joint pain (35.8%, n = 143) and lethargy (32.3%, n = 129).

Conclusions: The study findings do reveal that a large proportion of women in Kerala experience climacteric symptoms and women may be provided with balanced information regarding menopause.

1. Introduction

Menopause which is defined as complete cessation of menstruation for twelve months or more is a normal physiological change experienced by middle age women.¹ This transition from a potentially reproductive to a non-reproductive state is the result of changes in female hormonal production by the ovaries. Some of menopausal symptoms experienced by these women can be severe enough to affect their normal daily activities.^{2,4} These symptoms are directly resulted from depletion of estrogen level as women approaches menopausal stage and some of these women begin to experience menopausal symptoms early in the perimenopausal phase.¹ It is well documented that menopausal symptoms experienced by women affect their quality of life.^{1,5} Modern medicine has significantly prolonged the life span of humans and most women spend one-third to half of their lifetime in post-menopausal stage.^{6,7}

The world population of women aged over 60 years was below 250 millions in 1960 and it is estimated that in 2030 1.2 billion women will be peri or postmenopausal and this will increase by 4.7 million a year.⁷ According to the World Health Organization's (WHO's) health statistics 2011, in India an average female life expectancy in 2011 is 68 years and is projected an increase to 73 years by 2021. However, unfortunately

majority of these women are not aware of the changes brought about by menopause. Women as do men, experience an age-related decline of physical and mental capacity. It has been shown that menopausal symptoms vary from individual to individual and also according to racial groups. For instance, studies have reported that somatic and psychological symptoms are less frequent among Asian women as compared to Caucasian women.^{6,9–12} Further, menopausal symptoms may also vary according to menopausal status. Studies have shown 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.^{13,14}

The common climacteric symptoms experienced by them can be grouped into: somatic, psychological or sexual complaints. Somatic symptoms include hot flushes, night sweats, palpitation, insomnia and body aches. Among them the characteristic symptom is hot flushes/night sweats. In SWAN, a multiethnic, longitudinal study that was conducted on a large cohort (n = 16,065) of the U.S. population, the following distribution of experiencing HFs among ethnic groups was found: African American (46%), Hispanic (36%), Caucasians (31%), Chinese (21%), and Japanese (18%) women.² Freeman and Sherif's systematic review indicates that VMS are highly prevalent in most

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societies, and, interestingly, hot flush prevalence patterns are more associated with the menopausal stages than with regional variation.¹¹ Previous studies found that Asian women have a reduced risk of reporting hot flushes compared with other racial groups. A cross-sectional study by Brown et al. supports the possible associations of cultural differences and hot flushes.¹²

Although menopause related symptoms have been extensively studied in the western countries, not much data were available in Asia especially in South East Asia including India. Climacteric symptoms and demand for treatment differ widely among women with different cultural backgrounds. Limited research data were available regarding menopausal symptoms experienced by women in Kerala. This study aims to document the prevalence of menopausal symptoms and the factors associated among rural women aged 40–60 years in Kerala.

2. Materials and methods

This cross sectional study was conducted among 400 women aged 40–60 years who were permanent residents of a rural area in south Kerala during February to May 2015. Sample size was calculated taking the prevalence of the characteristic symptom, hot flushes, obtained from previous study¹ using the formula, $N = (Z\alpha)^2 pq/d^2$ where p is 0.41 and d is 5.100 women each from 4 wards of a Panchayath, were randomly selected by simple random sampling at four levels. **Level 1:** Vamanapuram Block PHC area situated in Nellanad Panchayath was selected. **Level 2:** The 4 sub centers in Vamanapuram Block PHC was listed out. **Level 3:** From each of these sub centers, 1 ward was selected randomly. **Level 4:** From each ward first house was selected randomly. One woman from each house belonging to the age group of 40–60 years who satisfy the inclusion criteria was included in the study consecutively till 100 women were interviewed from each ward.

Women who were pregnant or lactating, or had attained surgical menopause or with history of alcohol or drug abuse or having any mental disability or undergoing treatment for psychiatric disorders and those with known genital malformations were excluded from the study. A semi structured questionnaire was used to collect data by house to house survey among women aged 40–60 years. Data on various socio-demographic factors and other relevant fields were collected. The menopausal status was classified according to STRAW (Stages of Reproductive Aging Workshop) classification which divided menopause staging into:

- Postmenopausal:** no menstrual bleeding in the last 12 months.
- Late perimenopause:** had menstruation in the last 2–12 months but not in the last 2 months.
- Early perimenopause:** had increasing irregularity of menses without skipping periods
- Premenopausal:** minor changes in cycle length particularly, decreasing length of the cycle.

The data collected were coded and entered into excel sheet and analyzed in IBM SPSS 20 (Trial version). Proportions and percentages were estimated for qualitative variables. For quantitative variables mean with standard deviation were used. Chi-Square test is used as a test of significance for estimating factors associated with menopausal symptoms and its awareness among the respondents. Odds Ratio was used to assess the strength of association. Significance was assumed at alpha error of 5% (ie., p value < 0.05).

3. Results

The mean age of respondents was 48.79 ± 6.552 (Standard Deviation (SD)) years. The sociodemographic distribution of participants is given in Table 1.

The mean age at Menarche was 13.76 ± 1.187 (SD) years. 19.5% ($n = 78$) of the participants reported a history of Premenstrual

Table 1

Distribution of participants based on Sociodemographic profile (N = 400).

Sociodemographic profile		Frequency (n)	Percentage (%)
Age Group	40–45 years	153	38.3
	46–50 years	107	26.8
	51–55 years	49	12.3
	56–60 years	91	22.8
Education Group	Illiterate	28	7.0
	Primary	22	5.5
	Upper Primary	46	11.5
	High School	255	63.75
	Higher Secondary/ Diploma	29	7.25
	Graduate	17	4.25
	Honours/Profession	3	0.75
Occupation	Home maker	292	73.0
	Unskilled	64	16.0
	Semi skilled	2	0.5
	Skilled	9	2.3
	Shop owner/clerk/farmer	21	5.3
	Semi profession	12	3.0
Marital Status	Married	358	89.5
	Unmarried	4	1.0
	Widow	30	7.5
	Divorcee	4	1.0
	Separated	4	1.0

symptoms.

Among these 400 women, 28 (7%) were premenopausal, 55 (13.8%) perimenopausal and 156 (39%) postmenopausal and others ($n = 161$; 40.3%) did not have any change in cycle length.

The mean age at Menopause was 48.78 years (95% Confidence Interval (CI) = 48.09–49.47) with a SE of mean 0.348 (minimum age – 38 and maximum age – 58). Standard deviation was 4.329 years (Fig. 1).

23 menopausal symptoms were studied among the participants (Table 2). 79.9% ($n = 318$; 95% CI = 75.9–83.7) had at least one symptom. Among those who attained menopause ($n = 156$), 153 (98.1%) reported at least one symptom.

Somatic symptoms were present among 73% ($n = 292$) of respondents. The most frequent symptom observed was joint pain (35.8%) followed by lethargy (32.3%). The characteristic symptom of menopause, hot flush was reported by 29.5% of the participants.

194 (48.5%) women had Psychological symptoms and the most frequent symptom was mood swings (29.5%), while 58.75% ($n = 235$)

Fig. 1. Box plot showing Age at menopause (N = 155).

Table 2
Prevalence of climacteric symptoms.

Climacteric Symptoms		Present	
		Frequency (%)	95% CI
Somatic symptoms (N = 292)	Joint Pain	143 (35.8)	31.3–40.3
	Lethargy	129 (32.3)	27.5–37.3
	Hot flushes/night sweats	118 (29.5)	25–34
	Head ache	101 (25.3)	21.3–29.5
	Insomnia	99 (24.8)	20.8–28.8
	Palpitation	95 (23.8)	19.8–28.0
	Breast tenderness	72 (18.0)	14.5–22.0
	Dizziness	51 (12.8)	9.5–16.3
	Body tightness	45 (11.3)	8.5–14.5
	Weight gain	25 (6.3)	4.0–8.8
Psychological Symptoms (N = 194)	Itching	22 (5.5)	3.3–8.0
	Mood swings	118 (29.5)	25.3–34.0
	Irritability	71 (17.8)	14.3–21.5
	Anxiety	54 (13.5)	10.0–16.8
	Feeling Depressed	38 (9.5)	6.5–12.5
	Memory loss	29 (7.3)	4.8–9.8
Uro genital symptoms (N = 235)	Loss of concentration	9 (2.3)	0.8–3.8
	Stress incontinence	112 (27.8)	23.8–32.0
	Abdominal discomfort	90 (22.5)	18.5–27.0
	Loss of libido	62 (15.5)	12.3–19.2
	Increased frequency of micturition	51 (12.8)	9.5–16.0
	Dysuria	50 (12.5)	9.3–15.8
	Vaginal dryness	31 (7.8)	5.0–10.3

complained of Uro genital symptoms. The most frequent symptom being stress incontinence (27.8%).

Hot flushes seem to be significantly associated with age, education, occupation and history of premenstrual symptoms (PMS) The age of the respondents is significantly associated with the complaint of hot flush. More women aged 46–55 years reports hot flush than the other age groups. In this study hot flush/night sweats seems to be reported more in women with regular physical activity (Table 3). About 61.7% have reported that menopausal symptoms affect their day to day life (Table 4).

4. Discussion

In the present study, out of the 400 women, 7% were premenopausal, 13.8% were perimenopausal and 39% were post menopausal. This finding is consistent with the finding in another study done in Malaysia in which 37.4% of women were in postmenopausal period¹ and that done by Metintas S et al. who also observed similar percentage of premenopausal (6.5%), peri menopausal (12.5%) and post

Table 4
Effect of menopausal symptoms in their day to day life as reported by women.

Effects of Menopausal Symptoms	Frequency (n)	Percentage (%)
Does not affect	153	38.3
Affects work efficiency	186	46.5
Affects relation with family	15	3.8
Affects social life	9	2.3
Affects responsibilities at home	37	9.3
Total	400	100.0

menopausal (58.8%) women.¹⁷ Yet another study done in Bangladesh also reported that 23.96% were premenopausal, 42.43% perimenopausal and 33.59% of the women were postmenopausal(4).

The mean age at menopause in this study was 48.78 ± 4.329 (SD) years which is in par with other studies from Asia though is lower than that reported in studies from western world.^{1,2,14} Similar figure of mean age at menopause was observed in studies done in Thailand (48.7 years)⁶ and Singapore (49.1 years).¹⁰ Among the study participants, 79.9% had at least one symptom. Among those who attained menopause 98.1% complained of at least one symptom. Similarly study done in Kottayam, Kerala by Anil Bindhu et al. also noted that 75.6% of participants and 88.8% of post menopausal women had at least one of the menopausal symptoms.¹⁹ The most frequent symptom reported was joint pain (35.8%) followed by lethargy (32.3%). Similarly study by Kapur et al. in Uttarakhand reported joint pain as the commonest symptom (55.8%) followed by feeling tired (51.15%) (26). Nayak et al., 2012, reported a higher prevalence of “Feeling tired or worn out” (67.5%) among women in Karnataka.²¹ The study by Rahman et al. also reported joint pain as the most frequent symptom though the percentage was higher (80%).¹ In our study, the classical presentation of menopausal symptoms; hot flushes were noted to be 29.5%. Similar finding was observed in another study by Shahedur Rahman et al. who reported that 35.8% of women had complained of hot flushes in Bangladesh.⁴ But this percentage is lower when compared to findings from studies done on Western women who reported that 45%–75% women have hot flushes during menopausal transition.⁶ Several studies from Asian countries have also reported a lower prevalence of classical menopausal symptoms. This may be due to woman's attitude and awareness, or socio-cultural and economic factors.^{7,9} The age of the respondents was significantly associated with hot flush. This was consistent with findings from another study done in Kerala who reported that Vasomotor Symptoms were more reported by women aged 46–52 years.²¹ This finding is supported by Roposo J et al. in their study who reported that vasomotor symptoms (hot flushes and sweating at night) were experienced most frequently by the younger age group (47–57 years) women(22).

The number of years of schooling has shown to be significantly

Table 3
Factors associated with hot flushes.

Factors associated	Hot Flushes present N(%)	Hot Flushes absent N(%)	Test value (p value)
Age Group	40–45 years	34(22.2%)	9.46 (0.024)
	46–50 years	119(77.8%)	
	51–55 years	70(65.4%)	
	56–60 years	28(57.1%)	
	Illiterate	65(71.4%)	
Education Category	Up to High School	21(75.0%)	13.08 (0.004)
	Higher Secondary	73(65.2%)	
	Graduate and above	180(75.0%)	
	Un employed	8(40.0%)	
Occupation Category	Employed	218(74.7%)	8.98 (0.003)
	Employed	64(59.3%)	
History of premenstrual symptoms	Yes	44(56.4%)	9.249 (0.002)
	No	238(73.9%)	
Physical Activity	Regular physical Activity	44(59.5%)	5.322 (0.021)
	Irregular Physical Activity	238(73.0%)	

associated with hot flushes. Duffy O K et al. reported that hot flush was seen more in lower education group(23) in contrast to the findings in this study.

Consistent with the findings in the present study that being employed seems to be significantly associated with reporting of hot flushes, DiBonaventura et al. also found that employed women reports hot flush more compared to un employed⁽²⁴⁾.

Hot flushes seem to be significantly associated with history of premenstrual symptoms (PMS). 43.6% among those with PMS reports hot flushes. This finding is consistent with the finding in study by Chuni et al. who reported that hot flush frequency is associated with menstrual cycle irregularity, dys menorrhoea and other premenstrual symptoms¹⁸ and another study by O. K. Duffy also suggested similar findings.²³ Consistent with the present study, Gold E B et al. also suggested an association between premenstrual symptoms and hot flushes.²⁵ Like the present study, other studies done in Asian and Caucasian women also suggests that there is no significant association of marital status and contraceptive pill use with the presence of hot flushes.^{18,19}

The present study failed to find an association between parity and the reporting of hot flushes. This may be due to the inadequate sample of nulliparous women in the study.

5. Conclusions

This study of middle-age women from rural Kerala between the ages of 40 and 60 years showed that the mean age of menopause was 48.79 years which was consistent with the findings from other studies on Asian women. The menopausal symptoms experienced by them were similar to other Asian women but the prevalence of classical menopausal vasomotor symptoms was lower compared to studies on Caucasian women. Somatic symptoms were present among 73% of respondents. 48.5% women had Psychological symptoms while 58.75% complained of Uro genital symptoms. The most frequent symptom observed was joint pain (35.8%) followed by lethargy (32.3%). The characteristic vasomotor symptom of menopause was reported by 29.5% of the participants and mood swings by 29.5%. Age group in which participants belong, their education, occupation, history of pre menstrual symptom and Menopausal status were significantly associated with vasomotor symptoms.

Recommendations

Menopause clinics: The onus of developing specialty menopause clinics akin to antenatal clinics from the sub centre level. Developing management of menopause as a medical specialty within obstetrics and gynaecology care lies with the government and non government organizations. **Guidelines:** A proper guideline would aid the health care providers in extending optimal care to the aging woman. **Health promotion:** Each woman needs an individualized health plan management. Women may present at the menopausal clinic or as an opportunistic contact to be picked up by the health professional.

Limitations

As this was a cross sectional study, it does not exclude other confounding effects of the natural aging process that may influence experience of symptoms. Further, all women may not have correctly recalled the symptoms. One challenge of hot flash studies is the lack of universally accepted gold standards to define hot flashes and hot flash activity. Individual perceptions of what constitutes a hot flash may vary, making comparisons difficult.

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CRedit authorship contribution statement

Resmi S: Funding acquisition, Data curation, Formal analysis. **Anil Bindu S:** Data curation, Formal analysis. **Benny P. V:** Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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