

# EFFECT OF MENOPAUSE ON SLEEP QUALITY AND STRESS AMONG WOMEN RESIDING IN A RURAL AREA OF PUDUCHERRY, INDIA.

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## KEYWORDS

Pre-menopausal, perimenopausal, postmenopausal woman, sleep quality, stress

## ABSTRACT:

**Introduction:** Sleep disturbances and stress are common in women than men across the world, but most common during the menopausal transition period. This study focussed on these two health problems among the premenopausal, perimenopausal, postmenopausal women.

**Methodology:** This study was a cross-sectional study conducted among the three groups of women in rural area of Puducherry. A total sample of 300 women were selected each group consisting of 100 participants. This was a questionnaire-based study using an interviewer administered questionnaire. The data were entered into Microsoft excel and analysed using SPSS version 20.0. Pearson correlation and Chi-square test were used to analyse the association between variables.

**Results:** The study showed a positive correlation between age and their association between sleep quality and stress ( $r = 0.45$ ,  $p < 0.001$ ;  $r = 0.53$ ,  $p < 0.001$ ). Among the three groups premenopausal women had higher mean sleep quality index score ( $F = 26.11$ ,  $p < 0.001$ ) and stress score ( $F = 73.42$ ,  $p < 0.001$ ). The women with poor sleep quality also had higher rates of stress with  $r$  value = 0.55 and  $p$  value  $< 0.001$ .

**Conclusion:** The study identified higher rates of stress and poor sleep quality in premenopausal women and healthy lifestyle factors for these two factors can be included while treating premenopausal women.

## INTRODUCTION

Menopause is one of the most significant events in a women's life and brings in a number of physiological and psychological changes that affect the life of a women permanently. There has been a lot of speculations about the symptoms that appear before, during and after the onset of menopause. Multiple internal factors influence the quality of women's life during the menopausal transition which also depends on her previous physical and emotional status, her social situation and beliefs about menopause and its effects.<sup>[1]</sup> Major depression affects nearly 5% of adult population in a year. Prevalence of stress is found to be two times more among women (21%) compared to men (12.7%). Even among women without previous history of any stress, transition to menopause and the related hormonal changes are found to be associated with new onset of stress. Women who enter perimenopause are two to four times more likely to have clinically significant stress related symptoms.<sup>[2]</sup>

With the available literature, presence of symptoms varies between men and women with women presenting with internalising symptoms and men presenting with externalising symptoms.<sup>[3]</sup> Women also experience specific forms of stress related illness, including premenopausal dysphoric disorder, postpartum depression and postmenopausal depression and anxiety that are associated with changes in

ovarian hormones and could contribute to the increased prevalence of stress and depression in women.<sup>[4]</sup> Occurrence of stress in women has been identified to correlate with few physiological changes in women including, the time of puberty, prior to menstruation, following pregnancy and at perimenopause which suggests that hormonal fluctuations may be a trigger for stress among women. Good sleep quality is essential for peaceful life.

Disturbed sleep is a very distressing symptom which has huge impact on the quality of life. There is a very strong association between sleep disturbance and stress, link between the two is significant that some researchers have suggested that a diagnosis of stress in the absence of sleep disturbance should be made with caution.<sup>[5]</sup> In some study, 97% reported sleep difficulties due to stress and 59% of these indicated that poor sleep significantly affected their quality of life.<sup>[6]</sup> Our study focussed particularly on stress and sleep disturbances among premenopausal, perimenopausal and postmenopausal women.

Perimenopause is the period of 3-4 years before menopause followed by one year of amenorrhoea covering the age group of 40-48 years.<sup>[7]</sup> Menopause is the permanent cessation of menstruation resulting in the loss of ovarian follicle development usually above 48 years. Menopause is genetically determined. Highest prevalence of stress has been reported among women aged 45 to 54 years. The factors that influence these rates are not understood completely<sup>[8]</sup> and hence in the present study we tried to assess the difference in the occurrence of stress and sleep quality among women from different age groups and menopause status.

## **OBJECTIVES**

1. To assess the level of stress and sleep disturbances among the premenopausal, perimenopausal and postmenopausal women.
2. To find the association between education, occupation and socioeconomic status and stress, sleep quality.

## **METHODOLOGY**

A Community based cross sectional study was conducted for the period of two months from July 2024 to September 2024 in the Koodapakkam Rural area of Puducherry. Three groups of women were selected for the study i.e., premenopausal, perimenopausal and postmenopausal women. Women who were in the age group of 30 to 38 years without history of amenorrhoea and menstrual disturbances in the previous one year (operational definition) were considered in the premenopausal group, women aged between 40 to 48 years with history of amenorrhoea for 8 months to 1 year prior to the study period has been included under perimenopausal group and women aged above 50 years who attained menopause naturally, with more than one year of amenorrhoea were considered as postmenopausal group. Surgical menopause was not included in our study.

A total of 300 women were interviewed for the study with 100 women in each group. After obtaining informed written consent, the participants were interviewed in their house maintaining confidentiality throughout the interview. Indian standard classification of education was used to classify education status of the women.<sup>[9]</sup> Occupation was categorized using Modified Kuppusamy Scale.<sup>[10]</sup> Socio-economic status was classified based on Modified BG Prasad's Classification.<sup>[10]</sup> Sleep quality was assessed using The Pittsburgh Sleep Quality Index (PSQI) which is an effective instrument used to measure the quality and patterns of sleep. It differentiates "poor" from "good" sleep quality by measuring seven areas: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction over the last month. It scores the above-mentioned components from 0 to 5. Scores less than 5 indicates good sleep quality. A Score of 5 and above indicates poor sleep quality.<sup>[11]</sup> Sheldon Cohen's Perceived Stress Scale was used to assess the stress status among the three groups of women.<sup>[12]</sup> It categorises the stress into (0-13)-low stress, (14- 26)-moderate stress, (27-40)-high perceived stress. The data were entered in Microsoft Excel sheet and appropriate statistical tests were done. Pearson correlation and Chi-square test were used to analyse the association between variables.

## RESULTS

A total of 300 participants were studied. Education status of the participants showed highest number of illiterates in the postmenopausal group with 69% being illiterates and 64% and 14% illiterates among peri and premenopausal women respectively and graduates were higher in premenopausal group (41%). Based on the socio-economic status, most of the premenopausal women were in the upper socio-economic status and postmenopausal women were in middle socio-economic status. Perimenopausal women were in the lower middle and lower socio-economic status. Unemployed were common in all the three groups with high prevalence in the perimenopausal group (88%) [peri (88%) > post (65%) > pre (32%)]. Professionals and semi-professional were higher in the premenopausal group as depicted in Table 1.

Among the study participants, sleep quality index and stress increased with increase in age. There was a positive correlation between age and sleep quality index ( $r = 0.45$ ,  $p < 0.001$ ) which means there is a reduction in sleep quality with increase in age. Increase in the age, higher is the rate of stress ( $r = 0.53$ ,  $p < 0.001$ ). Illiterate people have higher sleep quality index which indicates poor sleep quality ( $t = 10.653$ ,  $p = 0.002$ ) similarly they have higher rate of stress ( $t = 6.643$ ,  $p < 0.001$ ). Working women have lower rate of sleep quality index than the homemakers ( $t = 1.621$ ,  $p = 0.106$ ). Similarly, homemakers have higher rate of stress ( $F = 24.066$ ,  $p < 0.001$ ). There was a negative correlation between precipitate income and sleep quality index. Higher the precipitate income, higher the sleep quality ( $r = -0.338$ ,  $p < 0.001$ ) and lower was the level of stress ( $r = -0.443$ ,  $p < 0.001$ ). There was significant difference in the mean sleep quality index. Among the three, women in postmenopausal group had higher mean sleep score. Analysis of variance for sleep quality showed F value of 26.11 and p value of  $< 0.001$  as depicted in Table 2. The women with poor sleep quality has higher rates of stress. Analysis of variance for stress showed F value of 73.42 and p value of  $< 0.001^*$  as depicted in Table 2.

Additionally, individuals with poor sleep quality has higher rates of stress as depicted in Table 3. Percentage of stress showed higher rates among premenopausal women with percentage of 89 followed by perimenopausal women with percentage of 31 and postmenopausal women with percentage of 21 with Chi-square value of 131.21 and p value = 0.001 as depicted in Figure 1.

**Table 1: Socio demographic status of the study participants (n=300)**

	Premenopausal	Perimenopausal	Postmenopausal
Education	Frequency (%)	Frequency (%)	Frequency (%)
Illiterate	14 (14)	64 (64)	69 (69)
Primary	7 (7)	19 (19)	25 (25)
Secondary	22 (22)	5 (5)	5 (5)
Higher secondary	16 (16)	4 (4)	1 (1)
Graduate	41 (41)	8 (8)	-
<b>Socio economic status</b>			
1 ( $\geq 6254$ )	45 (45)	9 (9)	3 (3)
2 (3127-6253)	37 (37)	23 (23)	8 (8)
3 (1876-3126)	11 (11)	28 (28)	49 (49)
4 (938-1875)	6 (6)	31 (31)	39 (39)
5 ( $< 938$ )	1 (1)	9 (9)	1 (1)
<b>Occupation</b>			
Profession	17(17)	2(2)	-
Semi profession	10(10)	1(1)	-
Clerical, Shop owner	11(11)	4(4)	-
Skilled workers	10(10)	1(1)	4(4)
Semiskilled workers	20(20)	4(4)	19(19)
Unskilled worker	-	-	12(12)

Unemployed	32(32)	88(88)	65(65)
Total	100(100)	100(100)	100(100)

**Table 2: Association between menopause status with sleep quality and stress**

	Premenopausal Mean ± SD	Perimenopausal Mean ± SD	Postmenopausal Mean ± SD	F value	p value
PSQI	5.8±2.6	4.3±3.1	3.3±1.3	26.11	<0.001*
PSS	38.7±6.4	28.9±7.3	22.9±5.3	73.42	<0.001*

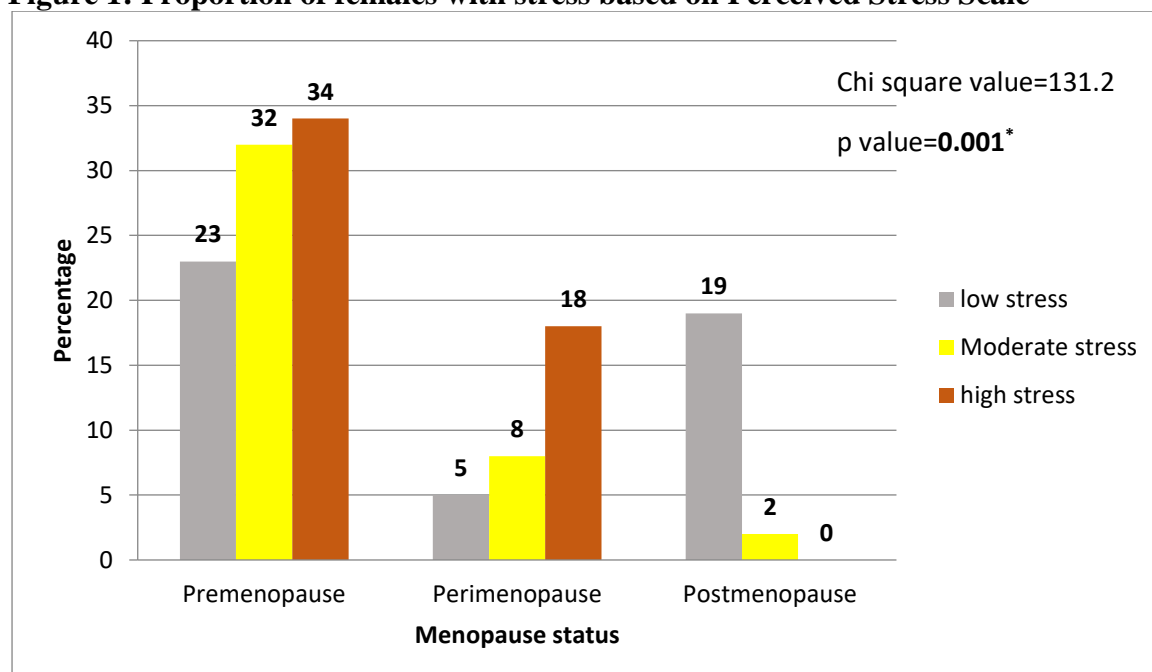
\* p value significant

	r value	p value
Premenopausal	0.55	<0.001*
Perimenopausal	0.89	<0.001*
Postmenopausal	0.40	<0.001*

**TABLE 3: Correlation between Sleep quality & stress**

\* p value significant

**Figure 1: Proportion of females with stress based on Perceived Stress Scale**



## DISCUSSION

The present study was carried out to estimate the prevalence of sleep disturbances and stress among premenopausal, perimenopausal and postmenopausal women. There was a significant difference in the mean value of sleep quality index and stress in the three groups. Poor sleep quality and stress was noticed among premenopausal women. High prevalence of the illiterates in premenopausal group

would have been a contributory factor for high rate of sleep disturbances and stress due to lack of awareness among the people about the menopausal transition.

**Grandner et. al** study demonstrated that lower the income and illiteracy has associated with more sleep disturbances which was similar to our study.<sup>[13]</sup> Working women also suffered from sleep disturbances and stress but the proportion is high among homemakers. Abha Singh et al have found that homemakers (71.43%) were affected more in comparison to working women (28.57%) which was concordant with the results of present study.<sup>[14]</sup> Recent study showed that higher income and educational status was associated with better sleep quality.<sup>[15]</sup> In the present study higher per capita income was associated with low sleep quality index and stress.

**Marcelo Justus dos Santos et al** study showed negative correlation between income and stress that is lower the income higher is the rate of stress which is concordant with our study. People with high or medium socio-economic status have a good sleep quality than people with a low socio-economic status.<sup>[16]</sup> The first multinational European study conducted in three countries evaluated the association between socio-economic status and stress and concluded that high socio-economic status has lower rates of stress.<sup>[17]</sup>

The study conducted by **Lorant et al.** revealed that low SES individuals had higher odds of stress.<sup>[18]</sup> In this study perimenopausal women who also has higher rate of sleep disturbances and stress than postmenopausal women but lower than the premenopausal group. Perimenopausal women suffered high rates of stress as they face menstrual irregularities. Recent reports have consistently documented that the perimenopause is a time of increased risk for the development of stress symptoms in women. Results from a multi ethnic community-based cohort of perimenopausal and postmenopausal women showed that stress symptoms are more likely to occur in perimenopausal than in postmenopausal women.<sup>[19]</sup> In a recent community-based study by Freeman and colleagues, an increase in the stress and depression symptoms was noted among women transitioning to menopause and a decrease, after onset of menopause.<sup>[20]</sup>

## CONCLUSION

The study showed that sleep disturbances and stress were present in all the three groups of study participants but women in premenopausal age experienced higher rates of sleep disturbances and stress. The study also indicated the strong association between quality of sleep and stress. Stress can also manifest as sleep disturbance. Educating the women about the menopausal symptoms can create awareness during their menopausal transition period. As studies on these aspects are limited only to socio economic factors, further studies are required regarding hormone replacement therapy and their impact on improving quality of life of women.

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