Research Article

Navigating the Midlife Shift: A Study to Explore Menopausal Symptoms and Perceived Stress

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Abstract

With changes in the physiological life cycle and severe hormonal changes as they pass through, middle - aged women are the most vulnerable group and likely to experience physical and mental health issues like hot flushes, sweating, muscular discomfort, stress, anxiety and depression. Finding middle - aged women's menopausal symptoms and their relationship is the main goal. To determine them, a cross-sectional study conducted on 106 middle-aged women between the ages of 40 and 60, a semi-structured interview using Modified Menopausal Rating Scale (MRS). Followed by perception of stress evaluated using Perceived Stress Scale (PSS). The present study shows the mean age of menopause, 47.2 $\pm$ 5.6 years. 3 most prevalent menopausal symptoms were joint and muscular discomfort reported by 103 women (97.3%), physical and mental exhaustion reported by 86 women (81.1%) and sleeping problems reported by 88 women. There is a significant strong association of menopausal symptoms and stress.

Keywords: Menopause; Middle - Aged Women; Stress; MRS; PSS

Introduction

Menopause is characterized by the end of menstruation due to a reduction in a ovarian activity, which causes persistent amennorhea [1]. Women in their middle years are more susceptible to mental health issues including stress, worries, anxiety and depression because of the harmonal shifts and physiological life cycle changes that come with aging [2]. A woman's menstrual cycle ends at menopause, which is an important topic to research. More women are going through menopause as a result of better health care and longer life expectancies [2,3].

When a living thing's adaptation ability is exceeded by environmental demands, stress results, causing biological and/or psychological changes that raise the possibilities of adverse health outcomes. Anxiety and stress frequently overlap, because human emotions and stress are intimately interlinked. Menopausal women commonly experience stress, sleep-related difficulties, and depressive symptoms, particularly during times of significant changes in sex hormone level, such as puberty and menopause. Menopause presents with symptoms such as vasomotor, somatic and psychological symptoms, as well as sexual dysfunction, which

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may significantly impact the quality of life of per-menopausal women. Some women feel that they lose their sense of purpose as they enter menopause due to loss of fertility. Psychological symptoms commonly observed among peri- menopausal women include irritability, stress and anxiety [4,5].

In a study done by Nirmala Bhatta and Roshani Khatry among peri-menopausal women in the age group 40-55 years attending gynecological outpatient department of Patan Hospital in Nepal, stress was one of the most prevalent symptoms observed. The Menopause Rating Scale was used in the study to assess the menopausal transition. Ten percent of the women reported high levels of stress, thirty-five percent reported moderate levels, and fifty-four percent reported low levels [6]. Six between four and eight years may pass during the menopausal transition. Anxiety, sadness and psychological stress can all rise as a result of stress during the menopausal transition. During menopause, women worldwide are two to five times more likely to have serious depressive illness. Women are more severely distressed psychologically at this period due to inadequate coping mechanisms [7].

While numerous studies have concentrated on menopausal symptoms, fewer had addressed mental health and well-being among middle - aged women [8,9]. This study aimed to estimate stress levels and identify various factors associated with menopausal women in North Chennai, yet there remains a need for further research in stress during this transition. Thus, a study on stress and its contributing elements on menopausal women is of interest to the researcher.

Objectives

The objective of the present study is to assess the level of stress and its associated factors among menopausal women in urban community of North Chennai.

Materials and Methods

Study design

A cross-sectional observational study was conducted among Middle -aged women aged 40-60 years.

Study population

This study was conducted among Middle -aged women residing in selected urban slums of North Chennai, a densely populated urban area. Specifically, the study focused on the 12th ward of Ennore Kuppam, where over 100,000 people live in urban slums.

Sample size and sampling method

The sample size (n) was calculated using the formula:

$$n = \frac{z^2 * p(1-p)}{e^2}$$

Where:

Z = 1.96 for a 95% confidence level (α\alphaα),

P = proportion (expressed as a decimal), assumed to be 40%

e = margin of error, assumed to be 10%.

According to a study conducted among 60 menopausal women in India revealed that 16.7% experienced moderate stress levels, while 83.3% experienced high stress levels. Assuming the level of stress among middle - aged women 40 - 60 years to be 57% [10,11] the sample size estimated at 96. Considering a nonresponse rate, the minimum sample size determined to be 106. Non probability purposive sampling technique was used to select the sample. Standardized structured questionnaire in Tamil version was used to collect the data. The inclusion criteria consisted of middle-aged women in the age group of 40 - 60 years, who were residents of the study area for the past 6 months and given their consent to participate in the study. The exclusion criteria included middle -aged women with a history of mental illness and on psychiatric medication, physical disabilities, a hysterectomy operation done or those on medication induced menopause, as well as pregnant and breastfeeding women were also excluded from the study.

Post-menopausal, per-menopausal, and pre-menopausal statuses were distinguished. Menstrual bleeding within past 12 months is considered as post-menopausal, based on menopausal phases. Pre-menopausal, with slight changes in the length of the cycle, especially decrease in length; peri-menopausal, with menstruation throughout the preceding or last 2 - 12 months but growing irregularity of periods without skipping periods.

Study tools

A predesigned, standardized structured tool was used to collect data from the study participants regarding socio demographic details, Menopausal Rating scale and perceived stress among middle - aged women.

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- **Part I:** The socio-demographic questionnaire includes questions about participants' characteristics such as age, educational level, employment status, marital status, type of family and income of the family.

- **Part II:** Menopause rating scale (MRS) - To evaluate the menopausal symptoms, a standardized instrument is used. MRS has been widely utilized to evaluate the menopausal symptoms and their intensity across the globe. It is a psychometrically standardized scale [12].

- The Menopause Rating Scale (MRS) is a popular and standardized questionnaire which is carefully examined for its validity and reliability. Participants in the study may easily grasp this self-administered tool, as it is intended to evaluate in addition health-related quality of life in middle-aged women. The MRS facilitates the comparison of symptoms and evaluation of their severity. It encompasses a total of 11 symptoms categorized into three dimensions: Somatic symptoms include hot flashes, heart discomfort, sleep problems and joint and muscular discomfort; Psychological symptoms include depressive mood, irritability and fatigue, anxiety, physical and mental exhaustion; and Urogenital Symptoms include sexual problems, bladder problems and vaginal dryness. Participants indicate their complaints for each item by ticking the appropriate box on 0 = NO, or 1 = yes indicating the presence or absence of the menopausal symptoms with including urinary frequency. The sum of composite scores for every dimension yields the overall score which range from 0 to 12 [12,13].

- **Part III:** The Perceived stress scale (PSS) was created to measure the stress perceptions. In contrast to life-event based stress measures, this appraisal-based, is distinguished by its excellent and superior psychometric qualities and its unique capacities to measure stressful events of life. In addition to the general population, validation studies for the PSS have been carried out among a variety of sub populations, including individuals with health problem, People with psychiatric and mental health issues and also people in diverse occupations.

The original authors propose the 10-item version of the PSS (PSS-10) is appropriate for assessing stress due to its psychometric qualities. The PSS-10 asks questions about thoughts and feelings that have occurred throughout the last month. Participants of the study are required to answer and respond to the options from 'never' to 'very often' and how frequently they felt in a particular way. "0" means never and "5" means quite often. The answers to the four affirmatively stated items (items 4, 5, 7, 8) must first be inverted in order to determine the overall PSS score. The sum of the scores for each question is then used to determine total PSS score, greater scores correspond to higher levels of perceived stress [14]. The individual scores on the PSS ranged from 0 to 40, stress levels are classified as low, if the score is less than 14, moderate if the score is between 14 and 26 and high if the score is between 27 and 40.

Ethical considerations

Ethical Approval for the study was granted by the ethical committee. Written informed consent was obtained from all participants prior to the interviews. Participation in the study was entirely voluntary, with no coercion applied. Confidentiality of participants' information was ensured throughout the study.

Statistical Methods

After being coded and categorized, the data was imported into SPSS version 24. Stress levels and socio-demographic characteristics were displayed using frequency distributions and percentages. Values below 14 were classified as low stress, and values equal to or higher than 14 were classified as moderate and high stress for the purposes of chi-square test. This classification aided in identifying the correlation between stress and few demographic factors including age, marital status, level of education, employment position and menopausal symptoms. The association between menopausal symptoms and stress was investigated using the Spearman correlation co-efficient.

Results

A total of 106 menopausal women completed the survey. The Mean age of Menopause in this study was 47.2 + 5.6 years. Among these Middle - aged women, 12 (11.3%) were pre-menopausal women, 39(36%) were peri - menopausal and 55(51.6%) were post - menopausal women. Most of the middle-aged women (49.8%, or 45%) who experience menopause are between the ages of 51 and 55 (Table 1).

By analyzing the socio-demographic variables of the participants, it was found that the majority of 56 (55.7%) had

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Age in years	Menopausal status: n = 106			
	Pre - Menopausal	Peri- Menopausal	Post - Menopausal	Mean age of Menopause
41 - 45 years	6	15	2	44.8
46 - 50 years	6	13	12	48.3
51 - 55 years	0	11	19	49.8
56 - 60 years	0	0	22	47.5
Total	12	39	55	190.4
Mean age of Menopause	47.2 ± 5.6			

Table 1: Distribution of Age of Middle - aged Women.

completed a higher level of education. Additionally, 65 women (61.3%) were married. Most of the Middle-aged women 39 (36.1%) worked in private sector jobs, and the majority (71, or 67%) were Hindus. With a p-value of 0.0079, a chi-square test analysis used to study the relationship between socio-demographic fctors and the mean age of menopause, results showed a significant correlation between the age of menopause and higher educational status. Other sociodemographic factors did not significantly correlate with menopausal age (Table 2).

Demographic Variables	Frequency	%	Mean age of Menopause	Chi - Square: F value; p value
1. Education				
Not Educated	4	3.8	51.8	17.85; p = 0.0079*
Primary Schooling	2	1.9	51.8	
Secondary Schooling	12	11.3	50.3	
Higher Secondary	29	27.4	51.3	
Higher Level of Education	59	55.7	48.3	
2. Marital Status				
Married	65	61.3	48.6	2.85; p = 0.068
Unmarried	6	5.7	51.2	
Widdowed	26	24.5	52.6	
Single, Seperated	9	8.5	53.2	
3. Occupation				
Self - Employed	23	21.7	50.6	4.76; p = 0.59
Government	44	41.5	51.3	
Private	39	36.8	53.1	
4. Religion				
Hindus	71	67.0	50.8	7.56; p = 0.24
Christians	22	20.8	51.8	
Muslims	5	4.7	48.6	
Others	8	7.5	47.4	
5. Type of Family				
Nuclear	87	82.1	48.9	9.3; p = 0.36
Joint	19	17.9	51.9	

Table 2: Distribution of Socio - Demographic Variables of Middle - aged Women with Mean age of Menopause.

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The Modified MRS was used to measure the prevalence of menopausal symptoms, with 0 denoting "NO" and 1 denoting "YES" for the occurrence of symptoms in middle-aged women. Among all women (n = 106), the three most prevalent menopausal symptoms were joint and muscular discomfort, reported by 103 women (97.3%), physical and mental exhaustion, reported by 86 women (81.1%), and sleeping problems, reported by 88 women. The majority of the physical and mental symptoms, including hot flushes, sweating and depressive mood followed by sleeping problems (83% and 76%). When comparing middle-aged peri-menopausal women to post-menopausal and pre-menopausal women, a high significant difference was seen (Table 3).

Menopausal Symptoms	Pre - Menopausal n = 12	Peri - Menopausal n = 39	Post - Menopausal n = 55
Somatic Symptoms			
1. Hot flushes/Sweating	10 (83%)	29 (74.3%)	19 (34%)
2. Heart discomfort/Palpitations	2 (17%)	9 (18%)	23 (42%)
3. Sleeping problems	8 (66.6%)	32 (76.9%)	48 (56%)
4. Joint and Muscular Discomfort	12 (98.9%)	36 (82.6%)	55 (99.8%)
Psychological Symptoms			
Depressive mood	8 (66.6%)	32 (76.9%)	20 (36%)
Irritability	2 (17%)	35 (81.3%)	15 (27.3%)
Anxiety	7 (56.7%)	30 (80.4%)	43 (48.5%)
Physical and Mental exhaustion	10 (83%)	37 (84.4%)	21 (38.6%)
Urogenital Symptoms			
Pain/Burning sensation in vulva/vagina	5 (15.8%)	27 (72.36%)	25 (46.7%)
Burning Micturition	1 (9.8%)	31 (80.6%)	31 (46.8%)
Dryness of vagina	1 (9.8%)	21 (37.4%)	14 (25.4%)
Incontinence and Frequency of urine	0	31 (74.35%)	39 ((45.5%)

Table 3: Prevalence of Menopausal symptoms in different phases of Menopausal status.

Table 4 shows the analysis of stress levels, its frequency and percentage among middle - aged women. Middle - aged women who participated in the study showed 24 of them had no perceived stress and 15 presented with low level of stress and the moderate stress were seen in 42 women and 25 of them suffered higher perceived stress.

Level of Stress	Frequency	Percentage
No Stress	24	22.6
Low Stress	15	14.2
Moderate Stress	42	39.6
High Stress	25	23.6

Table 4: Analysis of level of Stress perceived by middle - aged women.

Table 5, in multivariate analysis using ANOVA, level of stress assessed in middle - aged women and the predicted menopausal symptoms was seen high in moderate level of stress perceived by the women. The higher the prevalent of menopausal symptoms were significantly higher among moderate and high stress perceived by the middle - aged women and the result showed p value of 0.001 and 0.005 respectively. The mean menopausal score of menopausal symptoms is 6.9 in most of the women who perceived high level of stress.

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Level of Stress	Menopuasal Symptoms Present NO	Total Average Mean Score of Menopausal symptoms Mean (SD)	p Value
No Stress	12	3.1	0.008*
Low Stress	10	4.8	0.02
Moderate Stress	41	5.9	0.001*
High Stress	10	6.9	0.005*

Table 5
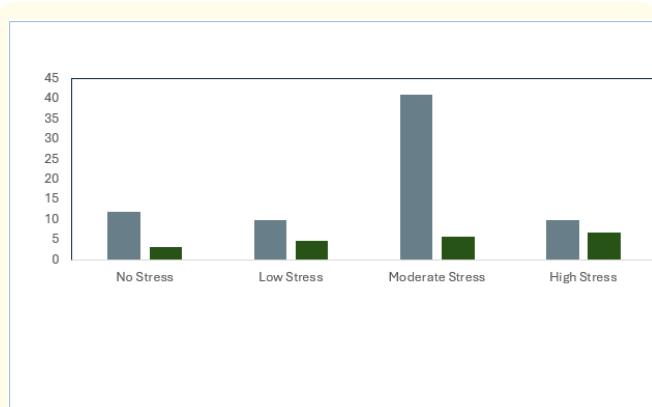
Figure 1: Mean Menopausal symptoms score with stress levels.

Discussion

Age of women strongly influences the menopausal symptoms in women during the transition period. All other comorbidities related to cardiovascular health, bone health, mental, sexual and social health also increases with age decreasing the standard of living in the middle-aged women. Systemic reviews done recently across India on menopausal age reports 46.6 years in women. The average age at natural menopausal in India varies by its location. In India, it is 47.3 years in the east, 46.2 years in the west, 45.5 in the north, 46.1 years in the south, and 47.8 years in the Central parts [16]. According to Other research conducted both inside and outside of India, the average age at which menopause began varied from 44.5 to 51.3 years [17,18].

In the present study, the mean age of menopause was 47.2 ± 5.6 years. The result in the study is similar to other studies done in India and also majority of the women were in between 51 - 55 years. Although the average age of menopause is around 50 years, the timing can vary significantly among women due to mix of genetic, lifestyle, medical, and environmental factors. Recognizing how age and these factors influence menopause can aid women in better anticipating and managing this life transition.

In this present study middle-aged women's sociodemographic characteristics are compared to the average age of Menopause. There was a statistically significant correlation found between the educational status and the mean age of menopause. The age at which women go through menopause is greatly influenced by their educational attainment. The interaction of health awareness, socioeconomic stability, lifestyle choices, psychological well - being, and reproductive behavior all contribute to this relationship. Recognizing this connection can aid in creating targeted health interventions and support for women across different educational levels [19].

As a part of somatic and psychological subscales, the present study discovered that peri-menopausal women were more likely than post-menopausal women to feel joint and muscular discomfort, followed by physical and mental exhaustion, and sleeping problems (Table 3). Comparing these differences to pre-menopausal women, the result revealed there is a statistically significant differences between the menopausal phases. These outcomes aligned with those of other researchers conducted in other parts of the globe. The symptoms that were most frequently noted in those studies were aches in the joints and muscles, as well as mental exhaustion and physical fatigue [20].

In this study, the higher the prevalent of menopausal symptoms were significantly higher among moderate and high stress perceived by the middle - aged women. Stress is a crucial factor that can worsen menopausal symptoms, creating a cycle that impacts overall well - being. It can increase the frequency and intensity of hot flashes, as anxiety and stress trigger the body's

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stress response, leading to sudden changes in body temperature. Stress often leads to sleep disturbances, such as difficulty falling and staying asleep, and hormonal changes during menopause can already disrupts sleep patterns, further aggravated by added stress. Hormonal fluctuations can cause mood swings, irritability, and depression, and stress can intensify these psychological symptoms, making it harder to cope with daily challenges. Understanding the interrelation between stress and menopausal symptoms is crucial for managing this life stage. By adopting stress - reducing strategies, women can improve their quality of life during menopause [8].

Conclusion

Health issues of menopausal women pose a significant challenge to public health, particularly there is no specific health program for these women in the country. Current women and geriatric health care services mainly address general health problems and do not specifically target menopausal health issues. It's time for India to develop and launch community programs at all levels of prevention, health promotion and practice.

Limitations

A number of shortcomings are identified in this study. Since the study is cross-sectional, it ignores the confounding effects of women's aging processes, which could affect how menopausal symptoms are experienced. The classification into pre, peri and post-menopausal groups is further complicated by the fact that certain participants are placed into distinct menopausal status groups due to lack of information regarding the regularity of the menstural cycle.

Ethical Statement

This study was approved by the Institutional Ethics Committee of Bharath Institute of Higher Education and Research (Approval No: BIEC 101 - 24). All procedures performed in this research involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1975 Declaration of Helsinki and its later amendments.

Consent Statement

Written informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, their right to withdraw at any time, and the measures taken to ensure confidentiality and anonymity.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest related to this study.

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