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Measuring Climacteric Symptoms: A Community based Study among Lotha Females of Nagaland

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ABSTRACT

Background: The overall health and well-being of the mid-aged women has become a major public health concern around the world. Before and after the onset of menopause, women experience physical or psychological symptoms which affect the overall health leading to decrease in Quality of Life (QoL).
Objective: To measure the climacteric symptoms and risk factors.
Materials and Methods: Cross-sectional data was collected on a sample of 202 adult females. Data was collected by multi-stratified sampling method. The subjects ranged in age from 35-60 years. Data was collected on socio-demographic aspects, health, quality of life and physiological parameters.
Results: The mean and median age of the subject was 48.3±7.6 and 49 years respectively. The mean and median age of pre-menopausal females was found to be 41.2±4.6 and 41 years respectively and of post-menopausal females it was 54.2±3.5 and 54 years respectively. Among pre-menopausal females higher percentage of headache was found whereas among post-menopausal females sexual dysfunction was found to be the most prevalent symptom. Highly significant values were found for all the menopausal symptoms in clusters, sub-clusters and total Greene score among post-menopausal females. For the severity of menopausal symptoms, post-menopausal females who had low quality of life were found to be at higher risk for developing all the menopausal symptoms.
Conclusion: In the present study, factors like family size, health status and age at menarche line were found to be the risk factors for menopausal symptoms. Females having low quality of life were also seen to have higher menopausal symptoms.

KEYWORDS: Menopause; Quality of life; Menopausal symptoms; Nagaland; Lotha females.

ABBREVIATIONS: QoL: Quality of Life; FMP: Final Menstrual Period; WHO: World Health Organization; WHOQOL: The World Health Organization Quality of Life; GCS: Greene Climacteric Scale; CI: Confidence Interval.

INTRODUCTION

Menopause is the permanent cessation of menstruation resulting from the loss of follicular activity in the ovaries. It is a stage when the menstruation cycle stops for longer than 12 months and there is a drop in the estrogen and progesterone, the two important hormones in the female body.[1] 'Menopause' was derived by a French physician in 1821, from the Greek word 'menos' for 'month' and 'pause' for 'to stop'.[2] The age at which menopause occurs differs individually, culturally and geographically. Age at menopause is calculated in years by the Final Menstrual Period (FMP) in women's life. The age at menopause may be obtained by periodically asking them about the absence or presence of menstrual cycles or by asking them to recall their age at the time of last menstrual period.[3]

Even before the onset of menopause, menopausal symptoms may occur and their effect differs individually. Some individuals may not find it bothersome while other might se-

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verely be affected causing difficulties to perform daily activities. The menopausal transition is a function of progressive decline in ovarian follicular population and reduced steroidogenic capacity of ovarian stroma, as such it represents ovarian senescence.[4] During the menopausal transition, physiological as well as morphological changes occur. A variety of physiological changes takes place in the body and some of these are result of cessation of ovarian function and related menopausal events, others are function of ageing process.[1] Little distinction has been made between symptoms that result from a loss of ovarian functions, from the ageing process or from the socio-environmental stresses of mid-life years.[1]

Menopause related symptoms have been studied extensively in western countries but very less data is available from developing countries, especially South East Asia.[5] Based on various researches World Health Organization (WHO)[1] classified the symptoms of menopause into vasomotor symptoms, urogenital atrophy, irregular menstruation and other problems. Most of the women with the onset of menopause suffer from various symptoms which may or may not be related to menopause. The various symptoms of menopause have been categorized by scholars and researchers in their in-depth study and for the association between the severities of those symptoms with menopause. To study the effect and severity of these symptoms various standardized questionnaires have been developed and extensively used for the study. The various menopausal symptoms experienced by the subjects are mostly classified into various categories like, psychological, somatic, vasomotor, sexual dysfunction etc.

In North-East India very few studies have been done on menopause and no published literature has been found among Lotha females. Thus, the present study focuses on the various climacteric symptoms and their risk factor using the Greene climacteric scale among adult Lotha females of Nagaland.

MATERIALS AND METHODS

The present study was carried out among adult Lotha females of Wozhuro range under Wokha district, Nagaland. This group of people belong to Tibeto-Burman family, followed clan exogamy. Their primary occupation is shifting cultivation. They belong to one of the major tribes in Nagaland.

For the collection of data an exclusion criteria was set and those subjects who were pregnant, unmarried and have undergone induced menopause were excluded from the study. Data was collected on 202 females of which 111 females were post-menopausal i.e. stopped menstruating and 91 females were pre-menopausal i.e. they were still menstruating. Cross-sectional data was collected by using multi-stratified sampling. A structured proforma was prepared to collect data on socio-demographic parameters like age, educational status, house type, family size, occupation etc. and on reproductive history like age at menarche, age at marriage, age at menopause etc. The quality of life among the subjects was also analyzed using The World Health Organization Quality of Life (WHOQOL)[6] questionnaire developed by WHO in 1996 in an attempt to develop a quality of life assessment that would be applicable cross-culturally. The WHOQOL consist of various questions with scores ranging from 1-5 based on the severity and the median value of the total score was taken after which the values below the median score was labelled as low quality of life and the values above the median score was labelled as high quality of life.

There are various questionnaire developed for assessing the severity or the type of symptoms associated with menopause and are being used widely by researchers for studying menopausal symptoms.

In the present study, the Greene Climacteric Scale (GCS) have been used to assess the menopausal symptoms experienced by the subjects. The Greene Climacteric Scale[7] provides a brief measure of menopausal symptoms and has classified the symptoms into psychological symptoms, physical or somatic symptoms and vasomotor symptoms which can be used to assess changes in different symptoms, before and after menopause. The scale consist of 21 questions with four point rating scale based on the severity: not at all (0); a little (1); quite a bit (2); extremely (3).

In psychological symptoms it includes 11 symptoms such as heart beating quickly or strongly, feeling tense or nervous, difficulty in sleeping, excitable, attacks of anxiety and panic, difficulty in concentrating, feeling tired or lacking in energy, loss of interest in most things, feeling unhappy or depressed, crying spells and irritability, the somatic or physical domains include symptoms such as feeling dizzy or faint, pressure or tightness in the head, parts of the body feel numb, headaches, muscle or joint pains, loss of feelings in the hands or feet, breathing difficulties, and the vasomotor domain include symptoms like hot flushes, night sweats and lastly sexual dysfunction.

Analysis was performed using Statistical software package SPSS version 17. Multinomial logistic regression was used to analyze the severity of the menopausal symptoms with socio-demographic and reproductive as well as nutritional status among post-menopausal females. In the present study, purpose of the study was explained and written informed consent was obtained from all the participants before starting the study. Ethical clearance was taken prior to start the work from Departmental ethical committee.

RESULTS

The mean and median age of the present study was found to be 48.3±7.6 and 49 years respectively (Table 1). The mean and median age of pre-menopausal was found to be 41.2±4.6 and 41 years and among post-menopausal females were 54.2±3.5 and 54 years respectively. Table 2 describes the mean, standard deviation and t-test values of menopausal symptoms us-

Age (years)	Mean±SD	Median
Total population	48.3±7.6	49
Pre-menopausal females	41.2±4.6	41
Post-menopausal females	54.2±3.5	54

Table 1: The age of Nagaland females.

Psychological symptoms	Mean±S.D (%)			t-test
	Total	Pre-menopause	Post-menopause	
Heart beating quickly or strongly	0.29±0.47(28.2)	0.24±0.45(10.3)	0.33±0.49(17.8)	-1.36
Feeling tense or nervous	0.64±0.50(62.8)	0.57±0.51(25.2)	0.69±0.48(37.6)	-1.73
Difficulty in breathing	1.28±0.91(55.9)	0.88±0.91(23.2)	1.61±0.77(47.0)	-6.15***
Excitable	0.15±0.35(14.8)	0.11±0.31(4.9)	0.18±0.38(9.9)	-1.39
Attacks of anxiety, panic	0.25±0.43(24.7)	0.16±0.37(7.4)	0.32±0.46(17.3)	-2.49*
Difficulty in concentrating	0.93±0.66(74.2)	0.75±0.66(28.2)	1.08±0.63(46.6)	-3.65***
Feeling tired or lack in energy	1.69±0.49(67.3)	1.52±0.54(22.2)	1.83±0.40(45.0)	-4.68***
Loss of interest in most things	0.85±0.58(74.7)	0.62±0.55(26.2)	1.05±0.52(48.5)	-5.62***
Feeling unhappy or depressed	1.04±0.43(92.5)	1.02±0.36(42.5)	1.06±0.49(50.0)	-0.66
Crying spells	0.29±0.45(29.2)	0.32±0.46(14.3)	0.27±0.44(14.8)	0.75
Irritability	0.16±0.37(16.3)	0.18±0.38(7.9)	0.15±0.36(8.4)	0.43
Feeling dizzy or faint	0.27±0.45(26.7)	0.15±0.36(6.9)	0.37±0.50(19.8)	-3.42***
Pressure or tightness in the body	0.65±0.57(59.9)	0.52±0.58(21.2)	0.76±0.54(38.6)	-3.02**
Parts of the body feel numb	0.23±0.45(21.1)	0.12±0.32(5.4)	0.32±0.52(15.8)	-3.08**
Headaches	1.53±0.52(94.0)	1.43±0.54(44.0)	1.62±0.48(54.9)	-2.66**
Muscle and joint pains	1.17±0.70(82.1)	0.85±0.69(30.1)	1.44±0.59(51.9)	-6.52***
Loss of feeling of hands or feet	0.15±0.37(14.8)	0.05±0.22(2.4)	0.23±0.44(12.3)	-3.47***
Breathing difficulty	0.20±0.39(19.8)	0.12±0.32(5.4)	0.26±0.44(14.3)	-2.51*
Hot flushes	0.74±0.79(51.9)	0.43±0.74(12.3)	0.99±0.74(39.6)	-5.33***
Sweating at night	0.76±0.76(55.9)	0.57±0.79(17.3)	0.92±0.71(38.6)	-3.27***
Sexual dysfunction	2.64±0.74(97.2)	2.22±0.94(42.5)	2.99±0.09(54.9)	-8.59***

***$p<0.001$, **$p<0.01$, *$p<0.05$

Table 2: Menopausal symptoms based on Greene Climacteric Scale (GCS).

ing the Greene Climacteric Scale. Scores in all the menopausal symptoms except crying spells and irritability showed increase among post-menopausal females as compared with pre-menopausal females. The difference between the two groups were found to be statistically significant in symptoms such as difficulty in breathing ($p<0.001$), attacks of anxiety, panic ($p<0.05$), difficulty in concentrating ($p<0.001$), feeling tired or lacking in energy ($p<0.001$), loss of interest in most things ($p<0.001$), feeling dizzy or faint ($p<0.001$), pressure or tightness in the body ($p<0.01$), parts of the body feeling numb ($p<0.01$), headaches ($p<0.01$), muscle and joint pains ($p<0.001$), loss of feelings of hands and feet ($p<0.001$), breathing difficulty ($p<0.05$), hot flushes ($p<0.001$), sweating at night ($p<0.001$) and sexual dysfunction ($p<0.001$).

Most prevalent symptoms experienced by pre-menopausal females was headache followed by sexual dysfunction and feeling unhappy or depressed and among post-menopausal females, it was headache and sexual dysfunction followed by muscle and joint pain. In the total score, the most prevalent menopausal symptom was sexual dysfunction followed by headache and feeling unhappy or depressed. Symptoms like muscle and joint pain, loss of interest in most things and difficulty in concentrating also showed high prevalence.

The cluster, sub-cluster and total Greene score was also calculated where the mean, standard deviation and t-test was taken to analyze the difference between the two groups (Table 3). This result showed that the cluster and sub-cluster such as psychological, anxiety, depression, somatic, vasomotor, sexual dysfunction and total Greene score was found to be more among post-menopausal females as compared with pre-menopausal females and this difference was found to be highly significant ($p<0.001$).

Multinomial logistic regression was calculated at 95% Confidence Interval (CI) among post-menopausal females to see the effect of demographic, health, lifestyle indicators on the se-

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Variables	Mean±S.D		t-test
	Pre-menopause	Post-menopause	
Psychological	6.4±3.33	8.6±3.20	-4.799***
Anxiety	2.7±2.10	4.2±2.09	-5.054***
Depression	3.6±1.58	4.3±1.43	-3.348***
Somatic	3.2±2.12	5.0±2.55	-5.243***
Vasomotor	1.0±1.49	1.9±1.32	-4.578***
Sexual dysfunction	2.2±0.94	2.9±0.09	-8.591***
Total Greene Score	12.8±6.58	18.4±5.90	-6.426***

***$p<0.001$, **$p<0.01$, *$p<0.05$

Table 3: Cluster, sub-cluster and total Greene score according to menopausal status.

Variables	Psychological (>8)	Anxiety (>3)	Depression (>4)	Somatic (>5)	Vasomotor (>2)	Total Greene Score (>18)
Age						
≥54 years	2.3(0.9-6.2)	0.4(0.1-1.2)	0.4(0.1-1.1)	1.2(0.5-3.0)	1.0(0.4-2.5)	1.4(0.5-3.6)
<54 years †						
Education						
≤ primary class	0.9(0.2-3.1)	0.8(0.2-2.7)	0.9(0.2-3.2)	1.3(0.4-4.0)	0.8(0.2-2.6)	0.8(0.2-3.1)
≥ middle class †						
Family size						
≥6	1.2(0.5-3.1)	0.8(0.3-2.1)	1.8(0.7-4.5)	0.5(0.2-1.3)	2.5(1.0-6.4)*	0.7(0.3-1.8)
<6 †						
Health status						
Average	35.3(3.9-314.6)***	1.5(0.3-6.8)	-	3.6(0.8-15.4)	4.6(1.1-18.4)*	-
Poor	40.9(3.5-467.7)**	1.6(0.2-11.1)	-	20.1(2.6-155.9)*	7.2(1.2-44.1)*	-
Fit †						
Age at menarche						
<14	1.5(0.6-3.9)	1.4(0.5-3.5)	1.2(0.5-3.1)	1.3(0.6-3.1)	3.0(1.2-7.3)**	2.7(1.1-6.7)*
≥14 †						
Quality of life						
Low quality of life	8.6(3.4-21.5)***	4.6(1.6-13.0)**	1.6(0.5-5.0)	1.6(0.5-5.0)	3.2(1.3-7.5)**	6.3(2.5-16.1)***
High quality of life †						
Body mass index						
Underweight	1.4(0.4-4.0)	0.9(0.3-2.7)	1.6(0.5-4.3)	1.6(0.6-4.2)	0.6(0.2-1.5)	1.8(0.6-5.1)
Overweight	0.4(0.1-3.4)	0.3(0.04-2.4)	0.6(0.1-8.5)	2.1(0.3-14.8)	0.5(0.1-5.0)	0.9(0.1-7.6)
Normal †						

*$p<0.05$, **$p<0.01$, ***$p<0.001$
†Reference category

Table 4: Demographic, health, lifestyle indicators as a risk factor for severity of menopausal symptoms among post-menopausal females.

verity of menopausal symptoms. From Table 4, it was observed that females with age of ≥54 years were 2.3 times more at risk of developing psychological symptoms >8 than those females who were to <54 years of age, 0.4 times more risk of developing anxiety >3, 0.4 times more risk for developing depression >4, 1.2 times more risk of developing somatic symptoms >5, 1.0 times more risk of developing vasomotor symptoms >2 and 1.4 times more for total Greene score >18 and the risk factor was non-significant. In education qualification when compared with those ≤primary and ≥middle class, subjects who attained only ≤primary class were 0.9 times more risk for developing psychological symptoms >8, 0.8 times more risk for anxiety >3, 0.9

times more risk for depression >4, 1.3 times more risk for somatic symptoms >5, 0.8 times more risk for vasomotor symptoms >2 and 0.8 times more risk for total Greene score>18. Those subjects who had ≥6 members in a family were 1.2 times more at risk for developing psychological symptoms >8 than those with ≤6 members, 0.8 times more risk for developing anxiety >3, 1.8 times more risk for depression >4, 0.5 times more risk for somatic symptoms >5, 2.5 times more risk for developing vasomotor symptoms >2 ($p<0.05$) and 0.7 times more risk for total Greene score >18. The self-perceived health status of post-menopausal females showed that subjects with average health status were 35.3 times more risk for psychological symptoms >8

(p<0.001), 1.5 times more risk for anxiety >3, 3.6 times more risk for somatic symptoms>5, and 4.6 times more risk for vasomotor symptoms>2 (*p*<0.05) than those subjects with good/fit health status. For depression >4 and total Greene score >18 no result and difference was observed. For post-menopausal subjects with poor health status, they were 40.9 times more at risk for psychological symptoms >8 (*p*<0.01), 1.6 times more at risk for anxiety >3, 20.1 times more at risk for somatic symptoms>5 (*p*<0.05) and 7.2 times more at risk for vasomotor symptoms>2 (*p*<0.05) than those with good/fit health status. For depression >4 and total Greene score >18 no result was observed.

The age at menarche at ≤14 years were 1.5 times more at risk for psychological symptoms >8, 1.4 times more at risk for anxiety >3, 1.2 times more at risk for depression >4, 1.3 times more at risk for somatic symptoms (>5), 3.0 times more at risk for vasomotor symptoms >2 (*p*<0.01) and 2.7 times more risk for total Greene score >18 (*p*<0.05) than those with age of ≥14 years. The quality of life was also assessed and found that post-menopausal subjects with low quality of life were 8.6 times more at risk for psychological symptoms >8 (*p*<0.001), 4.6 times more risk for anxiety >3 (*p*<0.01), 1.6 times more risk for depression >4, 3.4 times more risk for somatic symptoms >5 (*p*<0.01), 3.2 time more at risk for vasomotor symptoms >2 (*p*<0.01) and 6.3 times more risk for total Greene score >18 (*p*<0.001) than those with good quality of life. In Body Mass Index (BMI), subjects who were underweight were 1.4 times more at risk for psychological symptoms >8, 0.9 times more at risk for anxiety >3, 1.6 times more at risk for depression >4, 1.6 times more for somatic symptoms >5, 0.6 times more at risk for vasomotor symptoms >2 and 1.8 times more for total Greene score >18. Those subjects who were overweight were found to be 0.4 times more at risk for psychological problems >8, 0.3 times more at risk for anxiety >3, 0.6 times more at risk for depression >4, 2.1 times more at risk for somatic symptoms >5, 0.5 times more for vasomotor symptoms >2 and 0.9 times more for total Greene score >18. The risk factor of BMI among underweight and overweight post-menopausal females when compared with normal post-menopausal females were found to be non-significant for all the menopausal symptoms.

DISCUSSION

In developed countries, the climacteric affecting women from a bio-psycho and social point of view has extensively been studied.[8] Symptoms at midlife are associated with a wide range of socio-demographic, lifestyle and health measures.[9-11] In the present study, scores in all the menopausal symptoms except crying spells and irritability were more in post-menopausal females as compared with pre-menopausal females. This findings agrees with the studies reported by various researchers.[12-14] The difference between the two group was found to be statistically significant in symptoms such as difficulty in breathing, attacks of anxiety, panic, difficulty in concentrating, feeling tired or lacking in energy, loss of interest in most things, feeling dizzy or faint, pressure or tightness in the body, parts of the body feeling numb, headaches, muscle and joint pains, loss of feelings

of hands and feet, breathing difficulty, hot flushes, sweating at night and sexual dysfunction. Barentsen et al[15] found higher and statistically significant symptoms among post-menopausal women such as feeling tense or nervous, difficulty in sleeping, attacks of panic, loss of interest in most things, irritability, feeling dizzy or faint, pressure or tightness in head or body, parts of body feeling numb, muscle or joint pain, loss of feeling in hands or feet, hot flushes, night sweats and sexual dysfunction.

Most prevalent symptoms experienced by present pre-menopausal females was headache followed by sexual dysfunction and feeling unhappy or depressed and among post-menopausal females, headache and sexual dysfunction were most prevalent followed by muscle and joint pain. In the total score, the most prevalent menopausal symptom was sexual dysfunction followed by headache and feeling unhappy or depressed. While Sierra et al,[8] reported symptoms like difficulty in concentrating, feeling unhappy or depressed, headache and hot flushes were more prevalent, and Kapur et al,[16] showed that the most prevalent symptoms were muscle and joint pains, followed by feeling tired or lack in energy, eye problems, headache and feeling unhappy or depressed. Worldwide, hot flushes are among the most commonly reported symptoms among women transitioning through menopause and in certain populations, hot flushes effect up to 75% of women undergoing this transition.[17,18] In our study however, hot flushes and night sweats were relatively not so prevalent.

The clusters, sub-cluster and total Greene score showed an increasing trend with post-menopausal status and this findings correlates with the findings by Barentsen et al,[15] where peri and post-menopausal scored significantly higher on all sub-scales except for depression and Sierra et al,[8] also found higher but significant values among post-menopausal females in psychological, anxiety, somatic and total cluster.

The risk factor for the severity of menopausal symptoms among different clusters from among demographic, health, lifestyle and BMI variables was also assessed. Results from the present study showed large family size, poor health status, lower age at menarche and low quality of life were associated with higher scoring for total and different cluster. In a study[19] it was suggested that women with least education were bothered more by vasomotor and general somatic problems than their better educated peer. However in our study educational level did not show significant value. In the size of the family, post-menopausal subjects who had more than 6 members showed more at risk of developing the vasomotor symptoms with significant difference. In the self-perceived health status of the post-menopausal subjects, subjects with average and poor health status were more at risk of developing the psychological, anxiety, somatic and vasomotor than the subjects with good health, but in depression and total Greene Climacteric Score no result was obtained. Statistically significant difference was seen in psychological and vasomotor functions in both poor and average health status subjects. In somatic symptoms statically significant difference was seen among subjects with poor health status. Post-menopausal

subjects with age at menarche less than 14 years of age was found to be more at risk of developing vasomotor symptoms and total Greene score than those subjects whose age at menarche was more than 14 years. Similar study by Kirchengast et al[20] reported significant correlation between socio-economic factors, educational level, marital status, total number of children and the degree of severity of several climacteric symptoms. In a study,[21] vasomotor symptoms were found to be common during the menopause transition and remained elevated for some years in a majority of older post-menopausal women.

Post-menopausal females who had low quality of life were seen to be more at risk for developing all the menopausal symptoms excfept for depression which suggested that low quality of life were associated with high prevalence of menopausal symptoms. AlDughaither et al,[22] suggested that more severe the menopausal symptoms, the higher the MRS score and the worse the quality of life. The risk factor of BMI among underweight and overweight post-menopausal females when compared with normal post-menopausal females and were found to be non-significant for all the menopausal symptoms which contradicts the finding by Moilanen et al,[23] where higher body mass index was significantly associated with higher number of psychological and vasomotor symptoms.

CONCLUSION

To conclude, climacteric symptoms were more prevalent among post-menopausal females than pre-menopausal females. Family size, self-perceived health status, age at menarche and quality of life were independent risk factors. The present study reported significant correlation between low quality of life, self-perceived health status and the degree of severity of most climacteric symptoms among Naga females. Therefore, improving the health status and quality of life will play a vital role in reducing the risk factor for the severity of menopausal symptoms and would enhance not only the health quality but also the work output.

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