Original Article

Clinical and Gynaecological Determinants of Menopause Symptom Severity in Kwara State, Nigeria

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ABSTRACT

Background: A number of factors are known to determine how menopause symptoms are perceived by women in different cultures. The aim of this study was to explore the gynaecological and medical correlate of menopausal symptoms severity of middle belt Nigerian.

Method: Women with natural menopause between age 40 and 60 years were randomly evaluated for menopause symptoms severity using Menopause Rating Scale (MRS) questionnaire. The total MRS scores were correlated with certain medical and gynaecological parameters using Pearson's Bivariate Correlate while logistic regression analysis was used to isolate independent factors.

Result: Three hundred and eighty-five women responded for the study. Their mean age was 51.3±0.3 years. The mean MRS score was 14.02±0.44 and 40% of the women studied had severe symptoms on the rating scale while others were mild. Age, menstrual cycle length, age at first delivery, diastolic BP and mean arterial pressure were significantly correlated with the total MRS score but only the age showed an independent impact on regression analysis. History of breast problem, presence of diabetes and history of contraceptive use were also positively associated with menopause severity.

Conclusion: The clinical and gynaecological parameters of women play a significant role in predicting their perception of menopausal symptoms severity and cannot be ignored.

INTRODUCTION

It has been established that the perception of menopausal symptoms severity varies from person to person as well as among different people groups[1-4]. However, specific factors that determine these outcomes have not been fully elucidated.

The symptoms that are frequently reported across different populations during menopause are hot flushes, heart discomfort, headaches, joint pain, irritability, insomnia, anxiety, depression and frequent fatigue[2,5,6,7], impaired memory, lack of concentration and significant loss of libido[8,9]. The prevalence of these symptoms vary between individuals and cultures[15,16]. Studies have shown that Japanese and Chinese women experienced more of musculoskeletal symptoms like joint stiffness and frequent fatigue[17], while vasomotor symptoms were predominant in African-American as well as Hispanic women[8,15,18]. Asian women displayed more

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of physical and psychological symptoms[18,22] while women in Australia and Turkey mostly report hot flushes and night sweats[20]. Arabian women including; Egypt, Saudi Arabia, Jordan and UAE reported more musculoskeletal related symptoms[21-27]. In Nigeria, several studies reported joint pain and hot flush predominantly, then, insomnia, anxiety, urinary symptoms, fatigue, and dyspareunia[2,28.30-33]

The World Health Organization (WHO) projected that sub-Sahara African women will spend a larger proportion of their lives in post-menopause due to an estimated rise in the proportion of adults over age 60 from 46 million people in 2015 to 157 million by 2050[1,34]

What makes these statistics worrisome is that the degree of the disabling effect menopausal symptoms has on ageing women is still largely unpredictable; some usually show very severe multiple reactions to the point where they will require clinical intervention while others show minimal or no reactions at all[10].

Several authors have made efforts to isolate factors that determine how disturbing symptoms of menopause can be for a woman. Several factors like standard of living, lower educational level, access to basic amenities, employment status, nature of jobs, age, religious beliefs, social lifestyle including alcohol and smoking, even tribal beliefs have been researched[11,12,16]Similarly, exercise, diet, body mass index have also been implicated as significant predictors[11,13].

The association between gynaecological history and the severity of menopausal symptoms have been poorly studied especially in Nigeria. However, some literatures have shown the impact of fertility index, menarche, parity and individual's menstrual cycle length on the outcomes of their menopausal symptoms[35-38]. A study done in Lagos showed that women who had earlier menarche displayed worse psychological symptom while women who started menstruating at older age experienced severe insomnia at menopause, but age at menopause seems to have no deciding effect on the severity of symptoms in the same study[2]. Women with history of diabetes, hypertension and renal disease were found to have worse symptoms at menopause[35.39,40]

The aim of this study was to determine the correlations between gynaecological and clinical parameters of Nigerian women and the severity of their menopausal symptoms.

Benefit to Science

The fallout of this study will provide health care providers with information that will help them assist their clients to cope better with menopause symptoms

Methodology

Study Design:

The study was a prospective and observational study.

Target Population

The target population were menopausal women within Ilorin East Local Government Area (IELG) which were predominantly of the Yoruba ethnic group. The local government has a population of 207,462 according to 2006 National Population Census.[41,42] This NPC report also showed that 102,661(49.5%) of the total population are women while about 16,015(15.6%) are within the age of 40-69years.[41]The local government covers an area of 486km^2 with a population density of 576.1/km^2.

Study Population

Study participants were selected randomly from Market places, Government offices, Religious houses (Churches and Mosques) and Hospitals.

Sample Size Determination

The sampling technique used was a simple random sampling.

After obtaining ethical approval from the Research and Ethics Committee of the Kwara state ministry of

health, sample size was determined using the Fisher formula[43]

$$n = \frac{Z^2 \times P \times q}{d^2}$$

n= Desired sample size; Z= Standard normal deviation set at 1.96 which corresponds to the 95% confidence interval; P= theproportion of the target population; q = 1-P; d =Degree of accuracy desired usually set at 0.05.

$$P = \frac{\textit{Population of target age of women in IELG}}{\textit{Total population of women in IELG}} = \frac{16{,}015}{102{,}661} = 0.156$$

Proportion of target population (P) = 0.156
q = 1-0.156 = 0.844
d = 0.05 (degree of accuracy)
Therefore, sample size ($\frac{1.96^2 \text{ x } 0.156 \text{ x } 0.844}{0.05^2} = 202$

Adding 10% attrition rate of the determined sample size = 0.1x202.3 = 20.2
I.e. Total workable sample = 202+20.2 = 222.2

Selection Criteria:

Women below 40years, women who had premature or iatrogenic menopause were excluded from the study. Women who were medications that can affect gonadal functions were also excluded from the study. Likewise, women with mental health issues were exempted.

Research Instrument

The women were interviewed by trained research assistants using a structured questionnaire with the following domain; Socio-demographic; Medical History; Obstetrics and Gynaecological history and a modified Menopause Rating Scale (MRS).[44] MRS is a globally validated tool for evaluating menopausal symptoms[9].

MRS Score

MRS is an 11-item health-related questionnaire developed and validated to measure the severity of menopause-related complaints by rating a profile of symptoms on a scale from 0 (no symptoms) to 4 (extremely severe). The total MRS score (0 – 44) is indicative of the severity of a woman's symptoms and its impact on quality of life.

Using the conventional standard[8], the MRS scores were graded into 3 categories according to the level of severity in perception. (0 is asymptomatic; 1-2 is Mild to Moderate; while 3-4 is severe)

Sampling Technique

Women who met the inclusion criteria were recruited using simple random sampling from communities in Ilorin East Local Government including Oke Oyi, Oke Ose, Sango, Agbede, Eleko, and Fate.

Trained research assistants approached hospitals, Government schools, Offices, Market places and Churches. The women were briefed about the study and how it would contribute to the overall improvement menopausal women's quality of life in the future. They were also assured that the research would be at no costto them rather they would have free tests such as blood pressure, weight and body mass index. A written consent was gotten from those who could write in English while oral consent was obtained from those who could not. Study cohorts were given the liberty to decline from the process at any time they feel so without any repercussion.

Statistical Analysis

Data was analysed using SPSS statistical software version 22[45]. Continuous variables were recorded as means ± standard deviation (SD) while the categorical variables were expressed as frequency and proportion. Association between continuous variables was determined using the student-t test while chi-square ($\chi 2$) test was used for categorical variables. Correlation between the various continuous variables and the MRS scores was determined using Pearson's Bivariate Correlate and logistic regression analysis. Statistical significance was set at $p<0.05$.

RESULTS

Socio-demographic Data

The mean age of the respondents was 51.3±0.3 years; mean weight was 74.5±0.7kg while the mean

height was 1.62±0m. Their mean calculated Body Mass Index was 28.3±0.3kg/m^2. Six (1.5%) women were underweight, 112(28.8%) were of normal weight while 134(34.4%) were overweight. Eighty-five women (21.9%) had Grade 1 obesity, 38(9.8%) had Grade 2 while 10(2.6%) were within grade III obesity (Table 1).

Majority of the respondents 331(85.1%) were Yoruba, 16(4.1%) were Ibo, only 3(0.8%) were Hausa while the remaining 34(8.7%) belonged to the other ethnic minorities. Most of the women 213(54.8%) were Muslims, while 171(44%) were of the Christian faith. Only 18(4.6%) had had a divorce before, 40(10.3%) had been widowed before. Majority, 338(86.9%) were currently married while 38(9.8%) of them were widows as at the time of contact. Most of the married women, 254(65%) were in a monogamous marriage while the rest were in a polygamous relationship. Only 16(4.1%) took alcohol while none of the respondents smoked cigarette.

Table 1. Basic Socio-demographic Characteristics of the Participants

Parameters	Characteristics	Number	(%)
BMI	Underweight	6	1.5
	Normal	112	29.1
	Overweight	134	34.8
	Grade I obesity	85	22.1
	Grade II obesity	38	9.9
	Grade III obesity	10	2.6
TRIBE	Yoruba	331	86
	Igbo	16	4.2
	Hausa	3	0.8
	Others	35	9.0
RELIGION	Muslim	213	55.3
	Christian	171	44.4
	None	1	0.3
MARITAL STATUS	Single	5	1.3
	Married	339	88.0
	Widowed	38	9.9
	Separated	3	0.8
MARRIAGE TYPE	Monogamous	254	66
	Polygamous	131	34
SOCIAL HISTORY	Alcohol	16	4.2
	Coffee	131	34
	Spices	205	53.2

Medical History (Table 2)

Thirty-two women (8.2%) had anxiety while up to 153(39.3%) admitted to be going through an emotional stress; 61(15.7%) were on some regular medications. The mean systolic blood pressure in the respondents was 131±1.02mmHg while their mean diastolic blood pressure was 83±0.6mmHg.

Gynaecological History (Table 2)

Ten (2.6%) of the women had infertility of some kind, while fibroid was seen in 7(1.8%) of them. Mean age at menarche was 15.1±2. Mean menstrual cycle length was 27.7±0.1 days while mean duration of menstrual bleed was 4.5±0.7 days. The mean number of pregnancies recorded was 5±0.1 while the mean parity was 4.3±0.1.

Up to 51(13.1%) had at least one caesarean delivery; 89(22.9%) had mild dysmenorrhea, 59(15.2%) had moderate dysmenorrhea while 21(5.4%) had severe dysmenorrhea. Out of these population, 76(19.5%) took medications for relief of dysmenorrhea. Mild Dyspareunia was recorded in 39(10%), moderate in 20 (5.1%) while only 2(0.5%) had severe dyspareunia.

Majority, 205(52.7%) of the respondents did not use any form of contraception. Out of the population that used contraceptives, 46(11.8%) used injectable, 25(6.4%) used oral agents, 32(8.2%) used Intrauterine Device, 10(2.6%) used condoms while 37(9.5%) women adopted natural methods of family planning.

Table 2. Medical and Gynecological History

	Characteristic	Number	%
MEDICALHISTORY	Hypertension	142	36.9
	Diabetes Mellitus	25	6.5
	Fibroid	7	1.8
	Anxiety	32	8.2
	Depression	153	39.3
	Regular Medication	61	15.7
MENOPAUSE	Natural menopause	374	97.1
	Surgical menopause	8	2.1
	Irradiation/Chemotherapy	1	0.26
	Not specified	2	0.54

	Characteristic	Number	%
SURGICAL DELIVERY	At least one caesarean section	51	13.1
DYSMENORRHEA	None	216	56.1
	Mild	89	23.1
	Moderate	59	15.3
	Severe	21	5.5
	Used relief drugs	76	19.5
DYSPANEURIA	None	324	84.2
	Mild	39	10.1
	Moderate	20	5.1
	Severe	2	0.6
CONTRACEPTIVE	None	205	53.3
	Injectable	46	11.9
	Oral agent	25	6.5
	Intrauterine device	32	8.3
	Condoms	10	2.6
	Natural method	37	9.6
	Not Specified	30	7.8

Menopause Rating Scale (MRS) Scores

Table 3 show the mean MRS Scores of the studied women demonstrating their perception of menopausal symptoms. "Joint pain" was the most severely perceived symptom with a score of 1.77 followed by "low libido" and "hot flushes" with scores of 1.66 and 1.64 respectively. The least perceived symptom was "dyspareunia" with a mean score of 0.76. The mean total MRS score was 14.02±0.44.

According to our MRS grading system, 15.1% were categorised as "Asymptomatic", 40% had "Severe" symptom perception while the others had "Mild" to "Moderate" perception.

Table 3. Menopause Rating Scale (MRS) Scores of the Respondents

Menopausal Symptom	Mean Score
Hot Flushes	1.64±0.07
Palpitations	1.13±0.06
Sleep Disorder	1.46±0.07
Depressive mood	1.12±0.06
Irritability	1.14±0.06
Anxiety or Panic	1.26±0.06
Poor Concentration	1.09±0.06
Low Libido	1.66±0.07
Dyspareunia	0.76±0.06
Urinary Frequency	1.11±0.06
Joint Pain	1.77±0.16
TOTAL MRS SCORE	14.02±0.44

Correlation of MRS Score with some Clinical and Gynaecological Factors

Table 4 shows the correlation of mean MRS score with certain clinical and gynaecological parameters where only age, diastolic BP and mean arterial pressure showed a significant positive correlation with the total MRS score and height was negatively correlated.

Menarche, duration of menstrual bleeding, age at delivery of first childand number of caesarean section all showed a negative correlation, however, only cycle length which was 27.7years on the average and age at 1st birth approximately 24years had a significant impact.

Linear regression analysis was carried out for only the significant correlates of MRS score as demonstrated. The only parameter that was

considered independent determinant of MRS score was "age". This means that menopausal symptoms perception worsens with increasing age, regardless of other factors.

Table 4. Correlation of MRS Scores With Some Clinical and Gynecological Factors

PARAMETERS	Mean	S.D	Pearson's	P. Value
Age (Years)	51.3	6.05	0.163	0.001**
Weight (Kg)	74.5	14.96	0.052	0.315
Height (m)	1.62	0.07	-0.002	0.971
BMI (Kg/m	28.25	5.56	0.063	0.215
Systolic BP (mm/Hg	131.9	20.0	0.90	0.078
Diastolic BP	83.39	12.40	0.109	0.033**
Pulse Pressure	48.53	15.69	0.028	0.584
Mean Arterial Pressure	99.57	13.45	0.112	0.029***
Menarche	15.10	2.292	-0.038	0.462
Duration of Bleeding	4.52	1.184	-0.076	0.138
Cycle Length	27.69	2.245	-0.118	0.021**
No of Pregnancy	5.00	2.072	0.058	0.256
Parity	4.26	1.487	0.023	0.653
Age at 1st Birth	23.86	5.832	-0.114	0.026**
Age at Last Birth	36.46	17.93	0.048	0.354
No of C/S	0.20	0.066	-0.031	0.549

Gynaeco-medical Correlates of Menopause Severity

Table 5 shows the association between some clinical and gynaecological factors with severe MRS. History of breast problem and diabetes showed a significant association with severe MRS (Table 6). Also use of contraceptives had significant impact. Dyspareunia and dysmenorrhea did not have any significant association with menopausal symptom severity.

Table 5. Correlates of Menopause Severity

Variables	Categories	N	Severe MRS n (%)	Chi-Square	P-value
Marital Status	Single	6	2 (40)	13.794	0.314
	Married	338	129 (38.2)		
	Widowed	38	21 (55.3)		
	Separated	4	2 (50)		
Kind of Marriage	Monogamy	226	79 (35)	12.282	0.05
	Polygamy	114	52 (45.6)		
	N/A	45	23 (51.1)		
High BP	Yes	142	68 (47.5)	11.826	0.66
	No	243	86 (35.5)		
Diabetes Mellitus	Yes	25	17 (68)	9.15	0.027*
	No	360	137 (38.1)		
Breast Problem	Yes	5	5 (100)	7.599	0.026*
	No	380	149 (39.2)		
Fibroid	Yes	7	4 (57.1)	3.171	0.366
	No	378	150 (39.7)		
Infertility	Yes	10	5 (50)	11.006	0.8
	No	375	149 (39.7)		
Depression	Yes	33	27 (81.8)	27.273	0.000***
	No	352	127 (36.1)		
Anxiety	Yes	32	26 (81.2)	25.785	0.000***
	No	353	128 (36.3)		

Table 6. Logistic Regression Analysis Of The Determinants

PARAMETERS	Standard Coefficient	T statistics	Correlations	P. Value
Age (Years)	0.106	2.101	0.162	**0.036****
Diastolic BP (mm/Hg	0.090	1.459	0.011	0.145
Systolic BP	0.021	0.342	0.092	0.733
MeanArterial Pressure	0.146	1.459	0.114	0.145
Cycle Length	-0.084	-1.697	-0.120	0.091
Age at 1st Birth	-0.080	-1.609	-0.114	0.108

DISCUSSION

This study have clearly demonstrated that clinical factors such as, diabetes, breast problems, diastolic BP, mean arterial pressure, depression and anxiety have strong correlations with menopausal symptoms severity. Age of women at their first delivery, menstrual cycle length and use of contraception were also found to be predictive factors of the women's perception of menopausal symptoms.

About40% of the women reported severe symptoms while 44.9% were within the mild and moderate degree. The mean MRS score was14.02±0.44 indicating a generally mild perception among participants. This is similar to a study done inKorea[47]and Saudi Arabia[8] where mild symptoms were also recorded.

We found a profound positive correlation between age and the total MRS score. This implied that women in Ilorin, Nigeria have worse symptoms as they grow older, similar to the findings in a previous Nigerian study by Olaolorun and Lawoyin[29]. Other Nigerian based studies however reported that age has no effect.[31,32]

Age of women at the onset of menstruation (Menarche) has been reported to play an impactful role on the degree of severity of menopausal symptoms[2]. However, in our study, there seems to be no significant influence menarche has on the severity of menopause symptoms. This is quite consistent with previous findings in Nigeria by Ameh *et al*[49]as well as in Egypt by Essa and Mahmoud.[35]

Duration of bleeding, number of pregnancies, parity, incidence of caesarean sections, dysmenorrhea, dyspareunia and the age of women at last birth in the population we studied did not have any significant influence on the severity of menopause. These corroborated another comprehensive study done among the three major ethnic groups in Nigeria[50]and other populations of the world.[35,36,38] What we found to significantly influence symptoms severity was age at first birth and menstrual cycle length. It seems as if those who have shorter length of menstrual cycle have more tendency to display severe symptoms at menopause which seems to contradict a previous finding where menstrual cycle length was reported to have no tangible effect[35]. While we subjected these significant factors to regression analysis, only age proved to remain a significant predictor of the total MRS score regardless of other factors.

It is still a research question if use of contraceptive or the type of contraceptive used, have any bearing on the way women perceive symptoms at menopause. A previous study[49]had reported that use of contraceptives has no effect on symptoms severity, but there was no detailed analysis of the type of contraceptive used. In our study, we attempted to isolate the effect of the common types of contraceptives on symptoms severity, but we could not find a significant impact of each method studied. However, out of the 180 women that indicated they used contraceptive 60 (33.3%) experience severe symptoms while 106 (51.3) percent of the 205 that did not engage in any form of contraception perceived severe symptoms. This chi square analysis show significance, meaning that use of contraceptive is slightly protective against severe symptoms at post-menopausal life.

The severity of menopausal symptoms in women who had history of diabetes, hypertension, renal disease and bronchial had been previously studied by Essa *et al*[35]. In their report all the women who had

history of these medical conditions had 1.69 times risk of developing severe symptoms than women who do not have. We found similar result from our study, women with history of diabetes and breast problem had more severe symptoms. A link between poor glycaemic control and menopause symptoms severity had been previously established[40].

CONCLUSION

Gynaecological and medical histories of women cannot be ignored when evaluating them for severity of symptoms at menopause. In this study, it was clear that age was an independent determinant of MRS score. We also found that women who give birth at younger age and have a shorter menstrual cycle were at higher risk of severe menopause symptoms.

CONFLICTS OF INTEREST: Nil

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