MENOPAUSE IN SAGAMU, SOUTHWEST NIGERIA
Adefuye Peter Oladipupo, Department of Obstetrics and gynecology, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria; Adefuye Bolanle Olufunlola, Department of Medicine, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria; Lamina Mustapha Adelaja, Department of Obstetrics and gynecology, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria; Shorunmu Tessie Owolabi, Department of Obstetrics and gynecology, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria; Akindele Raheem Akinwunmi, Department of Medical Physiology, Faculty of Basic Medical Sciences, Obafemi Awolowo College of Sciences, Olabisi Onabanjo University, Sagamu, Ogun State.

Corresponding Author: Dr. Adefuye Peter Oladipupo, Department of Obstetrics and Gynecology, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria. Email: peteradefuye2000@gmail.com

MENOPAUSE IN SAGAMU, SOUTHWEST NIGERIA

P.O. Adefuye, B.O. Adefuye, M.A. Lamina, T.O. Shorunmu and R.A. Akindele

ABSTRACT

Background: **As woman ages there is associated decline in her ovarian function until there is eventual cessation of menstruation (the menopause). Menopause is associated with alteration in the physiological, biochemical and psychological environment of the woman, the perception of which varies among women based on their sociocultural, educational and racial factors.**

Objective: **To demonstrate average age at menopause and common menopausal complaints most commonly experienced by our menopausal women.**

Design: A questionnaire based descriptive cross-sectional study of 402 women aged between 44 and 65 years attending out-patient clinics and who had experienced at least 24 continuous months of amenorrhoea.

Setting: **Study was undertaken at the Olabisi Onabanjo University Teaching Hospital, Sagamu, a tertiary health institution in southwestern Nigeria.**

Method: **Women aged between 44 and 65 years and whose last menstruation was at least 24 months earlier were interviewed using structured questionnaire.**

Results: **Four hundred and two out of 410 women interviewed correctly answered the questionnaire for analysis, (mean age 53.59 ✳ 5.12 years). The mean age of menopause was 48.91±2.58 years (range 41-57 years). The median and the modal ages at menopause were 49.00 years. Two hundred and twelve (52.7%) women experienced no symptoms. Of the 190 women that experienced symptoms hot flushes was the symptom that was most commonly experienced, and the least was depression; no respondent reported any episode of fracture.**

Conclusion: **The mean age at menopause in our practice is lower than the global average. Menopause in our women is commonly complaints free. The less parous and more educated a woman the poorer her perception of menopausal symptoms.**

INTRODUCTION

As woman ages the ovary becomes gradually unresponsive to gonadotropins with resultant decline in sexual cycles until menstruation finally ceases (1). The age at the last menstruation is referred to as menopause (1,2). During the period of decline menstrual cycles are characterized by irregularity in menstrual bleeding and oligoamenorrhoea is the most common symptom (1,3). Globally menstruation ceases in women between the ages of 45 and 55 years, and the global average is 51years (1,2,3)

Decline in ovarian function results from atresia of ovarian follicles, commencing from the time of menarche till menopause (1,2,3). Follicular atresia in the ovaries results in reduction in the levels of estrogen and elevation in the levels of gonadotropins (3,4,5). Low estrogen levels account for vasomotor symptoms of hot flushes and other systemic complaints that include hypertension, coronary heart disease, sleep disturbances, nervousness, bone pains and osteoporosis that are associated with menopause (1,3,4,5). Hot flushes, characterized by recurrent transient episodes of flushing, sweating and sensation of heat that commences from the face and spreads down the trunk associated with redness in the face and upper trunk due to peripheral vasodilation, often accompanied by palpitations, feelings of anxiety, and sometimes followed by chills. The episode lasts for about 3 minutes, occurring about 5 to 10 times a day. In some women the frequency is as high as 20 to 30 times a day (1,3).

The extent, severity and perception of vasomotor symptoms vary in women, less in obese women, more in caucasians and Afro-Caribbean than Japanese, Chinese and other Asian women (3,4). Similarly perception of menopause vary in women; while a number of women consider attainment of menopause as relief a few others entertain worries that include apprehension, depression, nervousness, irritability, and fears of the unknown (2,4,6). Perception of menopause is said to be influenced by socio-cultural beliefs and tradition, race, religion, educational and socio-economic status, and premenopausal health education on menopause (2,4,7).

The aim of this study is to determine the age at menopause, the most common of symptoms of menopause that are commonly experienced by Nigerian women in Sagamu, a sub-urban town in southwest Nigeria, associated socio-demographic and reproductive characteristics of the women. Also evaluated were the perception of menopause and its associated symptoms and complaints.

SUBJECTS AND METHOD

Women aged between 44 and 65 years, and who had experienced at least 24 continuous months of amenorrhoea, were recruited from gynecologic outpatient clinics and other consultant outpatient clinics in the hospital between 1st July and 31st December 2015. Four hundred and ten women consented and responded to prepared questionnaire. Health extension staff and medical students who had been previously tutored on the import of every question assisted women who could not read and write. Questions in the questionnaire bothered on age, parity, marital status, educational status, occupation, and estimated family income. Respondent's height and weight were taken and noted in the questionnaire to calculate the body mass index (BMI). Other questions in the questionnaire included age at first menstruation (menarche) and age at last menstruation (menopause), history of contraception, and the most experienced symptoms (or complaints) that is associated with her climacteric (a period of about six months to one year before the final cessation

of menstruation) and continuing several months to few years into menopause. Grades of perception of severity of symptoms were put as; (1) Not applicable when no symptom or sign is experienced; (2) Present but not severe to be regarded, (3) Present but does not limit function, (4) Present and limits function, and (5) Present and severe to necessitate medical attention.

Sample size calculation: Population size of the women were calculated using the formula: n = ((z2 x pq) + d2) x 1/d2, n being the minimum sample size, z is the standard normal deviate that corresponds to the level of confidence at 95% giving 1.96, p is the prevalence of menopausal women that was not known but assumed to be 50%, q is 1 less the value of the prevalence (1 – 0.5), and d is the level of precision that is desired for the study (arbitrarily taken as 0.05). With the application of this formula the minimum sample size for this study shall be 385.

Analysis of data was by statistical package for social sciences (SPSS) version 17.0 Results were presented in numbers and percentages to describe categorical variables. Quantitative variables were described using mean, median, standard deviation and range. Chi-square test was used to describe difference in means of age, parity and other sociodemographic characteristic between women with late and early menopause. Level of significance was considered at p-value < 0.05. Correlation between menarche and menopause were also examined.

RESULTS

Four hundred and two questionnaires out of 410 were correctly answered for analysis, giving a response rate of 98.04%. The age of the respondents ranged between 44 and 65 years and the mean age was 53.59 (±5.12) years. The parity of the women ranged between 0 and 8 and the mean was 3.57 (± 1.37). The age at menopause ranged between 41 and 57 and the mean was 48.91 (± 2.58) years. The median and the modal ages were found to be 49.00 years in both. Similarly for women who could vividly recollect their ages at menarche, it ranged between 10 and 18, and the mean was 14.87 (± 1.46) years. The median and modal ages for menarche in this group was 15 and 16 years respectively.

Two hundred and seventy-four (68.1%) respondents were aged between 46 and 55 years, and 126 (31.3%) were aged between 56 and 65 years (Table 1). Three hundred and ninety (97.0%) respondents are parous, 363 (90.3%) have 3 or more children (Table 1). Three hundred and thirty-eight (84.0%) respondents are married or living with their partners and 48 (12%) were either single or separated, and 16 (4%) were widows (Table 1). One hundred and eighty-five (46.0%) respondents had no formal education or at best primary school education, and 217 (54.0%) had at least secondary school education (Table 1). One hundred and seventy (42.3%) respondents never used contraceptives, and 168 (41.8%) had employed intrauterine contraceptive devices (IUCDs) (Table 1). Other methods of contraception used by respondents included foams/cream/vaginal tablets in 32 (8.0%), oral pills in 13 (3.2%), and injectable/depot/implants in 19 (4.7%) (Table 1). Sixteen (4.0%) women attained menarche on or before the age of 12 years, 147 (36.6%) between 13 and 14 years, and 239 (59.5%) at 15 years or more (Table 1). Twenty-seven (6.7%) women attained menopause early, at between ages 40 and 44 years, 365 (90.8%) at average age of between 45 and 55 years, and 10 (2.5%) at 56 years and more (Table 1).

Table 1

Socio-demographic characteristics and contraceptive history of respondents

Variable	Frequency	Percentage (%)
Age (n=402)		
41 – 45	2	0.5
46 – 50	138	34.3
51 – 55	136	33.8
56 – 60	83	20.7
61 - 65	43	10.7
Parity description (n=402)		
Nulliparous [0]	12	3.0
Fairly Parous [1 -2]	27	6.7
Moderately Parous [3-4]	288	71.6
Multiparous [≥ 5]	75	18.7
Marital status (402)		
Single/Never married	16	4.0
Married/Living together	338	84.0
Separated/Divorced	32	8.0
Widow	16	4.0
Educational status (402)		
Nil education	39	9.7
Primary school education	146	36.3
Secondary school education	119	29.6
Tertiary education (HND/Univ. degree)	98	24.4
Religion (n=402)		
Christianity	275	68.4
Islam	127	31.6
Monthly family income of respondents (n=402)		
<50000	177	44.0
50000-100000	162	40.3
>100000	63	15.7
Weight Distribution of respondents using the BMI (n = 402)		
Underweight (BMI <18.5)	0.0	0.0
Normal Weight (BMI = 18.5 - 24.9)	8	2.0
Overweight (BMI = 25.0 – 29.9)	177	44.0
Obese (BMI >30.0)	217	54.0
Distributions of pattern of occurrences of Menarche and Menopause in Respondents		
Menarche (n = 402)		
Early (≤ 12 years)	16	4.0
Average (13 – 14 years)	147	36.6

Late	(≥ 15 years)	239	59.4
Menopause (n = 402)			
Early	(40 – 44 years)	27	6.7
Average	(45 – 55 years)	365	90.8
Late	(≥ 56 years)	10	2.5
Contraceptive usage among Respondents (n = 402)			
Nil/Natural method		170	42.3
Foams/Creams/Vaginal tablets		32	8.0
Oral pills		13	3.2
Injectables/Depots/Implants		19	4.7
Intra-uterine contraceptive devices (IUCDs)		168	41.8

One hundred and ninety (47.3%) reported symptoms, commonest being hot flushes, occurring in 111 (27.6%), and the least common symptoms was depression in 11 (2.7%) respondents (Table 2). Other symptoms included insomnia, irritability, loss of libido, and dyspareunia in 61 (15.2%), 31(7.7%), 28(7.0%) and 30(9.5%) respectively. No respondent reported any incidence of fracture (Table 2). In 212(52.7%) respondents there were no symptoms, or not regarded if ever present (Table 2). The symptoms did not limit function in 111 (27.6%), limited function in 47 (11.7%), and necessitated medical attention (or treatment) in 32 (8.0%) respondents (Table 2).

Table 2
Chief menopausal symptoms experienced by the respondents (n = 402)

Menopausal symptoms	Frequency	Percentage
Nil Symptom	122	30.3
Hot flushes	111	27.6
Sleep Disorder (Insomnia)	61	15.2
Irritability	31	7.7
Loss of libido	28	7.0
Dyspareunia	38	9.5
Depression	11	2.7
Fractures	Nil	0.0
Perception/Severity of symptoms		
Absent/Present but not regarded	212	52.7
Present nut does not limit function	111	27.6
Present and limits function	47	11.7
Present and necessitate medical attention	32	8.0

Three hundred and thirty-two (80.3%) respondents had no symptom, or did not perceive such if ever present. Seventy-nine (19.7%) had symptoms that either limited their functions or necessitated consultation and treatment. Associations between these perceptions and sociodemographic characteristics are as presented in table 3.

Table 3

Sociodemographic factors on perception of severity of vasomotor symptoms

Sociodemographic factor	No (%)	X²	df	P-value
No symptom (or not regarded if ever present (n=323)				
Parity		132.65	1	<0.0001
Nulliparous – Fairly parous (0-4)	265(82.0)			
Multiparous (≥5)	58(18.0)			
Education		84.29	1	<0.0001
No education – Secondary school education	244(75.5)			
High School/tertiary education/University degree	79(24.5)			
Marital status		191.95	1	<0.0001
Married/living with a partner	286(88.5)			
Widow/Divorced/Separated	37(11.5)			
Body-mass index		5.72	1	0.017
Normal – Overweight (20.0 – 29.9)	140(43.3)			
Obese (≥30.0)	183(56.7)			
Previous health education on menopause		224.02	1	<0.0001
Nil education	296(91.6)			
Informal education	27(8.4)			
Symptoms present limit function or necessitate consultation and treatment (n=79)				
Parity		25.63	1	<0.0001
Nulliparous – Fairly parous (0-4)	62(78.5)			
Multiparous (≥5)	17(21.5)			
Education		21.27	1	<0.0001
No education – Secondary school education	60(75.9)			
High School/tertiary education/University degree	19(24.1)			
Marital status		41.12	1	<0.0001
Married/living with a partner	68(86.1)			
Widow/Divorced/Separated	11(13.9)			
Body-mass index		1.53	1	0.216
Normal – Overweight (20.0 – 29.9)	45(56.9)			
Obese (≥30.0)	34(43.1)			
Previous health education on menopause		56..82	1	<0.0001
Nil education	73(92.4)			
Informal education	6(7.6)			

Two hundred and ninety-two 292 (72.6%) respondents were indifferent to menopause. Sixty-seven (16.7%) and 43 (10.7%) expressed positive and negative attitudes respectively to menopause and reasons are as presented in table 4. Correlation between perception of menopause and sociodemographic factors are as in table 5.

Table 4

Attitude of Respondents to Menopause

Attitude	No	Percentage (%)
Indifferent	292	72.6
Positive Attitude		
Allows for full participation at the worship house all the time	19	4.7
No longer think about risking pregnancy	7	1.7
Relief from contraceptives	23	5.7
Free from monthly soiling of underwear and pants	12	3.0
Assumption of matriarch status in the family	6	1.5
Negative Attitude		
Fear of strange symptoms and feelings	7	1.7
Fear of neglect by husband	18	4.6
Fear of end to reproductive career	8	2.0
Fear of loss of beauty and figure	10	2.5
	402	100.0

Table 5

Influence of sociodemographic factor on the attitude of respondents to menopause

Sociodemographic factors	No (%)	X^2	df	p-value
Indifferent attitude (n=292)				
Parity		115.94	1	<0.0001
Nulliparous – Fairly parous (0-4)	238(81.5)			
Multiparous (≥5)	54(18.5)			
Education		71.01	1	<0.0001
No education – Secondary school education	259(88.7)			
High School/tertiary education/University degree	33(11.3)			
Marital status		174.91	1	<0.0001
Married/living with a partner	259(88.7)			
Widow/Divorced/Separated	33(11.3)			
Previous health education on menopause		214.04	1	<0.0001
Nil education	271(92.8)			
Informal education	21(7.2)			
Positive attitude (n=67)				
Parity		30.22	1	<0.0001
Nulliparous – Fairly parous (0-4)	56(83.6)			
Multiparous (≥5)	11(16.4)			
Education		22.70	1	<0.0001
No education – Secondary school education	53(79.1)			
High School/tertiary education/University degree	14(20.9)			
Marital status		32.97	1	<0.0001
Married/living with a partner	57(85.1)			
Widow/Divorced/Separated	10(14.9)			
Previous health education on menopause		32.97	1	<0.0001
Nil education	54(80.6)			
Informal education	13(19.4)			
Negative attitude (n=43)				

Parity		12.30	1	<0.0001
Nulliparous – Fairly parous (0-4)	35(81.4)			
Multiparous (≥5)	8(18.6)			
Education		12.30	1	<0.0001
No education – Secondary school education	33(76.7)			
High School/tertiary education/University degree	10(23.3)			
Marital status		25.32	1	<0.0001
Married/living with a partner	38(88.4)			
Widow/Divorced/Separated	5(11.6)			
Previous health education on menopause		35.37	1	<0.0001
Nil education	41(95.3)			
Informal education	2(4.7)			

DISCUSSION

Global age at menopause ranges between 45 and 55 years, and the mean is 51 years (1,3,4). Natural menopause can be as early as 43 years and as late as 57 years (8). In this study the age at menopause ranged between 41 and 57 years, the mean and median ages were 48.91(±2.58) and 49.00 years respectively. These findings compare with findings in the same region in the country. In Abakaliki, southeast Nigeria, the mean and median ages were 49.40(±3.00) and 49.00 years (6). Similarly in Ile-Ife and Benin city, both in southern part of Nigeria, mean ages at menopause were found to be 48.40, and 49.80(±2.60) years respectively (9, 10). These ages were significantly higher than the findings of mean age of 46.16(±0.37) and median age of 46.00 years in Zaria the northern part of Nigeria (11). Study mean versus mean in Zaria; 48.91 vs 46.16, 95% CI 2.49-3.00, p = 0.0001. And study mean versus average of means from southern Nigeria; 48.91 vs 49.20, 95%CI -0.55 - -0.04, p= 0.023. In the Luhya tribe of western Kenya with similar socio-cultural characteristics as in southern Nigeria, the median age for menopause was found to be 48.28 years (12). These findings may suggest the role of socio-cultural factors in the determination of the age at menopause as expressed by Neri and his colleagues (13). Other determinants of menopause are parity, educational status,

race, socioeconomic status, body mass index, use of hormonal contraceptives, state of industrialization of the society and nutrition (3, 11-16). Higher parity and industrialization of the environment may explain the difference in the study in Zaria and findings in this study and other southern parts. Achie and his colleagues found significant positive correlation between parity and menopause (0.263; p <0.05) in Zaria (11). However in this study parity was though negatively correlated (-0.052) but not significant (p=0.296).

Studies have demonstrated conflicting results in correlation between education and menopause. While Parazzini and Progetto menopausa Italia study group found age of menopause to be significantly lower among educated women, Gold and his colleagues, and Hidayet and his colleagues found that age of menopause was significantly higher among educated women (14,15,16). In this study there was a significant positive correlation between menopause and education (0.119, p= 0.017).

Some authors have found that age of menopause is determined more genetically rather than by race, parity, education, nutritional status, smoking and place of residence (3, 8). However Brambrilla and McKinlay found that menopause occur earlier in smokers than nonsmokers (17). In this study there was positive, but not

significant, correlation between menopause and body mass index (0.063, p – 0.210).

Information about menopause and use of hormonal contraceptives is conflicting. While some authors have advanced that follicular depletion in the ovaries continues irrespective of monthly ovulation or suppression of it by use of hormonal contraceptives (4), others claim that menopause is later in women on hormonal contraceptives than nonusers of it (18). Contraceptive practices among the respondents are most commonly intrauterine contraceptive devices (IUCDs). The number of respondents who had employed hormonal methods in the past was so few to draw any statistical inference. However comparing women who had used IUCDs with others who had not used any methods of contraception revealed no statistical significance; (IUCDs (n=168) vs none (n=170); 48.71 vs. 49.06, 95% CI -0.226, 0.915, p = 0.235).

Menopause is one of the important crises in the life of a woman and the management and control of associated symptoms remains a challenge (9). Hot flushes and night sweats are the commonest and the most universally experienced, and are experienced by between 50% and 75% of the Caucasian women (3,4,8). The median duration of persistent vasomotor symptoms vary from 3.4 to 11.8 years (19). Factors influencing persistence of vasomotor symptoms include age at onset, racial or ethnic groups and education (19). Similarly factors that influence perception of vasomotor symptoms include racial/ethnic factor, education, body mass index, and previous health education on menopause. The Asians are less likely to experience vasomotor symptoms more than the Caucasians (21). Seventy percent of Caucasians and Afro-Caribbean women suffer from hot flushes and sweats as against 10-20% of Japanese and Chinese women, and these differences are said to be related to cultural differences

and a diet related factor, the isoflavone consumption by the Asian (4). In virtually all the studies in our immediate environment hot flushes remained the commonest symptom experienced by menopausal women; 79.6%, 83.7%, 51.0% and 56.0% of the respondents in Abakaliki (in eastern Nigeria), Lagos (southwest Nigeria), Benin (Midwestern Nigeria), and Ilorin (northern Nigeria) respectively (6,7,10,20). In this study 122 (30.3%) respondents did not report any symptoms. Out of 291 that reported symptoms, the most common symptom expressed was hot flushes by 111 (27.6%). Other symptoms expressed in decreasing order are insomnia (15.2%), dyspareunia (9.5%), irritability (7.7%), loss of libido (7.0%), and depression (2.7%). None of the respondents reported incidence of fracture.

Factors associated with moderate to severe menopausal vasomotor symptoms are smoking, body-mass-index of 25-29.9, and education (22). In this study 212 (52.7%) of the respondents had no symptoms, or such were not regarded if they were ever present. One hundred and eleven (27.6%) experienced symptoms that were not severe to limit their functions. Forty-seven (11.7%) women had symptoms that limited their functions and 32(8.0%) had symptoms that necessitated medical consultation and treatment. The differences in perception of symptoms of menopause and the sociodemographic characteristics of the women were found to be significant for parity, education and marital status. The less parous and the more educated a woman the poorer her perception of menopausal symptom. Similarly women who are widow, separated, and divorced (or living alone) are more likely to be intolerant of menopausal symptoms than women who are married or living with their partners. Overweight or obese women are more likely to tolerate menopausal symptoms than women of normal weights. Similarly Gatrulla and his colleagues demonstrated a significant

inverse association between severity of vasomotor symptoms and education beyond high school (22).

Menopause and symptoms of menopause, as health challenges, are almost non-existent in Nigeria like in many African countries (10). Running menopause clinic is not a common finding in majority of the health posts, be it secondary or tertiary health institutions. Individuals with menopausal symptoms and its other health challenges are seen usually in the general gynecologic clinics and hormone replacement treatment (HRT) are individualized gynecologic services. This is likely due to positive attitude of our women to menopause that stems from our sociocultural values (10,11). In this study majority of the respondents, 292(72.6%) are indifferent to their becoming menopausal, 67(16.6%) expressed positive attitudes and 43(10.8%) expressed negative attitudes. Common reasons for the positive attitudes included having to bother less about compliance to contraceptive methods, followed by their abilities to be fully involved in all religious activities at the worship houses, freedom from monthly soiling of under wears and pants with blood from monthly menstrual bleeding. Less common reasons for expression of positive attitudes included no further risk of pregnancy and assumption of matriarch status at home. Common reasons for expression of negative attitudes included fear of neglect by their husbands and fear of losing their beauties and figures. Less common reasons for expression of negative attitude was a realization that they had ended their reproductive career and the emergence of strange symptoms and feelings that may be associated with menopause.

Poor or negative perceptions of menopause have been found to be associated with low level of family support, limited information and professional career (23). Hunter in his study found that females generally tend to demonstrate negative attitude towards menopause (24). Contrastingly, Ensieh and his colleagues in Iran found that 81.5% of the women demonstrated positive attitude (25). The difference in the two studies may be related to difference in their sociocultural settings, Europe that may be predominantly Christians and liberal and Iran that is Muslim Arab. In this study majority, 292(72.6%), expressed indifferent attitude and 67(16.7%) positive attitude, and 43(10.7%) expressed negative attitude. This spectrum of expression may be related to our sociocultural belief, lack of formal education on menopause, and lack of specialized health services on menopause in our health institutions (10).

Sociodemographic characteristics that influenced indifference and positive attitude to menopause included high parity, lower education attainment, being married or living with a partner, and at least informal health education on menopause. Conversely, factors that influenced negative attitude included lower parity, higher education attainment, not living with partner (that is, widows, divorced, and the separated), and lack of any form of health education on menopause.

CONCLUSION

This study indicates that women in Sagamu, as in other studies from southern Nigeria, experience menopause earlier than the global average. It is, however, significantly higher than findings in Northern Nigeria, parity and level of industrialization being the explanation for this difference. Menopause is commonly complaints free in majority of women in our practice and hot flushes are the commonest symptom most commonly experienced in women who have complaints. There is significant positive correlation between positive attitude and education on menopause.

In view of increasing number of women with attainment of higher education and its

resultant urban drift, it is recommended that our health policy should include health education on menopause and offer of specialized health services on menopause at our health institutions.

CONFLICT OF INTEREST

The authors jointly and separately express there are no conflict of interest between any of the authors and any organization.

REFERENCES

1. Nathan L. Menopause and Postmenopause. In: Current Diagnosis and Treatment in Obstetrics and Gynecology. Eds; Decherney, Nathan, Laufer, and Roman. Lange publication, 11th edition; chapter 59:948-970.

2. Research on Menopause in the 1990s. Report of a WHO Scientific Group. World Health Organization Technical Report, Geneva. Series Number 866:1-114

3. Hurd WW, Amesse LS, Randolph JF (Jr). Menopause. In: Novak's Gynecology. Eds. Berek JS, Rinehart RD, Hillard PJA, Adashi EY. 13th Edition, Lippincott Williams & Wilkins publication; Chapter29:1252-1290.

4. Nick Panay. Menopause and the postmenopausal woman. In: Dewhurst textbook of Obstetrics and Gynaecology for Postgraduates. Ed.Keith D. Edmonds, Blackwell publication. 7th Edition; chapter 47:479-495.

5. William L. Ledger. The Menstrual cycle. In: Dewhurst textbook of Obstetrics and Gynaecology for Postgraduates. Ed.Keith D. Edmonds, Blackwell publication. 7th Edition; chapter 35:348-355.

6. Ozumba BC, Obi SN, Obikili E, Waboso P. Age, Symptoms and Perception of Menopause Among Nigeria Women. J Obstet Gynecol Ind. 2004;54(6):575-578.

7. Adegoke O., Iranloye BO., and Osibogun A. Psychosomatic Menopausal Experience in Nigerian Women – The Influence of Age at Menarche and Age at Menopause. Asian Journal of Epidemiology. 2008;1(2):72-76.

8. Mindy SC, Howard Z. Menopause. In: The Johns Hopkins Manual of Gynecology and Obstetrics. Eds Hurt KJ, Guile MW, Bienstock JL, Fox HE and Wallach EE. 4th edition;chapter40:507-518.

9. Okonofua FE, Lawal A, Bamgbose JK. Features of menopause and menopausal age in Nigerian women. Int J Gynecol Obstet. 1990;31(4):341-345.

10. Ande AB, Omu OP, Ande OO, Olagbuyi NB. Features and perception of menopausal women in Benin city, Nigeria. Annals of African Medicine. 2011;10(4):300-304.

11. Achie LN, Olorunshola KV, Mabrouk M. Age at Natural Menopause among Nigerian Women in Zaria, Nigeria. Asian Journal of Medical Sciences. 2011;3(8):151-153.

12. Noreh J, Sekadde-Kigondu C, Karanja JG, Thagana NG. The Median age at Menopause in rural population of western Kenya. East Afr Med J. 1997;74(10):634-638.

13. Neri A, Bider D, Lidor Y, Ovadia J. Menopausal age in various ethnic groups in Israel. Maturitas. 1982;4(4):431-348.

14. Gold EB, Bromberger J, Crawford S, Samuels S, Greendale GA, Harlow SD, Skurnick J. Factors associated with age at natural menopause in multiethnic sample of midlife women. Am J. Epidmiol. 2001;153(9):865-874.

15. Parazzini F and Progetto Menopausa Italia Study Group. Determinants of age at menopause in women attending menopause clinics in Italy. Maturitas. 2007;56(3):280-287.

16. Hidayet NM, Sharaf SA, Aref SR, Tawfik TA, Moubarak II. Correlates of age at natural menopause: a community-based study in Alexandria. East Mediterr Health J. 1999;5(2):307-312.

17. Brambrilla DJ, McKinlay SM. A prospective study of factors affecting age at menopause. J Clin Epidemiol. 1989;42:1031-1039.

18. Palmer JR, Rosenberg L, Wise LA, Horton NJ, Adams-Campbell LL. Onset of natural menopause in African American women. Am. J Public Health. 2003;93(2):299-306.

19. Avis NE, Crawford SL, Greendale G, Bromberger JT. Everson-Rose SA, Gold EB, et al Duration of Menopausal Vasomotor Symptoms over the Menopause Transition. JAMA Intern Med. 2015 Feb 16. Doi: 10.1001/jamaintermed.2014.8063.

20. Saka MJ, Saka AO, Jimoh AAG, Abdulraheem IS. Therapeutic value of

multivitamin: Reducing emerging symptoms of menopausal women helping as a child care giver in Nigeria. African Journal of Pharmacy and Pharmacology. 2012;6(2):92-97.

21. Chung TK, Yip SK, Lam P, Chang AM, Haines CJ. A randomized double-blind, placebo-controlled crossover study on the effect of oral oestradiol and acute menopausal symptoms. Maturitas. 1996;25(2):115-123.

22. Gartrulla P, Worsley R, Bell RJ, Davis SR. Moderate to severe vasomotor and sexual symptoms remain problematic for women aged 60 to 65 years. Menopause. 2015 Feb 20. {Epub ahead of print)

23. Zhao G, Wang L, Yan R. Menopausal symptoms; experience of Chinese women. Climateric. 2003;3:135-144.

24. Patterson MM, Lynch AQ. Menopause: Salient issues for counsellors. Journal of Counselling and Development. 1988;67(3):187-195.

25. Hunter M. Predictors of Menopausal symptoms: Psychosocial aspects. Bailliers Clinical Endocrinology and Metabolism. 1993;7(1):33-45.

26. Ensieh N, Nayereh KD, Ahmad AE, Akbar H, Soheila D. Knowledge and attitude toward Menopause phenomenon among women aged 40-45 years. J Educ Health Promot, 2013;2:25