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Assessment of Nutritional Status of Perimenopausal Female School Teachers in Osogbo, Osun State, Nigeria

[1]Oyediran O.O, [2]Akinbade M.O, [3]Oyibocha E.O [4]Ojofeitimi E.O

[1]Department of Nursing Science. Obafemi Awolowo University, Ile-Ife
[2]Department of Community Health, LAUTECH Teaching Hospital, Osogbo
[3]Delta State School of Nursing, Warri
[4]Department of Community Health, College of Health Sciences, LAUTECH, Osogbo

Abstract: **Perimenopause is a natural part of a woman's life and it is often accompanied with endocrinological, biological, and clinical features which gradually occur. Perimenopause period occurs prior to the menopause which is permanent cessation of menstruation resulting from the loss of ovarian follicular activity.**

This study assessed nutritional status of perimenopausal women and their knowledge base about perimenopause, its causes and symptoms; identified the women's anthropometric indices; and established relationship between nutrition, non-communicable diseases and perimenopause with the view of encouraging positive healthy nutritional practices and intake.

Methodology: The study adopted a descriptive cross sectional design. Sample size was calculated using Leslie-Fisher's formula. Structured questionnaire that was piloted and validated was used to collect data. Results were analyzed using Statistical Package for Social Sciences (SPSS) version 20 and P value was set as 0.05.

Results: Findings revealed that majority of the respondents (75.2%) had good knowledge about perimenopause, (52%) opined that good nutrition delay onset of menopause and prevents non communicable diseases. Nutrition rating revealed that 8.5 were taking healthy nutrition. The anthropometric indices of the respondents showed that 59.5 had class 1 obesity, 60.8% were overweight in WHR, while 31.7% were overweight using WHtR, and 62.8% were overweight in WCR.

Conclusion: This study concluded that female elementary school teachers had good knowledge about perimenopause. Good nutrition was found to be one of the factors responsible for delay of onset of perimenopause and prevention of communicable diseases. It also concluded that most perimenopausal women were overweight.

Keywords: **Assessment, Perimenopause, Nutritional Status, School teachers.**

1. INTRODUCTION

Menopause is a universal phenomenon but there is a considerable variation among women regarding the age of attaining natural menopause and the manifestation of menopausal signs and symptoms. Worldwide, the estimates for the median age at menopause range from 45 to 55 years with the average age of onset of about 50 years (Utz, 2011).

Perimenopause is the time prior to menopause during which menstrual cycle and endocrine changes occur gradually before permanent period of amenorrhea after 12 calendar months. At this stage of life, the amount and the number of days of menstral flow decreases, skipping one or more months during several years before complete cessation. During the perimenopausal phase of life, female hormones tend to fluctuate very frequently which make the women to experience more physiological, psychological and sexual problems. (Graziottin, & Leiblum, 2005).

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Perimenopause it often referred to as 'around the end of menstraution' and it usually begins around 40 years of age and can last up to 8 to 10 years before natural menopause starts. During this period, there is gradual reduction in estrogen production and many women experiences menopausal symptoms like hot flashes, mood swings, night sweats, irregular menses, loss of libido and vaginal dryness. However, some women still having menstrual cycles that can result in pregnancy with unprotected sexual intercourse (Utz, 2011).

Lund (2008), discovered that globally, almost 400 million women within the range of 45 to 54 years are in the climacteric phase of life and by the year 2015 to 2020, nearly 500 million women will be entering the menopausal transition period (United States Census Bureau, 2010). In Nigeria with a total female population of approximately 59.5 million, about 25 % (14.88 million) are already in their pre, peri and postmenopausal period with a large proportion gainfully employed and still contributing to the economic development of the country (Federal Republic of Nigeria [FRN] Population and Housing Census, 2006).

A number of symptoms are experienced by women during the transition period. These include; hot flashes/flushes; night sweats; vaginal dryness, contraction with shallower folds; thinning of public, axillary and head hair; inability to sleep, mood swings. Other changes are decreased cervical size, uterine cavity and tubes; smaller clitoris and the breasts becoming less full and firm. Also, memory problems, dry, thin skin and decreased collagen levels, more abdominal fats, cystitis, fatigue, nervousness, urinary disturbances such as increased frequency and emotional outburst like shedding of tears and anger (Sembulingam, 2012; McLellan, Gallacher, Fraser, & McQuillian 2003; Meza Mercado, &Barraza, (2015) and Smeltzer , 2006.

Important morbidity issues associated with the transition period include; osteoporosis and fractures due to decreased estrogen levels which ordinarily help to build and maintain bones and increased risk of cardiovascular disease (McLellan, et al.,2003 and Saw, Ricci, Starovoytov, Fox, &Buller, 2013). Hence women approaching transition phase of life often present concerns about their health based on a possible family history of osteoporosis, cancer and/or heart diseases (Smeltzer, 2006).

According to Goyal, Malagi, Naik and Kasturiba (2013), perimenopausal changes have an impact on food intake and food choices of midlife women. It is an established fact that a well-balanced diet is important for good health and to combat some of the complications of perimenopause to certain extent. In another development, Appelhans, Segawa, Janssen, Kazlauskaite, Thurston, Lewis, & Kravitz, (2014) submitted in their Study of Women's Health Across the Nation (SWAN) that consumption of balanced diet women at menopause with a balanced diet prevents obesity and diseases that arise due to lack of energy and essential nutrients, . It also proffer protective activity which involves the protection of man-made and other diseases. While an unbalanced diet, low physical activity and emotional stress can intensify the symptoms of perimenopause. They then established that, there is a significant relation between perimenopause and nutrition. However, majority of menopausal women are changing nutritional status; the causes may be hormonal changes, bad eating habits, heredity, lifestyle, frequent use of alcohol and tobacco, etc.

Subak, et al., (2009) stated that obesity and high BMI contributes to morbidity and mortality, leading to some forms of cancer and chronic diseases, such as osteoarthritis, osteoporosis, cardiovascular, liver and kidney diseases, sleep apnea, and depression Women entering perimenopause unprepared to cope with changes of this period of life and with insufficient knowledge of dietary habits can lead to oversupply or lack of nutrients. A balanced diet prevents obesity and diseases that arise due to lack of energy and essential nutrients. In addition, limitation of foods high in saturated fat and nitrites, avoiding red meat, coffee, chocolate and alcohol and the use of prescribed drugs like vitamins E, D, and the B complex, calcium gluconate or carbonate and magnesium have been found helpful in managing perimenopausal symptons (Smeltzer, 2006; Meza, et al., 2015; Woods, 2005; McLellan, et al., 2003; and Walsh, Hunter, & Livingstone, (2006). It is against this background that this study was designed to: assess the knowledge base of respondents about perimenopause and its symptoms; assess the nutritional status in relation to perimenopause; determine the relationship between perimenopause and nutritional status and the relationship between anthropometric indices and non communicable diseases.

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2. METHODOLOGY

Study Setting: This research was conducted in Osogbo, the capital of Osun state. It was founded in early 18th century by Yoruba hunter and became the capital of Osun state in August 1991 following the creation of the state. It is located 9km north east of Ibadan and it covers an area of about 140square km and lies at height of 366 above the sea level. The population is about 28, 8343 according to year 2006 population census. Osogbo town has three local governments: Osogbo Egbedore and Olorunda). Osogbo local government has 15 political wards with 44 public elementary schools and these schools have 400 teachers. The local inspectorate of education's office is located at Oja-Oba in Osogbo. (Probst, 2011))

Study Population: This study population comprised of all female teachers within 30-60years in public elementary schools in Osogbo.

The inclusion and exclusion criteria for this study were female teachers within 40-60years as at the time of the study and male school teachers and female teachers that are less than 40 years working in elementary schools and those that were absent due to illness as at the time of collecting data respectively.

Study Design: This study adopted descriptive cross sectional research.

Sample Size Determination: The sample size was determined using Leslie-Fisher's Formula. The formula is stated thus.

$$N= \frac{Z^2P(1-P)}{d^2}$$

n=is the sample size

z=is the standard normal variance=1.96

p=prevalence of Menopause=25% (0.25) Kubani (2011)

d=normal deviation=0.05

$$n= \frac{1.96^2 \times 0.25(1-0.25)}{0.05^2}$$

n=288.12

The calculated sample size was approximately 288 respondents. However, adding 10% non-response rate, the eventual sample size was 316.8 which was approximated to 320.

Sampling Technique: Multistage sampling technique which involved three stages was used for this study.

First stage involved the use of simple random sampling to select one local government area.

Second stage involved random selection of one elementary school in each of the fifteen political wards in Osogbo L.G.A. with sampling interval of two to make a total of fifteen schools.

Third stage which is the last stage used purposive sampling method to select 320 female teachers that fall in the age range of 40-60 years as the respondents.

Research Instrument: Data were collected through the use of structured questionnaire. The questionnaire consists of four sections: **Section A:** Socio-demographic data of the respondents, **Section B**: Knowledge of the respondents on perimenopause and its symptoms, **Section C:** Assessment of relationship between perimenopause, nutrition and non communicable diseases and **Section D**: Anthropometric indices of the respondents. Responses on nutrition rating was interpreted thus for the purpose of this study: Each meal time is accorded maximum of five (5) points, and the mid meal/snacks is accorded one (1) point. The highest point a respondent can had in a day is 18 points considering the food frequency table used and three days for 54 points while a score above 60% was considered as taking healthy nutrition.

Instrument Validity: The instrument was a product of extensive literature search and it was also subjected to face and content validity with contributions from scholars in the field of Gynaecology, Education and Nursing to assess the relevance to subject matter, its scope and coverage.

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Reliability: The instrument was pilot tested among female teachers in five selected public elementary schools in Olorunda LGA using test retest method at two months to the main study. The Cronbach's alpha coefficient of the instrument was calculated to be 0.712

Data Collection: The researcher introduced herself to the secretary of L.G.EA., Osogbo who gave a formal letter of permission to the researchers for presentation to all head teachers of the schools that were studied. Data for this study was for collected for eight weeks from March to May, 2016.

Data Analysis: Generated data were computed into a computer and analyzed using a Statistical Product and Service Solution (SPSS) version 20. Analysis of the data was done using descriptive and inferential statistics t and were presented in a concise and understandable form. Descriptive statistics presentation were in form of pie charts, bar charts, frequency table and percentages. Pearson correlation and multiple regression were used to test the hypotheses and value of 0.05 was considered significant for the hypotheses.

Ethical Consideration: Ethical approval was taken from the ethical committee of the Osun state Ministry of Health and all the respondents were properly informed about the research objectives and their verbal consents obtained before commencing the study. Their voluntary participation, anonymity and confidentiality when collecting the data were also guaranteed. Their rights to participate or not to participate were duly respected and respondents that want to opt out during the study were allowed to do so.

3. RESULTS

Table 1: Socio-demographic characteristics of the respondents

Variables	**Frequency N=306**	**Percentage 100%**
Age		
40-45	21	6.8
46-50	84	27.5
51-55	180	58.8
56-60	21	6.8
Marital status		
Married	236	77.1
Separated	38	12.5
Divorced	19	6.2
Widowed	13	4.2
Ethnicity		
Yoruba	293	95.8
Igbo	13	4.2
Religion		
Christian	201	65.7
Islam	105	34.3
Educational status		
Grade 2	67	22.0
NCE	119	38.9
B.Ed	113	36.9
PGd	7	2.2
Length of Service		
1-10	35	11.4
11-20	105	34.3
21-30	138	45.1
31 and above	28	9.2
Total	**306**	**100**

Table 1 above reveals the social demographic distribution of the respondents. More than half of the respondents (58.8%) are between the ages of 51-55 and 77.1% were married. Almost all of them (95.8%) were Yorubas, 65.7% were Christians, 38.9% were NCE holders while 45.1% had teaching experiences between 21-30 years.

Table 2: Knowledge and Causes of perimenopause as Perceived by the Respondents

Variables	Frequency N=306	Percentage 100%
Knowledge of perienopause		
Time when women stops menstruation totally	230	75.2
When there is cessation of menses	76	24.8
Relationship between perimenopause and fertility		
There is no child birth again	45	14.7
Menopause is when one will not ovulate again	183	59.8
When a woman get to menopause she can no longer get pregnant again	78	25.5
Causes of perimenopause		
Ageing and seization of reproductive eggs	161	52.6
Normal body change	103	33.7
It is natural	39	12.7
Family planning	3	1.0
Total	**306**	**100**

Table 2: reveals that the respondents responses on knowledge. Majority of the respondents (75.2%) defined perimeno-pause as a time when a women stop menstruation totally, 59.8% of the respondents said that after perimenopause one will not ovulate again, 52.6% said ageing and cessation of reproductive eggs are the causes of perimenopause

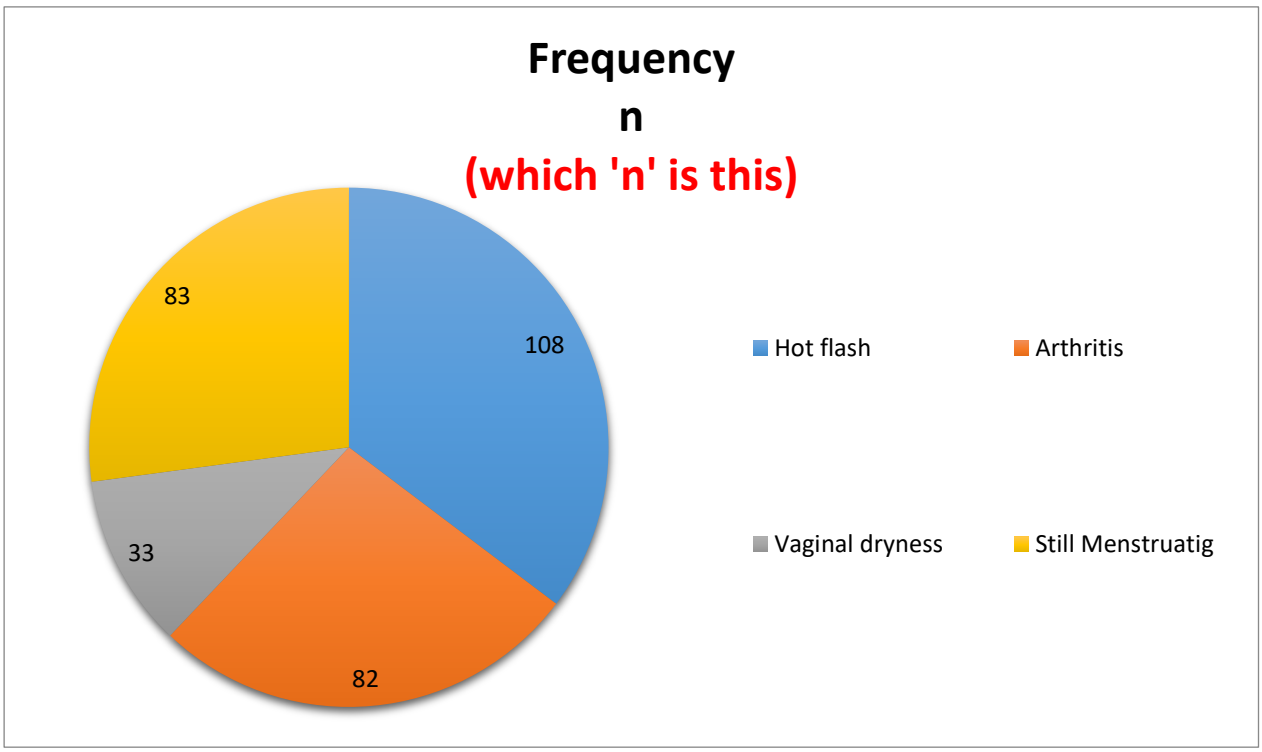

Figure 1: Most disturbing symptoms of perimenopause

Figure 1 shows that 108 (35 %) had hot flush, 83 (27 %) were still menstruating, 82 (27 %) had arthritis, while 33 (11 %) had vaginal dryness.

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Table 3: Causes of early and late perimenopause as Perceived by the Respondents.

Variable	Frequency N=306	Percentage 100%
Causes of early perimenopause		
Starting menstruation early/ heredity problem	32	10.5
Lack of sexual intercourse/stress	109	35.6
Early child birth and poor nutrition	75	24.5
Family planning drugs	73	23.9
Occurs naturally	17	5.5
Causes of late perimenopause		
Regular sexual intercourse	51	16.7
Good balance diet/health	147	48.0
Nature	21	6.9
Starting menstruation late/late marriage	87	28.4

Table 3 shows that 35.6% of the respondents said that lack of sexual intercourse/stress are the causes of early menopause while 48.0% revealed that balanced diet can cause late menopause.

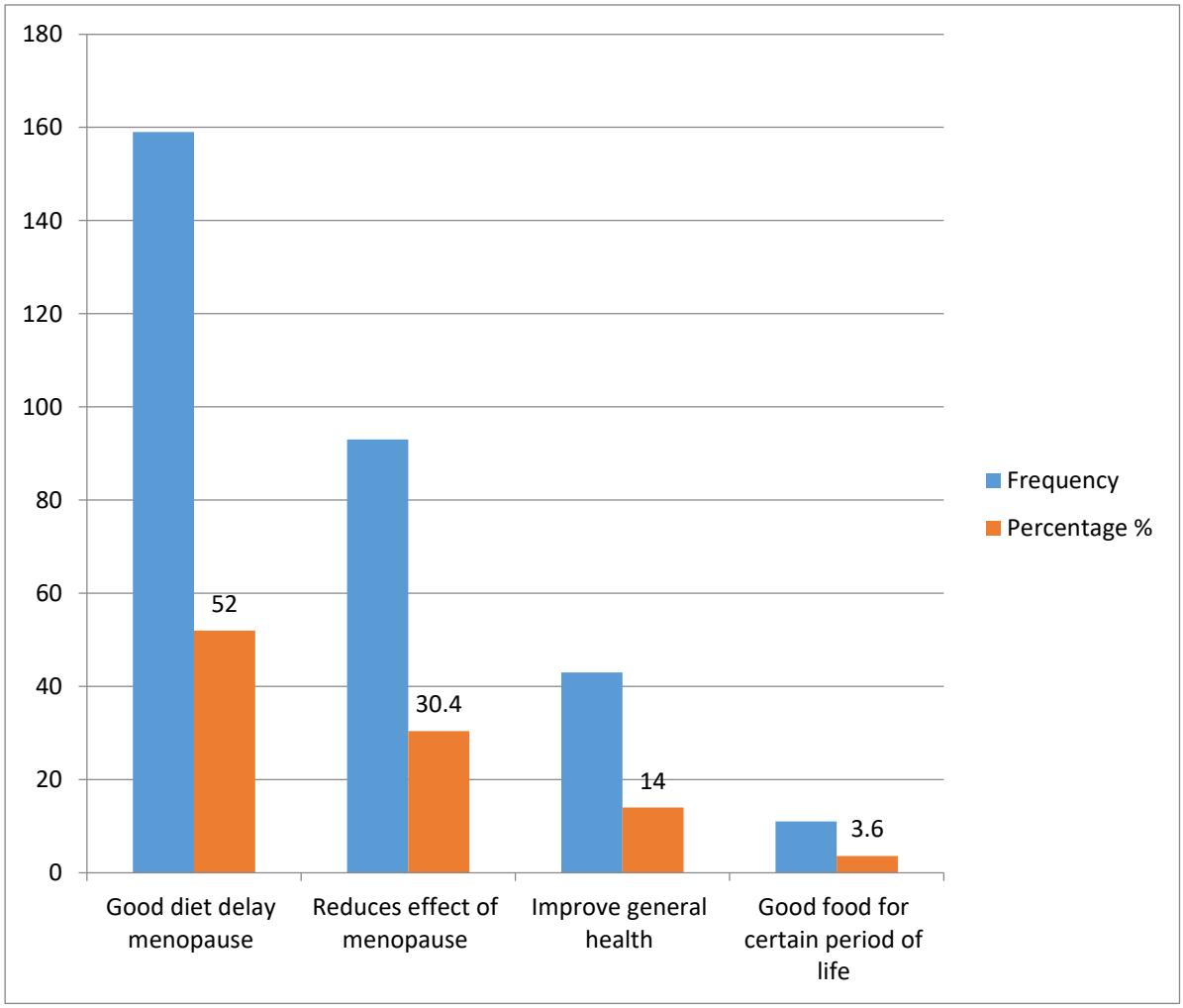

Figure 2: Relationship between perimenopause and Nutrition

Figure 2 reveals that 159 (52 %) of the respondent believe that good nutrition delay perimenopause, 93 (30.4 %) opined that it reduces effect of perimenopause. Also, 43 (14.0 %) shows that it improved general health, while 11 (3.6 %) reported that there are good food for certain period of life.

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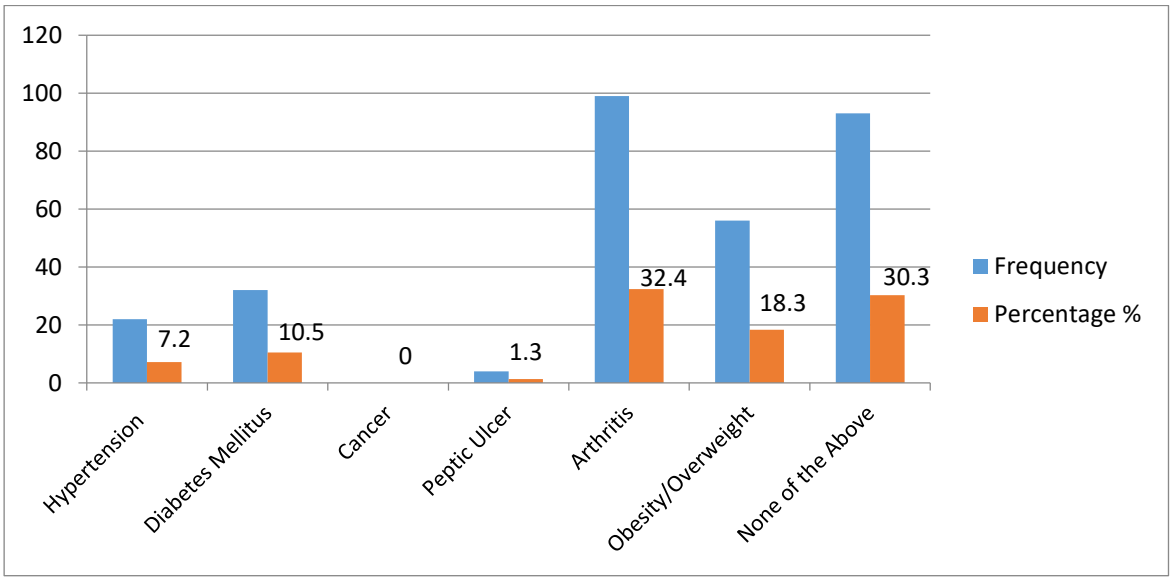

Figure 3: Prevalence of non-communicable diseases among respondents

Figure 3 shows that 22 (7.2 %) of the respondents had Hypertension, 32 (10.5 %) were Diabetic, none of the respondents has Cancer, 4 (1.3 %) had Peptic Ulcer, 99 (32.4 %) had Arthritis, 56 (18.3 %) were obese while 93 (30.3 %) did not have any non-communicable diseases.

Table 4: NUTRITION RATING FOR THREE DAYS (Healthy eating index)

Age Range Years	Frequency N = 306	Frequency Percentage 100%	Rating per 3 days (54 points)	Rating Percentage%
30 – 35	16	5.2	19	35.2 (< 60)
36 – 40	26	8.5	22	40.7 (< 60)
41 45	29	9.5	30	55.5 (< 60)
46 – 50	55	18	33	61.1 (>60)
51 – 55	146	47.7	28	51.8 (< 60)
55 – 60	34	11.1	24	44.4 (< 60)
Total	**306**	**100**	**156**	**288.7**

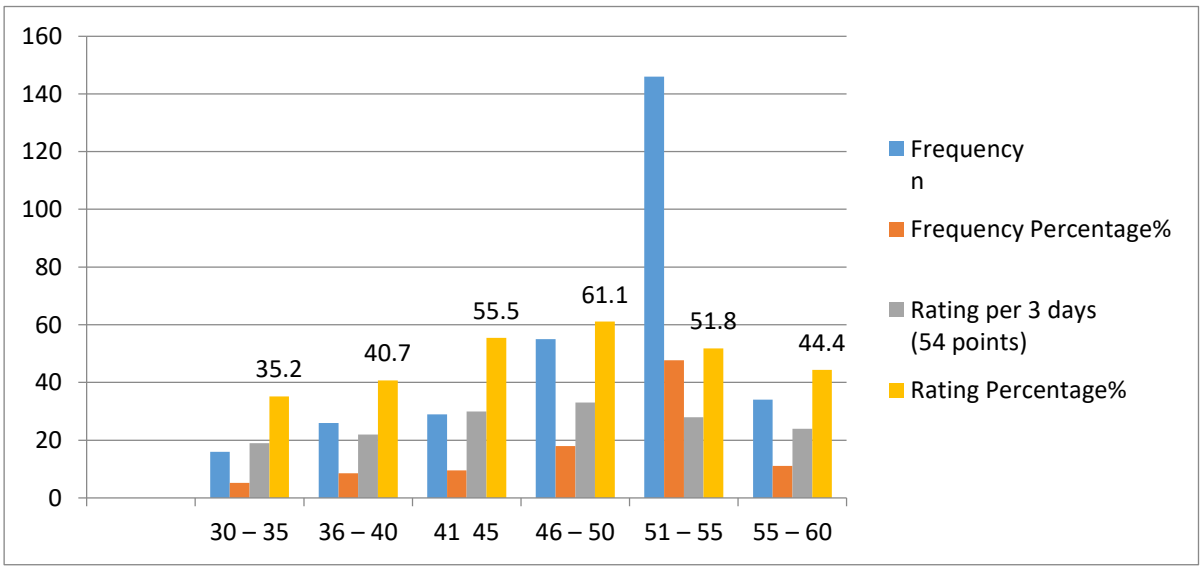

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Table 4 and figure 4 nutrition rating shows that 55 (18%) of the respondents within the age range of 46 – 50 got 33(61.1%) points out of 54 points. Therefore only 55 out of 306 respondents are taking healthy nutrition.
Note: < 60% rating is grouped as inadequate nutrition, while > 60% is healthy nutrition.

. **Table 5: Distribution of lifestyle modification of the respondents**

Variables	Frequency N=306	Percentage 100 %
Foods to be reduced during menopause		
Coke, bread, rice and meat pie	186	60.8
Eba and pounded yam	21	6.8
Fatty food (butter, cheese)	12	3.9
Fried food and sugary food	31	10.0
Reduce sugar and tea	56	18.3
Foods to be increased during menopause		
Beans, vegetable, soya and fish	232	75.8
Fruits, vegetables and water	34	11.1
Whole grain and high fibre	40	13.1
Physical exercise and Menopause		
It enhances good blood circulation in the body	71	23.2
It reduces symptoms of menopause	162	52.9
It reduces weight and allows deep sleep and keep fit	52	17.0
It reduces arthritis and week bone	21	6.9
Total	**306**	**100**

Table 5 above shows that majority of the respondents 186 (60.8%) reported that rice, coke, bread and meat pie should be reduced during perimenopause, 232 (75.8) were of the opinion that beans, vegetable soya and fish should be increased during perimenopause while 162 (52.9%) opined that physical exercise reduces symptoms of perimenopause.

Anthropometric Indices of the respondents

Table 6a: Body Mass Index and Waist Hip Ratio

Body mass index (BMI)	Range	Frequency N=306	Percentage 100%
Underweight	< 18.5	0	0
Normal weight	18.5 - 24.9	45	14.7
Overweight	25.0 - 29.9	33	10.8
Class 1 obesity	30.0 – 34.9	182	59.5
Class 2 obesity	35.0 – 39.9	46	15.0
Class 3 obesity	≥ 40	0	0
Total		**306**	**100.0**
Waist hip ratio			
Normal weight	< 0.80	36	11.7
Over weight	0.81 – 0.84	186	60.8
Obesity	> 0.85	84	27.5
Total		**306**	**100.0**

Table 6a above shows the anthropometric indices which include body mass index. Majority 182 (59.5%) of the respondents were in class 1 obesity, 46 (15.0%) were in class 2 obesity, 45 (14.7%) were within normal weight, while 33 (10.8%) were overweight. Waist hip ratio reveals that 186 (60.8%) of the respondents were overweight, 84 (27.5%) were obese, while 36 (11.7%) were of normal weight.

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Table 6b: Waist Height and Waist Chest Ratio

Waist height ratio	**Range**	**Frequency N=306**	**Percentage 100%**
Extreme Slim	< 0.34	8	2.6
Healthy Slim	0.35 -0.41	78	25.5
Healthy Normal Weight	0.42-0.48	97	31.7
Over weight	0.49-0.53	85	27.8
Very Overweight	0.54–0.57	38	12.4
Morbidly Overweight	0.58+	0	0
Total		**306**	**100.0**
Waist chest ratio			
Normal	<0.80	60	19.6
Overweight	0.80 – 0.84	192	62.8
Obesity	>0.85	54	17.6
Total		**306**	**100.0**

Table 6b shows the anthropometric indices of waist height ratio which reveals that Majority 97 (31.7%) of the respondents were within healthy normal weight while the anthropometric of waist chest ratio reveal that many of the respondents 192 (62.8%) were overweight, 60 (19.6%) were normal and 54 (17.6%) were obese.

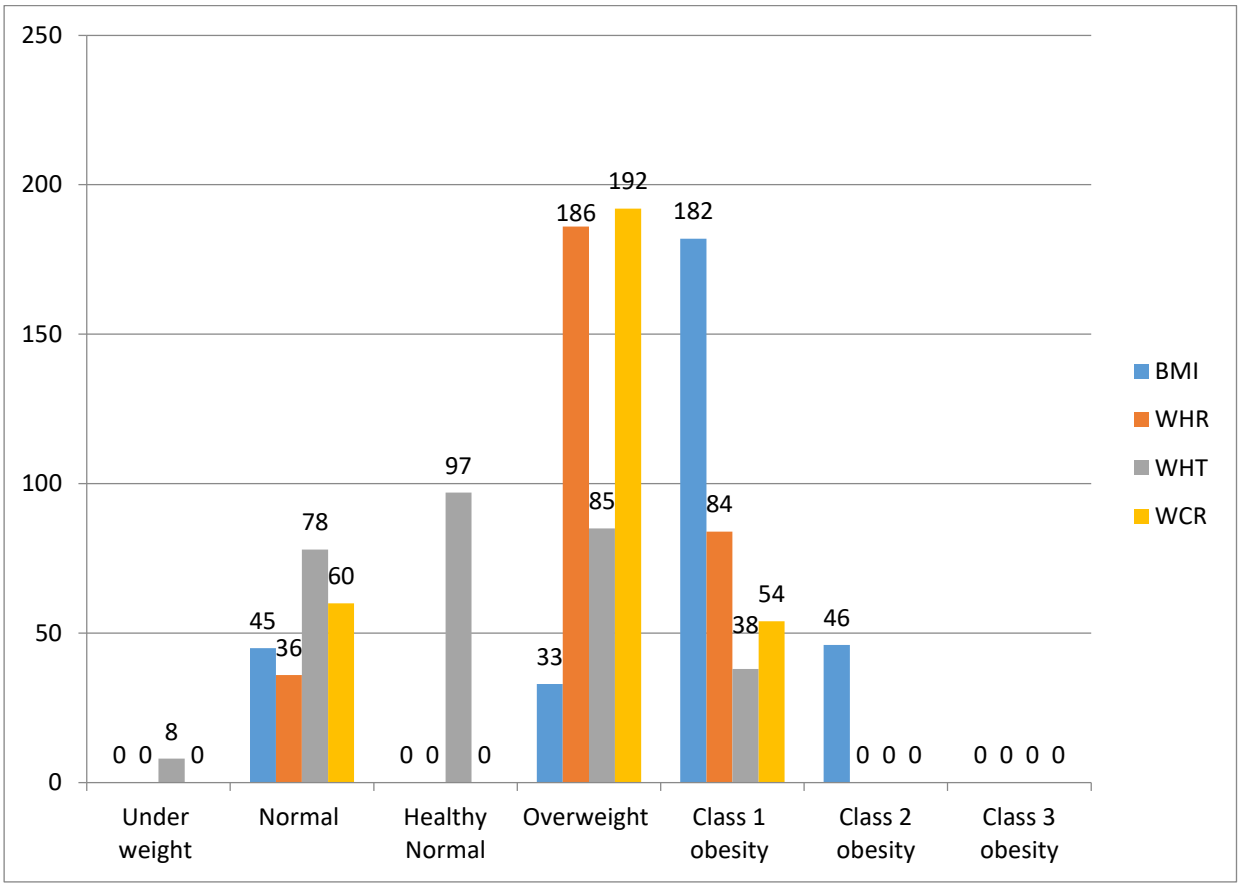

Figure 5: Anthropometric Indices of the respondents

Figure 5 above shows the anthropometric indices of the respondents. Majority of them 182 (59.5%) were in class 1 obesity in body mass index and 186 (60.8%) were overweight in waist hip, 97 (31.7%) were within healthy normal weight in waist to height ratio and 192(62.8%) were overweight in waist chest ratio.

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Hypotheses Testing

Hypothesis one: There is no relationship between Perimenopause and nutrition status.

Table 7

Variables	**N**	**Mean**	**SD**	**Df**	**r^{-cal}**	**sig^{-val}**	**P^{-val} ≤ 0.05**
Menopause	306	39.56	13.96				
				381	0.548	0.001	<0.05
Nutrition status	306	72.54	21.79				

Table 7 shows the Pearson's correlation coefficient statistics used to test the relationship between perimenopause and nutrition status. The Pearson correlation coefficient derived a value of 0.548 a degree of freedom of 304 and a significant value of 0.001. The sig. value is lesser than our critical value of 0.05. Thus, there is significant relationship between perimenopause and nutritional status.

Hypothesis two: There is no relationship between perimenopause and non-communicable diseases.

Table 8: Pearson Correlation Analysis on the Relationship between perimenopause and non-communicable diseases

Variable	**N**	**Mean**	**SD**	**Df**	**r^{-cal}**	**sig^{-val}**	**P^{-val} ≤ 0.05**
Menopause	306	39.56	13.96				
				381	0.631	0.01	<0.05
Non-communicable diseases	306	11.51	7.62				

Table 8 shows the Pearson's correlation coefficient statistics used to test the relationship between perimenopause and Non-communicable diseases. The Pearson correlation coefficient derived a value of 0.631 a degree of freedom of 304 and a significant value of 0.01. The sig. value is lesser than our critical value of 0.05. Thus, there is relationship between perimenopause and non-communicable.

Hypothesis Three: There is no relationship between anthropometric indices and non-communicable diseases.

Table 9: Pearson Correlation Analysis on the Relationship between anthropometric indices and non-Communicable diseases

Variables	N	Mean	SD	Df	r^{-cal}	sig^{-val}	P^{-val} ≤ 0.05
Anthropometric	306	59.03	23.04				
				381	0.671	0.004	<0.05
Non-Communicable diseases	306	17.91	10.82				

Table 9 shows the Pearson's correlation coefficient statistics used to test the relationship between Anthropometric and non-communicable disease. The Pearson correlation coefficient derived a value of 0.671 a degree of freedom of 304 and a significant value of 0.004. The sig. value is lesser than our critical value of 0.05. Thus, there is significant relationship between Anthropometric indices and non-communicable disease.

Hypothesis Four: There is no significant relationship between some selected socio demographic variables (age, marital status, ethnicity, religion educational status and years of experiences) and perimenopause.

To test this hypothesis, data collected on socio-demographic characteristics of the respondents and perimenopause was subjected to multiple regression analysis.

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Table 10: Multiple Regression Analysis on relationship between some selected Socio-Demographic and on perimenopause

Model Summary

R	R Square (R^2)	Adjusted R^2	Std.Error of the Estimate
0.187	.035	0.020	13.0121
F Statistics=6.285 P value= 0.035			

Model (Predictor or independent variables)	Unstandardized coefficients		Standardized Coefficients	T	Sig	Remarks
	Beta (β)	Std error	Beta (β)			
Constant	50.333	0.813		61.895	0.000	
Age	0.880	2.502	-0.018	4.352	0.025	S
Marital status	4.927	2.371	-0.109	2.078	0.038	S
Ethnicity	6.018	3.090	-0.102	0.948	0.435	NS
Religion	1.569	2.027	-0.041	-.774	0.439	NS
Educational status	3.308	2.947	0.059	8.123	0.026	S
Years of experience	2.061	1.732	-0.61	-1.190	0.235	NS
Knowledge	6.340	4.870	-0.78	-1.380	0.001	S
Nutritional status	5.861	3.91	1.84	2.01	0.030	S

Table 10 above demonstrates the result produced by multiple regression analysis on the data collected from 306 respondents through the use of questionnaires. From the model summary R 18.0% is the correlation between the dependent variable (perimenopause) and the independent variable (socio-demographic variables. age, marital status, ethnicity, religion, educational status and years of experience) knowledge of perimenopause and nutritional status. While R^2 35.0% is the variation that was explained by the independent variable. Further analysis showed; age (β =0.018, t =4.352,P<0.05), marital status (β= 0.109, t =2.078, P<0.05), ethnicity (β =0.102, t =0.948, P> 0.05), religion (β =0.041, t =0.774, P>0.05), educational status(β =0.059, t =8.123, P<0.05), years of experience(β=0.61, t =1.190, P> 0.05), knowledge of perimenopause(β=0.78, t =1.380, P> 0.05), and nutritional status (β=1.84, t =2.01, P> 0.05),. The probability of (F-statistic = 6.285, P value = 0.035) this shows the significance of the research. According to the standard, if the p-value is < 0.05 it is significant. In this study the above given table demonstrates the p-value of 0.035 which is <0.05 thus, the model of the research is statistically significant. So the independent variable of the study has significant relationship with the dependent.

4. DISCUSSION

Majority 180 (58.8%) of the respondents were between the ages of 51 and 60 and this is contrary to findings of Jack-Ide, Emelifeonwu, & Adika (2014) when they found out from their study in Niger Delta that the women age range was from 40 years and above 55 years and 236 (77.1%) were married while Jack-Ide et al (2014) found only 56.7% were married in their study, this difference may be due to their culture and huge marriage right among women in their state. 201(65.7%) were found to be Christians and this is very close to findings of Jack-Ide, et al., (2014) where 63.3% of their respondents were also Christians. Also, majority 230(75.2%) of the respondents defined perimenopause as a time when a women starts irregular menstruation and this was supported by Sherman, (2005) when they defined the term perimenopause as the intermittent cessation of menstruation for twelve months or more. However, the paradigm within which a woman considers menopause influences the way she views it. More than half of the respondents 183(59.8) agreed that women will not ovulate again after perimenopause and this is supported by World Health Organization, (2010 when they concluded that ovulation ceases during perimenopause but individual variations exist.

Hot flash was reported by 77(25%) among various signs and symptoms perceived with the highest duration of above six years. This findings is in agreement with Ossewaarde, et al (2005) that the most common symptoms of perimenopause are sweating, heart palpitation, mood swing, hot flash etc.

Majority 269 (87.9%) of the respondents started their menstruation between 10-13 years, this is in agreement with Ortega-Ceballos et al (2006) when they concluded in their study that the age of menarche was between <11 and >12 years.

The finding from this study revealed that 223 (72.9%) of the participants have stop menstruating and majority of them 212(95.1%) reached perimenopause at the age range of 46-55 years with mean age of 51.2 and this validates the findings of Kaur & Talwar,(2009) when they found the mean age at perimenopause for all women to be 51 years. In another study by Ceylan and Özerdoğan (2015) the average age of perimenopausal onset was reported to be 54 in Europe, 51.4 in North America, 48.6 in Latin America

Also, from the study 185(60.5%) of the respondents opined that there is relationship between menarche and perimenopausal age with the belief that early menarche will bring about early menopause. This corroborates the finding of Reynolds and Obermeyer (2003) when they concluded that women that reach menarche at early age (<10) are prone to early perimenopause (<45). Additionally, 36% were of the opinion that early perimenopause was due to lack of sexual intercourse/stress and 48.0% revealed that healthy nutrition that contains high fibre, micro nutrients, phytochemicals and antioxidants can delay perimenopause. 50.0% of the respondents abstain from sex and 33.3% opined that having sexual intercourse during perimenopause will lead to storage of sperm in them. This findings validates the documentation of Matthews (1992) and Ojofeitimi (2015) where he stated that one of the common myths of perimenopause was that perimenopausal women should not have sexual intercourse to prevent their abdomen from becoming big.

Majority 159(52.0%) agreed that healthy diet rich in fibre, pytho chemicals, antioxidants and micro nutrients, delays perimenopause, this is in support of the finding of Hyman (2007) when he concluded that increase intake of phytoestrogens (soy, flax, 1-2 cups of cruciferous vegetables daily), organic foods, a high-fiber diet, omega-3 fatty acids, flax seeds and balance glucose metabolism through a low glycemic load, high micronutrient index, phytochemical and antioxidants helps to restore hormonal balance thereby delaying the onset of perimenopause and prevent chronic non communicable disease.

This study also revealed three days nutrition rating of the respondents, 55(18%) of the respondents got 33 (61.1%) out of 54 points which shows that 55 out of 306 respondents are taking adequate diet rich in fibre, phyto chemicals, antioxidants and micro nutrients while majority are taking energy dense foods which make them to be obese and prone to chronic non communicable diseases.

Study revealed that majority 186(60.8%) of the respondents agreed that rice, coke, bread and meat pie should be reduced in order to reduce the sign/symptoms of perimenopause and this validates the recommendations of Ojofeitimi (2015) when he concluded that perimenopausal women should consume foods that are low in carbohydrates to provide the energy and fuel the body needs to function but should avoid refined carbohydrates such as white bread and pasta. Also, 98(32.0%) agreed that proteinous food (beans,soya ,fish) and water should be increased during perimenopause. This findings validate the position of Ojofeitimi (2015) when he emphasized that it is important for women to consume high protein food that can be find in plants like beans, nuts and pulses as part of their perimenopausal diet. 162(52.9%) were of the opinion that physical exercise reduces symptoms of perimenopause. This findings was in agreement with the position of Ojofeitimi (2015) when he maintained that exercise do not only strengthens your muscle and bones ,they also reduce your risk of heart attacks, help you lose excess body fat, improve your hormone levels add healthful life expectancy. Majority of the respondents suffered from one chronic disease or the other with the highest of them 99 (32.4%) suffering of from arthritis. And validates the findings of Moilanen, Aalto, Hemminki, Aro, Raitanen, & Luoto, (2010)

Analysis on relationship between perimenopause and nutrition status:

The Pearson correlation coefficient derived a value of 0.548 a degree of freedom of 304 and a significant value of 0.001. The sig. value is lesser than our critical value of 0.05. Thus, there is significant relationship between perimenopause and nutritional status and this finding corroborate the position of women health concern 2009 when they concluded that that good nutrition and higher intake of specific nutrients, together with small lifestyle changes offer significant help in maintaining a healthy perimenopause and make a real difference to how women feel.

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Analysis on the Relationship between perimenopause and non-communicable diseases:

Pearson's correlation coefficient statistics used to test the relationship between perimenopause and Non-communicable diseases. The pearson correlation coefficient derived a value of 0.631 a degree of freedom of 304 and a significant value of 0.01. The sig. value is lesser than our critical value of 0.05. Thus, there is relationship between perimenopause and non-communicable. Gaur & Iyer (2013) A significantly higher prevalence of NCDs and its risks were seen among post-menopausal women in terms of presence of diabetes, hypertension, high body fat content, higher mean abdominal obesity and waist stature ratio, without any adjustment for age, in the present study. The effect of menopause on prevalence of metabolic syndrome (MS) was assessed by Pandey et al (2010) on 498 urban females and found that post-menopausal women had significantly high prevalence of metabolic syndrome but the significance was lost after adjusting for age.

Analysis on relationship between Anthropometric and non-communicable disease:

The Pearson correlation coefficient derived a value of 0.671 a degree of freedom of 304 and a significant value of 0.004. The sig. value is lesser than our critical value of 0.05. Thus, there is significant relationship between Anthropometric indices and communicable disease which corroborate Ojofeitimi (2015) being overweight is one of the critical factors precipitating all these non-communicable diseases but they are preventable by avoiding them through healthy lifestyles and regular physical activities.

Analysis on relationship between socio demographic variables:

(Age, marital status, ethnicity, religion, educational status and years of experiences) and perimenopause, data collected on socio-demographic characteristics of the respondents and perimenopause were subjected to multiple regression analysis.

From the model summary R 10.0% is the correlation between the dependent variable (perimenopause) and the independent variable (socio-demographic variables. age, marital status, ethnicity, religion, educational status and years of experience). While R^2 10.0% is the variation that was explained by the independent variable. Further analysis showed; age (β =0.054, t =0.766,P>0.05), marital status (β= 0.047, t =0.803, P> 0.05), ethnicity (β =0.020, t =0.341, P> 0.05), religion (β =0.001, t =0.016, P>0.05), educational status (β =0.074, t =1.244, P>0.05), while years of experience (β=0.041, t =0.590, P> 0.05). The probability of (F-statistic = 0.506, P value = 0.804) this shows the significance of the research. According to the standard, if the p-value is < 0.05 it is significant. In this study the above given table demonstrates the p-value of 0.804 which is > 0.05 thus, the model of the research is not statistically significant. So the independent variable of the study of Ethnicity, Religion and Year of Experience has significant relationship with the dependant variable.

These findings validates the position of Gold, et al., (2000) and Lee et al., (2010) when they stated that variables like age, marital status, occupational status, educational status, alcohol consumption, post-menopausal duration jointly made significant contributions in predicting perimenopause symptoms.

5. CONCLUSION

Perimenopause is a period characterized with fluctuations of hormones which lead to development of certain changes in women.This study concluded that many women are knowledgeable about perimenopause and transition period as the end of reproductive stage whereas their knowledge about adequate nutrition during this phase of is inadequate. Results equally showed that there are many myths associated with the period. It also concluded that there is relationship between menarche and perimenopause; and also relationship between perimenopause and nutrition. It also established the relationship between perimenopause, life style modification and chronic non communicable diseases.

6. RECOMMENDATION

"As a general rule, the most successful man in life is the man who has the best information**"** Park (2007). Therefore, there is need to:

- Educate premenopausal and peri-menopausal women about adequate diet, with emphasis on intake of high fibre diet, micro nutrients, phyto chemicals and antioxidants. Also of vital importance is regular light exercise and lifestyle modification in order for them to be able to cope with the challenges associated with menopause.

- Clarify the myths associated with this crucial phase of life in other for them to face the challenges squarely, to relieve symptoms, enjoy sexual life and at the long run prolong life.
- Furthermore, there is need for regular medical check- up which should include blood sugar level and bone density check as well as blood pressure monitoring.
- Family support at this crucial time is recommended especially support from husband.
- In addition, health related programmes on comprehensive sexuality education to include menopause should be promoted by government and non governmental agencies because women approaching menopause usually need time and knowledge not medicine.
- Public health practitioners and nutrition experts need to embark on sensitization programme on food requirements for pre, peri and post menopausal women as this will help them to reduce menopausal symptoms and risk for chronic non communicable diseases.

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