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Research Article

Nutritional Status and Menopausal Complications Among Adult Women in Ogbomoso, Southwest, Nigeria

Adeniji A.O.[1], Ogunleye E.A.[2] and Olawuyi Y.O.[3]

[1]*Department of Nutrition and Dietetics, College of Health Sciences, Bowen University Iwo. Osun State Nigeria.*
[2]*Nutrition and Dietetics Unit, Bowen University Teaching Hospital, Ogbomoso. Oyo State Nigeria.*
[3]*Department of Nutrition and Dietetics, Faculty of Food and consumer Sciences, Ladoke Akintola University of Technology, Ogbomosho, Oyo State Nigeria*

ABSTRACT

One of the most challenging periods of every woman is the menopausal phase when changes occur both physically and emotionally. Changes in nutritional status can be a concern, which may have direct or indirect effect on the menopausal woman. This cross-sectional study examined the relationship between Nutritional Status and postmenopausal complications among adult women. The survey was conducted on 278 menopausal women aged between 45-65 years resident in Ogbomoso North and Ogbomoso South Local Government Areas of Oyo State. Socio-demographic and anthropometrics data were collected using self-administered questionnaire. Energy and nutrient intake were recorded through 24-hour dietary food recall. Descriptive statistics and Chi square test at α0.05 were done using SPSS version 21. Using the Body Mass Index (BMI) categorization, 16.5%, 37.8%, 43.2% and 2.5% of the respondents had normal weight, were overweight, obese, and morbidly obese respectively. The most common diseases during the menopausal period were hypertension (23.9%) and diabetes (6.5%). Mean calcium and potassium intake were less than Recommended Daily Allowance (RDA) at 139.35±6.61mg/day and 633.90±31.39mg/day respectively. However, the consumption of carbohydrates, protein and fat were found to be in excess. This imbalance in nutrients intake and other lifestyle habits yielded in increased BMI which was associated with many menopausal complications. BMI was significantly associated with marital status, hypertension, insomnia, hot flushing, bloated feeling, irregular heartbeat, fatigue, constipation, waist, hip and joint pain. Interventions on healthy eating, healthy lifestyle which are necessary to promote and improve healthy aging and to overcome the postmenopausal problem are recommended.

Keywords: *Menopause, Obesity, Nutritional status, Women*

**Author for correspondence: Email: yetundeoluolawuyi@gmail.com; Tel: +2348033518935*

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INTRODUCTION

According to World Health Organization 2011, menopause is defined as the permanent cessation of menstruation resulting from physiological changes involving the loss of ovarian follicular activity. Natural menopause is established after 12 consecutive months of amenorrhea for which there is no other obvious physiological or pathological cause. It is a mandatory stage for women who live long to attain old age. Menopause occurs due to low level production of two hormones responsible for women fertility, estrogen and progesterone. Several studies have revealed that women of menopausal age experience varying types of symptoms and severity, which eventually lead to some health complications, such as cardiovascular diseases, osteoporosis, and obesity (Toft 2009, Ford 2015 and Dalal 2015). Menopause is an inevitable transitional phase, progressing slowly and culminating in a series of body changes that can last for ten years. This transitional phase is often described as climacteric, which results from a decline on ovarian function and represents an important milestone in the reproductive life of women.

The average age for menopause is 51±3 years, many women are likely to live 20 years after menopause living with estrogen deficiency (Oloyede and Obajinmi, 2018). The changes come in form of various symptoms such as irregular periods, night sweats, hot flushes, mood changes, depression, vaginal dryness, insomnia, urinary problem to mention a few, and when the above mentioned symptoms are not properly addressed can lead to serious complications (Huizen, 2018).

Women's nutritional needs change during menstruation, pregnancy, breastfeeding and menopause (Pilar et.al., 2015). A woman's reproductive life means that her nutritional needs differ greatly from those of a man. As women age, the body goes through more physical and hormonal changes, so that

nutritional needs continue to evolve, making it important that the diets evolve to meet these changing needs. However despite the increase in the number of women in their menopausal years, information on the roles of nutrition or impact of nutritional status in ameliorating these symptoms is still sparse. Other authors stressed the fact that there is need for much research in this area, most especially in Nigeria (Okonta, et.al., 2009). Adequate nutrition plays important role in health throughout women's life (Busell, 2003) Women's nutritional needs and right to adequate diets go far beyond motherhood. Focus should not only be on puberty, pregnancy and lactation, but also on other areas or stages that affect women's healthy lifestyle. This lack of available information is resulting in women struggling with the life changes associated with menopause. Hence this study aimed at determining the relationship between Nutritional Status and Menopausal Complications among adult women in Ogbomoso North and South Local Government Areas of Oyo State.

MATERIALS AND METHODS

Study Design and Population: The study was descriptive cross-sectional in design and target population of the study were women within the menopause age range [45-65 years] who reside in Ogbomoso North and South Local Government Areas of Oyo State.

Sample selection: Representative samples were selected using a multistage random sampling technique. First stage: Each local government has 10 wards, the wards were stratified into 5 each, 2 in each stratum. Second stage: a ward in each stratum was randomly selected, using simple random sampling. Third stage: worship center, residential houses, markets, and offices were randomly selected in the wards through balloting. Last stage: the respondents were randomly selected in the worship centers, residential houses, markets and offices.

Data Collection: Structured self-administered questionnaires were used to collect data on the socio-economic and demographic characteristics of the respondents. Data on past medical history, symptoms of menopause experienced so far, medication e.g. supplements and antibiotics, nutritional status using anthropometric indices and dietary intake and also about their lifestyle modification were collected.

To determine the nutritional status, Waist/Hip Ratio [WHR] and Body Mass Index [BMI] was used. For WHR, a non-stretchable tape rule was used to measure the waist and the hip, this was expressed in centimeters [cm], and the measurement performed to the nearest 0.1 cm. Waist-hip ratio was calculated as waist measurement divided by hip measurement [W÷H] and further classified according to the US Department of Health, low (<=0.80), moderate (0.81-0.85) and high (>=0.86). Body mass index [BMI] was calculated by dividing the BW [body weight] expressed in kilograms, with BH [body height] expressed in meters squared: *BMI [kg/m^2] = BW [kg]/ BH [m^2]*.

Also a 24-hour dietary recall was structured to get detailed information about all foods and beverages consumed by the women in the past 24 hours, mostly from 12 midnight to midnight the following day. The record of the food and drink taken within 24 hours, place and the time the food/drink was taken and equivalent weight of food and drink was noted on the 24 hour dietary recall sheet.

Data Analysis

Data was analyzed using SPSS version 21. Descriptive statistics such as frequencies and percentages mean and standard error of mean, as well as Pearson chi square tests were used in the analysis. The 24 hours dietary recall was converted into weight of food in grams and analyzed for adequacy in nutrient intake using the Total Dietary Assessment [TDA] software. Waist-Hip ratio was compared with the cut off points.

RESULTS

The socioeconomic and demographic characteristics of respondents on Table 1 shows that 50% of the respondents were from Ogbomoso North Local Government Area and 50% were from Ogbomoso South local Government Area. Out of the 278 respondents, 29.5% respondents fell within the age of 45-50 years; 31.3 % fell within the age range 51-55 years; and 16.2% fell within the age range of 61-65 years. For marital status, 78.1% respondents were married; 1.4% were single and 18% respondents were widows. Most of the respondents (51.4%) respondents were civil servants; 27.0% respondents were traders; and 5% had other occupations. Total of 15.3% respondents live with their children; 74.4 % respondents live with their husbands and 1.5 % respondents live with relatives.

Table 1.
Socio-economic and demographic characteristic of the respondents.

	Variables	Frequency (sample size)	Percentage
Age (years)	45-50	82	29.5
	51-55	87	31.3
	56-60	64	23.0
	61-65	45	16.2
	Total	278	100.0
Marital Status	Married	217	78.1
	Single	4	1.4
	Separated	7	2.5
	Widow	50	18.0
	Total	278	100.0
Occupation	Civil Servant	143	51.4
	Retiree	46	16.5
	Trader	75	27.0
	Others	14	5.0
	Total	278	100.0
With whom do you live?	Children	43	15.8
	Husband	203	74.4
	Relatives	4	1.5
	Friends	5	1.8
	Alone	18	6.6
	Total	273	100.0

Table 2.
Knowledge on the attainment of menopause and past medical history of respondents.

	Variables	Frequency	Percentage
Irregular menstruation?	Yes	75	28.3
	No	190	71.7
	Total	265	100.0
Attained Menopause?	Yes	196	70.8
	No	81	29.2
	Total	277	100.0
Prior knowledge on menopausal symptoms?	Yes	175	68.9
	No	79	31.1
	Total	254	100.0
Primary Health Care Provider (Hospital Attended)	Government	143	54.0
	Private	117	44.2
	Maternity Centers	5	1.9
	Total	265	100.0
Visited a doctor to complain of any ailment?	Yes	198	73.3
	No	72	26.7
	Total	270	100.0
Frequency of visit to a doctor?	Weekly	4	1.7
	Fortnightly	13	5.7
	Monthly	63	27.5
	Yearly	149	65.1
	Total	229	100.0
Hypertensive?	Yes	66	23.9
	No	210	76.1
	Total	276	100.0
Diabetic?	Yes	18	6.5
	No	258	93.5
	Total	276	100.0

The most frequently experienced (both moderately and severely) menopausal symptoms as seen in Table 3 were waist, hip and joint pain (72.8%), dry vagina (58.9%) and decreased libido (61.4%). Majority of the respondents (87.7%) walked as a means of exercise, 10.9 % respondents were on regular medications like antidiabetic and hypertensive drugs (Table 4). In table 5, it is revealed that majority of the respondents were overweight (37.8%) and obese (43.2%). The mean nutrients intake among the participant are shown in Table 6. The current dietary intake and gaps in the macro and micro nutrient intake in comparison with RDA were observed. Table 7, revealed that BMI was significantly associated with marital status, hypertension, insomnia, hot flushing, bloated feeling, irregular heartbeat, fatigue, constipation, waist, hip and joint pain.

DISCUSSION

Aging has some associated changes in body composition, this impacts on physical activity and the health of humans (Russell and Grossmann, 2018). In Table 2, it is shown that 23.9% respondents were hypertensive, while 76.1% respondents were not; only 6.5 % were diabetic, while 93.5% were not. This is in contrast with the findings of Teede *et.al,* (2010) who noted that 16.1% of total population studied were diabetic. This may be as a result of the fact that these health conditions were self-reported. A total of 28.3% respondents were having irregular menstruation and 70.8% respondents had attained menopause. Only 68.9% respondents had the prior knowledge on menopausal symptoms as compared with higher result of 81.3% observed by Ezeome *et al.* (2019) and Ibrahim *et al.*, (2015).

Table 3.
Occurrences of Some Menopausal Symptoms among the Respondents

Menopause Symptoms	Never or almost never (%)	Occasionally not severe(%)	Occasionally but severe (%)	Frequently, not severe (%)	Frequently, but severe (%)
Insomnia	56	35.7	4.3	3.6	0.4
Dizziness	63.2	31.8	3.6	1.1	0.4
Hot flushing	55.5	33.1	5.9	5.5	0
Headache	29.8	55.3	8.0	5.8	1.1
Bloated feeling	62.5	29.9	3.0	3.4	1.1
Waist, hip and joint pain	27.2	46.7	11.2	9.1	5.8
Irregular heartbeat	61.9	28.2	6.2	1.8	1.8
Dry Vagina	41.1	43.8	5.3	5.7	4.2
Sudden urge to urinate	59.6	31.6	2.9	4.4	1.5
Mood Swing	50.5	41.1	4.0	3.3	1.1
Hair loss	55.1	26.8	5.8	11.6	0.7
Poor Concentration	48.6	38.8	8.3	2.9	1.1
Depression	51.8	35.3	9.2	3.3	0.4
Fatigue	37.8	48.4	8.0	4.7	1.1
Poor Memory	49.5	32.6	11.4	5.1	1.5
Decreased Libido	38.6	40.8	7.7	9.9	2.9
Constipation	62.8	27.4	4.7	4.0	1.1

Table 4.
Respondents' Exercise and Use of Drugs.

	Options	Frequency	Percentage
Exercise?	Yes	243	88.4
	No	32	11.6
	Total	275	100.0
Type of exercise?	Walking	214	87.7
	Jogging	27	11.1
	Running	2	0.8
	Others	1	0.4
	Total	244	100.0
Smoke?	Yes	2	0.7
	No	275	99.3
	Total	277	100.0
Consume alcohol?	Yes	5	1.8
	No	272	98.2
	Total	277	100.0
Drugs?	Yes	30	10.9
	No	245	89.1
	Total	275	100.0

Table 5.
Body Mass Index, Waist/Hip ratio and Calories Intake of Respondents.

	Groups	Frequency	Percentage
BMI	Normal	46	16.5
	Overweight	105	37.8
	Obese	120	43.2
	Morbid Obese	7	2.5
	Total	278	100.0
Waist/Hip ratio	Low	17	6.1
	Moderate	45	16.2
	High	216	77.7
	Total	278	100.0
Calories	Inadequate	14	5.0
	Adequate	103	37.1
	Excess	161	57.9
	Total	278	100.0

Table 6.
Mean Nutrient Intake of Respondents

Nutrients	Mean ±SEM	RDA
Protein (g/day)	71.64±16.54	46
Carbohydrate(g/day)	274.15±13.64	130
Fat (g/day)	38.06±1.50	18
Vitamin A (ug/day)	8332.50±450.85	700
Riboflavin B2 (mg/day)	0.64±0.043	1.1
Folate (ug/day)	163.27±22.40	400
Cobalamin B12 (ug/day)	0.97±0.19	2.4
Calcium (mg/day)	139.35±6.61	1200
Potassium (mg/day)	633.90±31.39	4700
Iron (mg/day)	37.36±10.69	8.0
Zinc (mg/day)	7.43±0.15	8.0

The authors noted that 81.3% of the respondents indicated that they had heard that every woman at some point in her life will reach menopause as it is a natural course. Thereby many women do not seek for medical intervention to alleviate the problems associated with menopause. This is established in the study of Bahiyah *et al.,* (2017), which revealed that 75.2% did not seek for any treatment for their menopausal symptom.

More than half of the respondents (55.3%) experienced occasional non-severe headache with 1.1% respondents who had frequent severe headache. This agrees with the study of Mohammadzadeh *et al.,* (2017) which showed that 24% had moderate severe headache, 48.7% had joint pains, and 40.7% suffer from dry vagina. The least frequently experienced symptoms were dizziness, bloated feeling and constipation. Some of the changes that occur during menopause partly can be explained by the damage to the defensive character of estrogens and a comparative surge in the androgen levels in circulation (Spangenberg, *et.al,* 2017).

Table 7.
Association between some selected symptoms of Menopause and BMI

Variable	Chi Square	P-Value
Age	16.582	0.056
Marital Status	20.788	0.014
Irregular menstruation	6.053	0.110
Hypertensive	10.823	0.013
Insomnia	25.565	0.012
Dizziness	15.886	0.196
Hot flushing	18.969	0.025
Headache	8.960	0.706
Bloated feeling	64.482	0.000
Waist, hip and joint pain	30.007	0.003
Irregular heartbeat	39.047	0.000
Dry vagina	26.746	0.008
Sudden urge to urinate	19.905	0.069
Mood swing	17.520	0.131
Hair loss	28.669	0.004
Poor concentration	19.904	0.069
Depression	11.576	0.480
Fatigue	32.051	0.001
Poor memory	20.839	0.053
Decreased Libido	9.747	0.634
Constipation	27.861	0.006
Exercise	0.617	0.892

A total of 88.4% respondents do regular exercise, while 11.6% do not partake in any type of exercise. This affirmed the findings of Morales-Fernandez, *et al.,* (2016) that 65.6% of the respondents took to walking as their physical exercise. Exercise helps to increase cardiorespiratory function and it alleviate the risk associated with declining estrogen level. Exercise was observed to be significantly associated with dry vagina (0.007) and decreased libido (0.028). A higher proportion of those who engage in exercise were not experiencing dry vagina and decreased libido.

Previous studies (Tursunović *et.al,* 2014; Kashyap and Chhabra, 2019) also reported a high proportion of overweight and obese respondents. Clinical changes happen in the body composition during menopausal transition- due to aging and hormonal changes (Nemati and Abass 2008). Ovarian estrogens upsurge the storing of peripheral fat, largely in the gluteal and femoral subcutaneous areas. The noticeable reduction in the concentrations of estrogen, complementary to

the relative hyperandrogenism is viewed as the chief element causing weight gain as well as the re-distribution of body fat in women of post-menopause age (Stefanska *et al.*, 2015). Majority (77.7%) of the respondents had high waist/hip ratio. This is corroborated by Davis *et al.*, (2012) who disclosed that 88% respondents of menopausal women interviewed had high waist/hip ratio. Increase in waist/hip can be associated with accumulation of fat during menopause which is more concentrated in the abdomen, this can be due to sedentary lifestyle as most of them cannot do rigorous work anymore. Poor dietary lifestyle decreased basal metabolic rate and decreased energy expenditure are also contributory factors to high waist/hip ratio. Some earlier research had revealed that women of post-menopause age remained at a considerably higher possibility of getting abdominal obesity compared to the women of pre-menopause age (Schubert *et al.*, 2006; Kozakowski *et al.*, 2017).

For the micronutrients, this study revealed that many women took less than the recommended level for vitamin B2, Folate, Vitamin B12, calcium and potassium. The proportion of women consuming less than 800 mg/day of dietary calcium was 74.5%. This is supported by the study of Nemati and Abass (2008) on nutritional status of postmenopausal women, where the mean intake of micronutrients were also low; vitamin B2 (0.9±0.4), vitamin B12 (0.9±0.6), calcium (506.0±363), Folate (67.5±57.3). Raj (2015), also reported a mean dietary calcium intake of 632.72±28.23mg/day. This study revealed that 129 (46.7%) respondents have waist, hip and joint pains occasionally but not severe, while 31(11.2%) respondents have severe joint pains, this can be attributed low consumption of calcium, potassium contain foods such as milk. The nutritional recommendations for older women can be improved by emphasizing daily serving of nutrient dense food from the food guide pyramid not just feeding on empty calories. Higher protein intake (1.0–1.2 g/day) can reimburse some loss of muscle mass in the course of weight loss (Layman et.al, 2005).

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