Original

Prevalence of Obesity among Market Women in Samaru Zaria, Kaduna State Northwestern Nigeria

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Abstract

Background: Lifestyles changes and increased affluence have led to increasing obesity in developing countries, with implications in women- infertility, polycystic ovarian syndrome, perinatal complications, and chronic medical illnesses. Sedentary lifestyles and consumption of high-caloric, energy-dense foods pose an increased risk among market women.
Method: A descriptive cross-sectional study was conducted among 79 female traders of the Samaru market. Using a semi-structured questionnaire, necessary information including socio-demographics, dietary patterns, physical activity, height, and weight were collected. The data was analyzed using Statistical Package for Social Sciences (SPSS) version 26 at a level of significance $p<0.05$. Ethical approval was obtained from the Research and Ethics Committee, Department of Community Medicine, Ahmadu Bello University, Zaria.
Result: Out of the 79 respondents, the majority were <40years of age 43 (54.4%), non-Yoruba tribe 49 (62.0%), currently married 46 (58.2%), below the tertiary level of education 55 (69.6%), engaged in physical activity 54 (68.4%) and within 0-10years of trading 40 (50.6%). Some of the respondents have a background chronic medical illnesses 27 (34.2%), ranging from hypertension, osteoarthritis, and diabetes. The prevalence of overweight and obesity was found to be 26.6% and 30.4% respectively. Bivariate analysis revealed a significant statistical relationship between obesity and age (P= 0.005), marital status (P= 0.0028), years of trading (P= 0.011), and the presence of chronic medical illness (P= <0.0001).
Conclusion: The prevalence of obesity was found to be high. Therefore, there is a need for proper health education and promotion to reduce it and its possible attending consequences.

Keywords: Obesity, Prevalence, Market women, Samaru-Zaria, Kaduna state, overweight, cross-sectional.

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Introduction

Obesity is a public health crisis worldwide with the prevalence increasing rapidly in numerous industrialized countries.[1-3] This can be viewed as a disease and a risk factor for chronic diseases and other morbidities.[1] It is described as an imbalance between energy intake and expenditure such that excess energy is stored in fat cells and increases in numbers.[4,5] However, this complex medical condition is affected by various contributory factors that will be discussed in the context of market women.

According to the World Health Organization (WHO), Obesity is defined as a Body Mass Index (BMI) greater than or equal to 30 kilograms per meter square (30 kg/m^2).[6] Hence body mass index measures the excess weight for height.[7] The science of obesity is far more complex than a simple definition of an imbalance in energy intake and output. Although this concept allows easy conceptualization of various mechanisms involved in the development of obesity, obesity is a far-reaching unhealthy condition more than just a mere cosmetic concern.[8] It has serious chronic and life-threatening complications, the severity of which depends on the magnitude of the body weight and location of body fat.[3] The major health consequences of overweight and obesity include type 2 diabetes mellitus, cardiovascular diseases, gallbladder diseases, psychological problems, cancers, respiratory problems, chronic musculoskeletal problems, skin problems, and infertility among others.[9,10]

Obesity was initially viewed as a problem of the developed world rather than the developing countries.[11] This was because of the low socioeconomic status, high level of poverty, undernutrition, and high prevalence of infectious diseases such as Tuberculosis, HIV/AIDS, malaria, gastrointestinal infections, etc.[11] However, following epidemiological transitions, lifestyle changes-physical inactivity in developing countries, the rate of obesity is found to be on the increase.[11]

The prevalence of obesity in developed nations, such as the United States is as high as 26.6% in men and 32.2% in women above the age of 20 years.[12] In Nigeria, a study conducted in Abeokuta among market women revealed a prevalence of 29%.[13] There were several reports of obesity and its comorbidities negatively affecting the lives of Nigerians and the consequent burden of the disease contributes to increasing costs of health care both at the state level and in the private sector.[13]

The choice of women in this study is due to increased complications of obesity among women. A meta-analysis reported obesity to affect both maternal and child health.[14] It poses serious problems such as hormonal dysregulation leading to menstrual abnormalities, polycystic ovarian syndrome (PCOS), infertility, and psychological problems (depression, anxiety, body dysmorphic disorder, etc). This is in addition to general complications of increased risk of chronic medical illnesses like hypertension, type 2 diabetes, respiratory diseases, and lots of musculoskeletal disorders. It was also found to cause metabolic problems in children of obese mothers.[14]

Female traders have even more risk of developing obesity as they possess increasing risk factors. The prolonged hours spent per day for trading mostly sitting in one place, sedentary lifestyle, and readily availability of high caloric, energy-dense food culminate to increase the likelihood among these population.[15] The attending consequences can have both economic and social problems among the affected women and the community at large. More resources are channeled towards the treatment of complications, and less time is available to train the children for the betterment of the larger community.[16]

More so, there were few studies conducted targeting obesity and female traders in Nigeria. Most of the studies were conducted in the southern and eastern parts of the country. The focus of the study therefore was to explore the prevalence in northern Nigeria. As Kaduna state was found to have a high rate of obesity in previous studies, a major market within a large heterogeneous city in the state was chosen for the study.

The findings in this study can help in the development of periodic enlightenment programs for market women on the negative consequences of obesity and to develop strategies for controlling it. This can help in reducing the negative consequences associated with it, thereby promoting health and preventing diseases.

Method

Research Design

A descriptive cross-sectional study was used to assess the prevalence of obesity among market women in Samaru market Zaria, Kaduna state Northwestern Nigeria.

Study Area

The study was conducted in Samaru, Zaria, Sabon-Gari local government area of Kaduna state, North West Nigeria with a population of about 54,000. It is situated on latitude 11°12" N and longitude 07°37"E at an altitude of 700m. It lies within the Northern Guinea

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Savannah zone and the climate zone is characterized by a dry season of 7 months duration from mid-October to mid-May and a wet season of 5 months from June to October with an annual rainfall of 1099.34mm.[17]

The soil is mainly accumulated clay lying between a depth of 36cm and 119cm. Samaru-Zaria is a semi-urban University satellite town that comprises many streets separated by minor roads, it is endowed with abundant basic amenities for survival, job opportunities, and the generation of economic prosperity for the peasants and mobile men of the neighboring villages. Samaru community is made up of different ethnic and religious groups, but the most predominantly ethnic groups are the Hausa/Fulani who are mainly Muslim. The community has primary, secondary, and tertiary institutions and a host of commercial activities.[17]

Samaru market is in Samaru town, of Sabon-Gari Local government Area. It is the main market that serves the majority of people in the community bounded to the south by Ahmadu Bello University (ABU) main campus about 500m away and to the west by ABU staff quarters 3 about 100 away. It is a heterogeneous market that comprises men, women, and different ethnic groups – Hausa, Igbo, Yoruba, and many others.[18]

Women are said to occupy about 200 shops in the market.

Study Population

The population for this study consists of female traders within the Samaru market. All female traders at least 18 years of age were included in the study. Female traders not available at the time of data collection and those not consented to the study were excluded.

Sample Size

The sample size was calculated using the formula below:

$$n = \frac{Z^2pq}{d^2}$$

P = prevalence of malnutrition from previous study found as 4.9% [19] = 0.049, q= 1-p = 95.1% = 0.951
n = 72
Using 10% non-response rate, n = 79

Sampling Technique

A systematic random sampling method was used to select the respondents.

First, all shops belonging to female traders were identified, mapped out, and numbered. A total of two hundred and nineteen shops (219) were identified as belonging to female traders. Secondly, the sampling interval was calculated using the formula:
$S = N/n$; $S \approx 3$

Shop number 8 was randomly selected as the starting point using a table of random numbers and subsequently an interval of 3 shops was taken (8, 11, 14, 17, etc.) until the sample size was completed.

Instrument for Data collection

The researcher developed a semi-structured questionnaire based on the objectives of the study. It comprises different sections to assess the respondents' socio-demographic characteristics, dietary habits, and physical activity, based on self-report by the participants according to WHO recommendation of at least 150 to 300 minutes of moderate aerobic activity per week (or the equivalent vigorous activity) for all adults, and subsequently height, weight, and blood pressure were measured to compute the Body Mass Index (BMI) by dividing the weight by the respective height squared.

$$BMI = \frac{Weight/Kg}{(Height/m)^2}$$

The result was interpreted based on the World Health Organization Classification as follows [6]:

1. Underweight = < 18.5Kg/m²
2. Normal weight = 18.5-24.9 Kg/m²
3. Overweight = 25.0-29.9 Kg/m²
4. Obesity = ≥ 30.0 Kg/m²

Method of Data collection

The instrument used was an interviewer-administered questionnaire. The data was collected with the help of a trained research assistant (a final-year Nursing student). The training was in two sessions of two hours each to be familiar with the study instrument and also to test the instruments used for the study (sphygmomanometer, stethoscope, weighting scale, and measuring tape).

Method of Data analysis

The data was entered into the statistical package for Social Science version 26 and cleaned to remove all inconsistencies. Data was summarized using tables and charts and the chi-square test was used to test the relationships between categorical variables. The results were interpreted at a level of significance of $p < 0.05$.

Ethical Consideration

Ethical clearance was obtained from the research ethics committee of the Department of Community Medicine Ahmadu Bello University Zaria. Permission to conduct the study was also taken from the market leaders.

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Informed consent was obtained from the participants and confidentiality was maintained.

Results

Out of the 79 respondents, the majority were <40years of age 43 (54.4%), non-Yoruba tribe 49 (62.0%), currently married 46 (58.2%), below the tertiary level of education 55 (69.6%), engaged in physical activity 54 (68.4%) and within 0-10years of trading 40 (50.6%). **Table 1**. Some of the respondents have a background chronic medical illnesses 27 (34.2%), ranging from hypertension 24 (88.9%), osteoarthritis 27 (100%), and Diabetes 1 (3.7%). **Table 2**. The prevalence of obesity was found to be 24 (30.4%) while 21 (26.6%) were found to be overweight. **Figure 1**.

Bivariate analysis revealed significant statistical relationship between obesity and age (X2 = 12.04, df = 1, P= 0.005), marital status (X2 = 8.93, df = 1, p= 0.0028), years of trading (X2 = 6.355, df = 1, p= 0.011) and presence of chronic medical illness (X2 = 16.82, df =1, p= <0.0001). **Table 3**.

Table 1: Socio-demographic and clinical characteristics of the respondents (n=79)

Characteristics	Freq	Percent (%)
Age(years)		
<40	43	54.4
≥40	36	45.6
Tribe		
Yoruba	30	38.0
Non-Yoruba	49	62.0
Marital status		
Currently married	46	58.2
Not-currently married	33	41.8
Level of education		
Below tertiary	55	69.6
Tertiary	24	30.4
Body Mass Index		
Obese	24	30.4
Not obese	55	69.6
Chronic medical illness		
Present	27	34.2
Absent	52	65.8
Physical activity		
Engaging	54	68.4
Not-engaging	25	31.6
Years of trading		
0-10	40	50.6
≥10	39	49.4

Table 2: Distribution of different chronic medical illnesses among the respondents (multiple response).

Chronic Medical illness	Frequency (n=27)	Percent (%)
Hypertension	24	88.9
Osteoarthritis	27	100
Diabetes	1	3.7

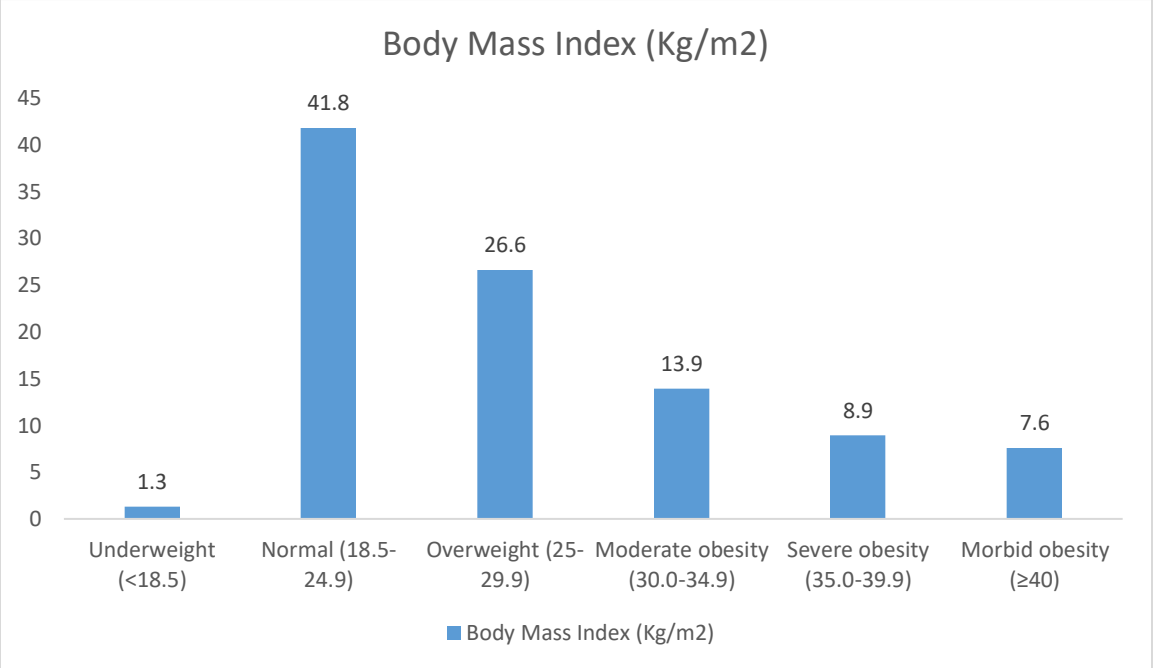

Figure 1: Distribution of Body Mass Index (Kg/m²) of the respondents

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Table 3: Relationship between Obesity and socio-demographics & clinical characteristics of the respondents.

Characteristics	Obese	Not obese	X^2	P-value
Age (years)				
<40	6	37		
≥40	18	18	12.04	0.0052
Tribe				
Yoruba	10	18		
Non-Yoruba	14	37	0.58	0.445
Marital status				
Currently married	20	26		
Not-currently married	4	29	8.93	0.0028
Level of education				
Tertiary	7	17		
Below tertiary	17	38	0.024	0.877
Chronic medical illness				
Present	15	9		
Absent	9	46	16.82	<0.0001
Physical activity				
Engaging	14	40		
Not-engaging	10	15	1.60	0.206
Years of trading				
0-10	7	33		
≥10	17	22	6.36	0.011
Dietary pattern				
Fatty diet	15	26		
Non-fatty diet	9	29	1.55	0.213

Discussion

This survey to determine the prevalence of obesity among market women in Samaru Zaria, Kaduna state Nigeria revealed a high prevalence among the study population despite subjective engagement in physical activity.

The majority of the women were less than 40 years of age with a mean age of 30.2 ± 2 standard deviation. This shows similarities in the age range with that obtained from the Nigerian Demographic and Health Survey (NDHS) of 2008 [20] and 2013.[21] The majority of the women were currently married which was in contrast with what was obtained from NDHS 2013,[21] but in conformity with a study among married women in Abeokuta.[13] The majority of the women have below tertiary level of education which conformed with northwest zone NDHS 2013 [21] and also a study among market women in Abeokuta[13] in which the majority of the women have only primary level of education. The ethnic and religious distribution are heterogeneous, and this is similar to that obtained in NDHS[20, 21] in which major cities with educational institutions tend to have features of heterogeneity.

The study found the prevalence of obesity among market women to be 30.4% which was in keeping with a prevalence rate of 29.6% among civil servants in the area, 29% among market women in Abeokuta,[13] 33.3% in urban northern Nigeria, 29.9% by Amira et al.,[19] in Lagos Nigeria. The similarities could be due to the high prevalence of obesity in the country and coupled with the fact that the dietary habits, physical inactivity, and other lifestyle changes caused by urbanization are almost similar across the country. However, it was relatively higher than the 21.4% found in Jos by Puppet et al.,[22] this could be because the study in Jos was conducted on both male and female populations and the prevalence of obesity is usually lower in males.

The study found a high prevalence of hypertension, osteoarthritis, and diabetes among the respondents. This conforms with the findings of Finer et al.[9] and Knight et al.[10] where blood pressure was found to increase in the obese, also Jussara et al.,[23] stated that obesity is one of the most significant and preventable causes of increased blood pressure in a patient with essential hypertension, Amira et al.,[19] in Lagos stated that obesity is a global health problem that is linked directly with several disease processes notably hypertension. The findings further

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emphasized the strong link between obesity and the development of chronic medical conditions.

This study found a significant statistical relationship between obesity, age, marital status, and level of education of the respondents. This was in keeping with a study by Ayla et al.,[24] which stated that for female subjects, the obesity prevalence was found to be increasing with age being married, being a housewife and having lunch at home and decreasing with higher education level and income.

Implications of the findings of this study

The study was able to identify the high prevalence of obesity among the study population and also immediate health education was provided for those with obesity and those at risk of developing it.

There's a need for a collaborative effort between the market leaders and the university community to come up with enlightenment programs on the consequences of obesity, healthy lifestyle, etc. targeted toward especially traders at increased risk of obesity in order to reduce the prevalence. More so, there is a need for collaboration with the Local government, state, and the nation at large on policies and protocols for controlling and reducing the prevalence.

Strengths and Limitations of the Study

The study was able to identify the high prevalence of obesity among the study population and also immediate health education was provided for those with obesity and those at risk of developing it. Those with existing complications were provided easy referral to the Teaching Hospital to benefit from prompt intervention. This helps in limiting complications and encouraging a healthy life.

The study was not without limitations as it was conducted in a single market, and the sample size was relatively small which can limit the generalization of findings. Therefore, there is a need for the study to be replicated in several markets across different geopolitical zones of the country, and with a larger sample size.

Conclusion

The prevalence of obesity was found to be high among the study population, and therefore there need for a collaborative effort to increase awareness about the consequences of obesity, the importance of healthy nutrition habits, and the importance of regular physical activity in controlling the menace caused by obesity.

Declarations

Ethical Consideration: Ethical clearance was obtained from the research ethics committee of the Department of Community Medicine Ahmadu Bello University Zaria. Permission to conduct the study was also taken from the market leaders. Informed consent was obtained from the participants and confidentiality was maintained.

Authors' Contribution:

Conceptualization: UI, YM
Data collection: UI, SS
Data analysis: UI, SS, MA
Manuscript draft: UI, UA, YM
Manuscript review and Finalization: UI, SS, UA

Conflict of interest: None

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