Original Article

Prevalence of obesity among adults in Issele-Uku, Delta State Nigeria

Otovwe Agofure

Department of Public and Community Health, Novena University Ogume, Delta State, Nigeria

ABSTRACT

Background: Obesity is gradually assuming an epidemic dimension among adults in Nigeria. Unfortunately, this has led to the increase in the prevalence of chronic diseases.
Objective: The study was designed to assess the prevalence of obesity among adults in Issele-uku, Aniocha North Local Government Area of Delta State, Nigeria.
Materials and Methods: The study employed a cross-sectional study design conducted among 201 respondents utilizing a simple random sampling technique. A validated semi-structured questionnaire was administered to obtain information from respondents; while descriptive and inferential statistics was used to analyze the data.
Results: The results show that more of the respondents were between the ages of 18–40 years, while about half 101(50.50%) were females and 104(52.0%) were married. Furthermore, only 46(23.0%) were overweight while 17.50% and 5.50% were pre-obese and obese respectively. The mean Body Mass Index of the respondents was 23.02 ± 4.42 while the respondents demonstrated positive attitude towards prevention of obesity. In addition, only eating akpu/fufu significantly predicted obesity ($R^2 = 0.034$) while both sex (P = .350) and educational status (P = 0.165) did not significantly influence obesity and some of the respondents' 82(41.0%) exercises once in a while.
Conclusion: The study recommended more awareness campaign on the dangers of obesity across communities in Nigeria.
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1. Introduction

Obesity defined by the World Health Organisation,[1] as a Body Mass Index (BMI) $\geq$30 kg/m^2 is gradually assuming an epidemic dimension in the world with Nigeria also having its own share of the burden.[2–5] This current trend of obesity has been attributed to the socio-economic and epidemiological transition of Nigeria from a lower income country to a middle income country; resulting in the change of lifestyle behaviours and dietary intake. As a result many Nigerians now live sedentary lifestyle while at the same time consuming diet with excess calories[6]; thus, resulting in high energy intake with low energy expenditure among most adult Nigerians. However, whatever the causes of obesity, its long term impact on the life of adults across Nigeria is well documented. Obesity has been shown to be a predisposing factor in the rising prevalence of morbidity and mortality associated with non-communicable diseases like type-2 diabetes mellitus, hypertension, cancer, stroke among adults.[7–9] The World Health Organisation Global InfoBase have shown the increase in Nigeria of overweight and obesity by 23% in men and 18% in women and 49% in men and 39% in women

between 2002 and 2010.[4,5] In addition, several studies have also documented the prevalence of obesity in Nigeria, for instance a study in Ile-Ife South-West Nigeria documented the prevalence of overweight to be 20.30%,[10] while a similar study in Ilorin North-Central showed the prevalence of overweight to be 35.10%.[11] Furthermore, a similar study in Lagos South-West Nigeria also documented the prevalence of obesity to be 22.20%[12] while a study in Maiduguri North-East Nigeria showed the prevalence of obesity to be 8.10%.[13] Furthermore, according to the Global Health Observatory Data adverse metabolic effects such as blood pressure, cholesterol, triglycerides and insulin resistance can result from overweight and obesity. In addition, risks of coronary heart disease, ischemic stroke and type-2 diabetes mellitus increases steadily with increasing body mass index.[4] In addition, raised body mass index also increases the risk of cancer of the breast, colon, prostate, endometrium, kidney and gall bladder; while mortality rates increases with increasing degrees of overweight.[4]

However, despite the glaring risk associated with obesity many adults in developing countries have the impression that overweight and obesity only affects the developed world[5] and culturally in Nigeria there is this notion that any individual with huge body mass index is a sign that the individual is rich and is living well. This misconception has helped to promote the ongoing

silence as it concerns obesity which has been shown to be on the increase in both urban and semi-urban areas.[14–16] Therefore this study was carried out in a semi-urban community of Issele-uku to assess the prevalence of obesity among adults 18–60 years.

2. Materials and methods

2.1. Study design

The study utilized a descriptive cross-sectional design. Thus 200 persons were selected for the study from the age of 18–60 years.

2.2. Study area

The study was conducted in Issele-uku the headquarters of Aniocha North Local Government Area of Delta State. Issele-uku is comprised of 10 quarters namely; Ogbe-Ofu, Idumu-inei, Ogbedibo, Ogbolie, Ogbe-Owele, Ogbe-nti, Ogbe-utu, Ishiekpe, Idumu-Ahaba and Aniofu.

2.3. Study population

The study population comprises adults from 18 years to 60 years residing in Issele-uku town.

2.4. Sample size determination

Sample size was determined using single population proportion formula $n = Z^2 p (1 - p)/d^2$, with the following assumptions: prevalence (p) of 35% from previous study[17] 95% confidence level, 5% margin of error. Accordingly, the minimum sample size (n) was found to be 201.

2.5. Sampling procedure

Five quarters from issele-uku were randomly selected from the ten quarters in the community. The five quarters selected were Ogbe-Ofu, Idumu-inei, Ishiekpe, Ogbolie and Ogbe-utu quarters. Thus respondents were randomly selected from the five selected quarters.

2.6. Instrument for data collection

A semi-structured questionnaire was used to obtain information from the respondents. The questionnaire was structured into section A-F. Section A obtained information on respondents' socio-demographic characteristics, B assessed the prevalence of obesity and section C sought information on respondents' attitude towards obesity prevention. Furthermore, section D assessed respondents' personal health history and eating habits, while section E identified the factors influencing obesity and section F assessed the type of exercise usually engaged by the respondents. In addition, Anthropometric measurement of height and weight were also done using standard calibrated instruments.

2.7. Data analysis

Responses from the questionnaires were entered into the computer and data generated were analyzed using Statistical Product for Service Solutions (SPSS) version 16.0 manufactured by IBM incorporated. Descriptive statistics was used to analyze the data which was presented in tables and charts. Chi-square test was used to determine the association between Body Mass Index and socio-demographic variables with level of significance set at P < .05. In addition, linear regression co-efficient R^2 was used to predict the factors that influences obesity.

2.8. Anthropometric measurement

The height and weight obtained were used to calculate the Body Mass Index of the respondents using the formula BMI = Weight (kg)/Height (m²). Body-mass index categories were defined using the WHO cut points in units of kg/m², normal weight = 18.5 kg/m² - < 25 kg/m², overweight = 25 kg/m² - < 30 kg/m² and obese ≥ 30 kg/m². Other additional cut-off points used include severe thinness = <16.00 kg/m², moderate thinness = 16.00–16.99 kg/m², mild thinness = 17.00–18.49 kg/m² while pre-obese = 25.00–29.99 kg/m², obese class 1 = 30.00–34.99 kg/m², obese class 11 = 35.00–39.99 kg/m² and obese class 111 = ≥40.00 kg/m².

2.9. Ethical consideration

Ethical clearance was obtained from the Department of Public and Community Health, Novena University. Verbal consent was also obtained from the community leaders in the community.

3. Results

3.1. Socio-demographic characteristics of the respondents

As shown in table 1 below, more of the respondents 50(25.0%) were between the age group of 18–24 years, 38(19.0%) between 25–30 years and 35(17.50%) between ages 31–35 years. In addition, about half 101(50.50%) were females while 99(49.50%) were males and more than half 104(52.0%) were married, 89(44.50%) were single respectively. Furthermore, 107(53.50%) of the respondents attained tertiary education; 72(36.0%) attained secondary education and 20(10.0%) primary education respectively. In the same vein, almost one third 65(32.50%) were business men and women, 39(19.50%) public servant and 19(9.50%) were farmers.

From Fig. 1 below, almost majority of the respondents 139 (69.50%) affirmed that they do not have a history of obesity in their family while 61(30.50%) affirmed that they do have a history of obesity in their family.

3.2. Prevalence of obesity among the respondents

According to Fig. 2 below, most of the respondents were normal weight 129(64.50%), 46(23.0%) were overweight and 25(12.50%) were underweight respectively.

Breaking down the bodyweight of the respondents shows that 64.50% were normal weight, 9.50%, 2.0%, 1.0% had severe thinness, moderate thinness and mild thinness respectively while 17.50% were pre-obese, 3.0%, 2.0%, 0.50% were obese class 1, obese class 11 and obese class 111 respectively (Fig. 3).

As shown in table 2 below, the respondents had a mean height of 1.59 ± 0.074, mean weight of 58.44 ± 11.58 and mean BMI of 23.02 ± 4.42.

3.3. Attitude towards obesity prevention

According to Table 3 below, almost one third of the respondents 65(32.50%) agreed that obesity can lead to death while 26(13.0%) disagreed. Furthermore, more than half 114(57.0%) strongly agreed that regular checking of weight is important to prevent obesity while only 5(2.50%) disagreed and almost half 99(49.50%) agreed that low fatty food can prevent obesity while 10(5.0%) disagreed. In addition, 112(56.0%) strongly agreed that exercising regularly can prevent obesity while 10(5.0%) disagreed and 101(50.50%)

Table 1
Socio-demographic characteristics of the respondents.

| Variable	Frequency	Percentage	P-Value
Age			
18–24	50	25.0	
25–30	38	19.0	
31–35	35	17.50	
36–40	24	12.0	
41–45	14	7.0	
46–50	12	6.0	
51–55	11	5.50	
56–60	8	4.0	
>60	8	4.0	
Sex			0.350[a]
Male	99	49.50	
Female	101	50.50	
Religion			
Christian	174	87.0	
Islam	18	9.0	
Traditional	8	4.0	
Marital Status			
Single	89	44.50	
Married	104	52.0	
Divorced	3	1.50	
Separated	4	2.0	
Educational Level			0.165[a]
Primary	20	10.0	
Secondary	72	36.0	
Tertiary	107	53.50	
None	1	0.50	
Occupation			
Farming	19	9.50	
Business	65	32.50	
Public Servant	39	19.50	
Trading	18	9.0	
None	59	29.50	
Name of town			
Ogbe-utu(Issele-uku)	40	20.0	
Ogbe-Ofu(Issele-uku)	40	20.0	
Ogbolie(issele-uku)	40	20.0	
Ishiekpe(Issele-uku)	40	20.0	
Idumu-inei(Issele-uku)	40	20.0	

[a] Analysed Vs BMI.
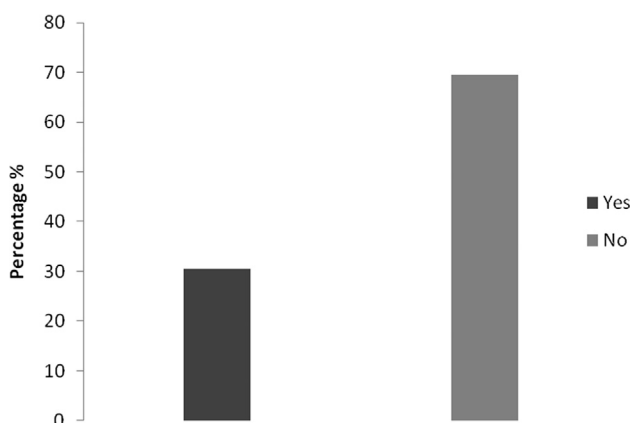
Fig. 1. Family history of obesity.

agreed that avoiding intake of fatty foods and meat can prevent obesity while 26(13.0%) disagreed.

3.4. Health history

The health history of the respondents shows that majority 182 (91.0%), 16(8.0%) and 2(1.0%) were never, rarely and often treated
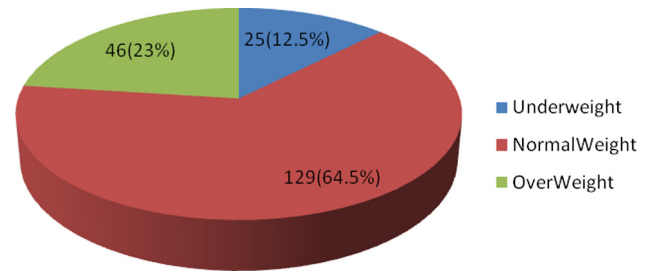
Fig. 2. Prevalence of Obesity among the respondents.

for heart disease while 171(85.50%), 23(11.50%), 6(3.0%) were never, rarely and often treated for hypertension respectively. Furthermore, 164(82.0%), 31(15.50%) and 4(2.0%) were never, rarely and often treated for diabetes while 182(91.0%), 11(5.50%) and 5(2.50%) were never, rarely and often treated for kidney problem (Table 4).

3.5. Factors that influences obesity

According to Table 5 below, only fufu/akpu significantly predicted obesity with a weak correlation and this account for only 3.40% of developing obesity. Other factors such as snacks, garri, chicken, pounded yam also have weak correlation and did not significantly predict obesity.

According to Table 6 below, more of the respondents 82(41.0%) only exercise once in a week while 23.0%, 18.0% and 13.50% only exercise weekly, daily and monthly respectively.

The type of exercise engaged in by the respondents shows that 98(50.80%), 28(14.50%), 24(12.40%) and 22(11.40%) engaged in walking, football, skipping cycling respectively.

4. Discussion

4.1. Socio-demographic characteristics

The socio-demographic characteristics of the respondents' shows more of the respondents were between the ages of 18–24 years, were females, married and were educated. This finding is slightly different from previous studies were the respondents age group were between 35–44 years and 21–30 years respectively.[18,19]

4.2. Prevalence of obesity

The Body Mass Index (BMI) classification of the respondents shows more of the respondents were normal weight and pre-obese. This finding is similar to previous findings in the six geopolitical zones in Nigeria where the respondents were normal weight and overweight and a study in Benue North Central where the respondents were also had normal weight and overweight.[18,20]

The mean anthropometric measurement of height, weight and BMI of the study was slightly lower than the study carried out in South-Western Nigeria, North-Central Nigeria and South-South Nigeria.[14,19,21]

4.3. Knowledge of obesity among the respondents

Almost all of the respondents have heard or were aware of obesity and that awareness can be said to have translated into good knowledge of obesity among the respondents. This finding is different from a previous study in Jos where the respondents demonstrated fair knowledge of obesity.[22]
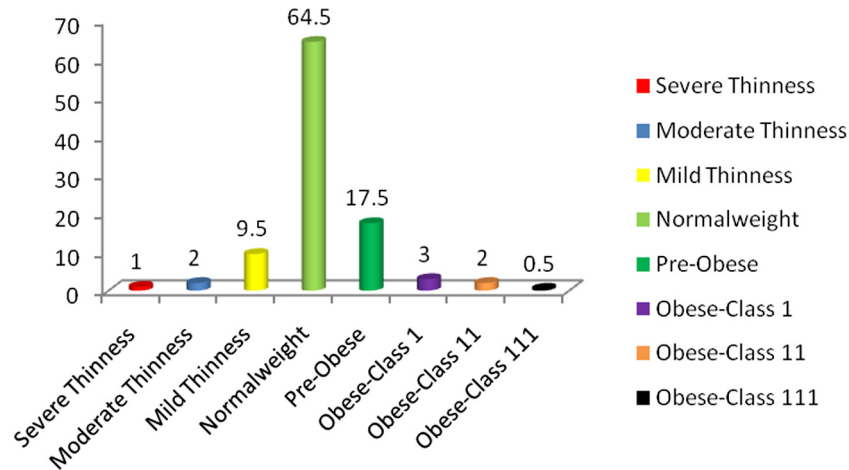
Fig. 3. Prevalence of Obesity among the respondents.

Table 2
Anthropometric characteristics of the respondents.

Variables	Minimum	Maximum	Mean ± SD
Height, m	1.45	1.80	1.59 ± 0.074
Weight, kg	40.0	102.0	58.44 ± 11.58
BMI, kg m^2	13.06	48.80	23.02 ± 4.42

Table 3
Attitude towards obesity prevention among respondents.

Variable	Frequency	Percentage
Obesity if not properly managed can lead to death		
Strongly Agree	15	52.50
Agree	65	32.50
Disagree	26	13.0
Strongly Disagree	4	2.0
It is important for an individual to regularly check his/her weight is to prevent obesity		
Strongly Agree	114	57.0
Agree	80	40.0
Disagree	5	2.50
Strongly Disagree	1	0.50
Eating of Low fatty food can prevent obesity		
Strongly Agree	89	44.50
Agree	99	49.50
Disagree	10	5.0
Strongly Disagree	2	1.0
Exercising regularly can prevent obesity		
Strongly Agree	112	56.0
Agree	73	36.50
Disagree	10	5.0
Strongly Disagree	5	2.50
Avoiding intake of fatty foods and meat can prevent obesity		
Strongly Agree	60	30.0
Agree	101	50.50
Disagree	26	13.0
Strongly Disagree	13	6.50

4.4. Attitude towards obesity

In addition, the respondents exhibited good attitude towards obesity as they agreed obesity could lead to death if not properly handled, disposed to regular checking of weight to prevent obesity, eating more of low fatty food to prevent obesity and engage in regular exercise to prevent obesity. This finding is also similar to previous study in Nigeria where the respondents exhibited good attitude towards obesity.[23]

Furthermore, majority of the respondents affirmed they have never been treated for any of the listed defects of heart disease, hypertension; diabetes and kidney problem. This findings is not surprising as very few of the respondents were obese and obesity is often a risk factor for most of these diseases.

More than one third 41.0% of the respondents say they exercise once in a while. However, this is not healthy enough and if not checked some of the respondents might become obese in the near future. There was no significant relationship between the numbers of times the respondents exercise and their BMI. This finding is consistent with previous studies.[22]

The findings of the study showed more males were overweight than females, although this was not statistically significant. This findings was similar to previous study but had a significant relationship with BMI.[22] Possible reasons for this could be the fact that they have reduced physical activity but as males, are more likely to be taller than their female counterparts; since BMI is a function of both height and weight, the 'shorter' females have an increased tendency for obesity while 'taller' males are overweight. Similarly, respondents with tertiary education were more overweight than those with primary and secondary education; although the relationship was still not significant. This finding can probably be because people with higher tertiary education are assumed to have better socio-economic status and have been shown to be prone to obesity than their counterpart with lower socio-economic status.[14,24,25]

Table 4
Health History of the respondents.

Defect	Never		Rarely		Often		Always	
	F	%	F	%	F	%	F	%
Heart Disease	182	91.0	16	8.0	2	1.0	0	0.0
Hypertension	171	85.50	23	11.50	6	3.0	0	0.0%
Diabetes	164	82.0	31	15.50	4	2.0	1	0.50
Kidney Problem	182	91.0	11	5.50	5	2.50	2	1.0

Table 5
Factors that influences obesity among the respondents.

Factors	Frequency	Percentage	R	R^2	P-Value
Soft drinks			0.026	0.001	0.712
Never	17	8.50			
Rarely	71	35.50			
Often	61	30.50			
Always	51	25.50			
Snacks			0.070	0.005	0.322
Never	10	5.0			
Rarely	69	34.50			
Often	75	37.50			
Always	46	23.0			
Garri			0.085	0.007	0.233
Never	5	2.50			
Rarely	30	15.0			
Often	90	45.0			
Always	75	37.50			
Chicken			0.132	0.017	0.062
Never	4	2.0			
Rarely	55	27.50			
Often	89	44.50			
Always	52	26.0			
Pounded yam			0.128	0.016	0.070
Never	10	5.0			
Rarely	60	30.0			
Often	75	37.50			
Always	55	27.50			
Kpomo			0.121	0.012	0.121
Never	10	5.0			
Rarely	56	28.0			
Often	82	41.0			
Always	52	26.0			
Burgar			0.020	0.000	0.774
Never	38	19.0			
Rarely	62	31.0			
Often	61	30.50			
Always	39	19.50			
Fufu/Akpu			0.183	0.034	0.009
Never	21	10.50			
Rarely	50	25.0			
Often	71	35.50			
Always	58	29.0			

Table 6
Type of exercise engaged by the respondents.

Type of Exercise	Frequency	Percentage
Number of times the respondents exercise		
Never	9	4.50
Daily	36	18.0
Weekly	46	23.0
Monthly	27	13.50
Once in a while	82	41.0
Tennis	21	10.90
Walking	98	50.80
Skipping	24	12.40
Cycling	22	11.40
Football	28	14.50

The possible limitations of the study is that some of the assessed variables such as family history of obesity, health history and exercise routine were all based on the responses given by the respondents. Consequently, there was no independent or clinical confirmation of these variables.

4.5. Conclusion

The study showed most of the respondents had normal weight and some were already susceptible to obesity. In addition, some of the respondents still exhibit poor exercise lifestyle and consume calorie loaded food such as fufu/akpu, saturated containing food like kpomo, burgar, chicken, snacks which might cause them to be obese. Therefore, more efforts should be put in place by policy makers and health educational instructors in taking the message of obesity as a risk factor for most non-communicable diseases which is becoming more prevalent in Nigeria.

Conflict of interest

The authors declare no conflict of interest.

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