



High Prevalence of Obesity among Indigenous Residents of a Nigerian Ethnic Group: The Kalabaris in the Niger Delta Region of South-South Nigeria

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ABSTRACT

Obesity is known to result in serious health consequence, yet, there are no known data on its prevalence among the Kalabari ethnic group in the Niger Delta region of Nigeria. This study aimed to investigate the prevalence of this disease among the indigenous residents of Kalabari communities in South-south Nigeria. Three hundred and four (304) adult subjects (117 males and 187 females) between the ages of 20-70 years participated in this study. Anthropometric parameters such as age, weight and height as well as information on their socio-cultural lifestyle were obtained. Results show a mean BMI of $30.00 \pm 6.88 \text{ kg/m}^2$, with 0.99% of the subjects being underweight, 27.63% normal weight, 22.04% overweight, and 49.34 % were obese. Positive correlation ($r = 0.3$; $p < 0.05$) was found to exist between age and BMI, and subjects of different age range differed in their obesity status. Diet and socio-cultural lifestyle were also found to influence obesity. The study therefore demonstrated a high prevalence of obesity among indigenous residents of Kalabari tribe; indicating a high risk of developing obesity related health disorders.

Keywords:

Obesity, Body mass index, Socio-cultural life style, Kalabari, Niger Delta, Nigeria

INTRODUCTION

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems (Haslam and James, 2005). Obesity increases the likelihood of various diseases, particularly heart disease, hypertension, type 2 diabetes, obstructive sleep apnoea, certain types of cancer, and osteoarthritis. A common population measure of obesity is the body mass index (BMI), which is a person's weight (in kilograms) divided by the square of his or her height (in meters). It is the most commonly used indicator of body fat, providing the basis for determining whether someone may be defined as being underweight, normal, overweight, or obese. A BMI of 30kg/m^2 is widely recognised as a cut-off point for obesity, and a person with a BMI of 30kg/m^2 or more is generally considered obese, while a person with a BMI equal to or more than 25kg/m^2 is considered over weight (WHO, 1998).

In modern Western cultures, the obese shape is widely regarded as unattractive, but not all contemporary cultures disapprove of obesity. There are many African, Arabic, Indian, and Pacific Island cultures which are traditionally more approving of obesity as it is associated with physical attractiveness, strength, fertility, and prestige (Powdermaker, 1997). This obesity-approving culture can be seen among the Kalabari people, of the Ijaw tribe in the Niger Delta region of Nigeria, and whose socio-cultural lifestyle include the "iria" (fattening room) ceremony. The Iria practice is a period of confinement for women, during the post partum period, for a period of 2 months to 3 months, during which they are fed with high caloric meals regularly in order to make them fat, and are restricted from partaking in domestic activities. However, there are no available reports on any possible effect of these socio-cultural lifestyles on the obesity disease burden among indigenes residents in Kalabari kingdom. The aim of this study therefore is to determine the prevalence of obesity among these indigenous residents of Kalabari, and to provide an overview on the contribution of socio-cultural lifestyle and other associated factors on obesity. The result from this study will provide useful data for researchers, medical and health practitioners, planners, as well as policy makers.

MATERIALS AND METHODS

Subjects and Study Area: A total of two hundred and ninety two (292), apparently healthy subjects comprising of 117 males and 175 females, which were non pregnant and non breast-feeding, between the ages of 20-70 years were enrolled into the study. The subjects were randomly selected from four communities in Kalabari tribe which include Abonnema, Ilelema, Buguma and Tema. All subjects freely gave their informed consent after being informed about the purpose of the study. Each subject filled a questionnaire where basic information about their age, sex, occupation, as well as their socio-cultural lifestyle was obtained.

Measurements: The parameters measured from the subjects were their weight and height. The subjects were asked to wear light clothes and remove foot wears while the measurements were taken. The "Harson Emperors" bathroom weighing scale graduated in kilogram (kg) was used for weight measurements. The subjects were asked to mount the scale gazing forward with their hands by the side while the weight was read. This was done twice and the average weight was recorded. A measuring tape graduated in metres (m) was used for height measurements. The subjects were asked to stand upright gazing forward with their hands by the side while the height was measured and recorded. Each subject filled a questionnaire where basic information about their age, sex, occupation, as well as their socio-cultural lifestyle was obtained. The body mass index (BMI) was calculated from the formula: weight (in Kilograms) divided by the square of the height (in metres) kg/m^2 , from where the obesity status of subject were determined using the WHO (1998) classification.

Statistics: The results were analysed statistically using SPSS (version 17) and Microsoft Excel computer softwares and are presented as mean, standard deviation, frequency and percentages.

RESULTS

The results for the anthropometric parameters of the study population (table1) show that the mean values for age, weight, height and BMI are (37.66 ± 14.94) , (79.14 ± 17.86) , (1.68 ± 1.08) and (30.00 ± 6.88) respectively.

Table 1: Anthropometric characteristics of the subjects studied

Parameters	Mean + SD	Range	Mode
Age (Years)	37.66 ± 14.94	20 – 70	38.00
Weight (Kg)	79.14 ± 17.86	36 – 120	80.00
Height (m)	1.68 ± 1.08	1.07 – 1.89	1.60
BMI (Kg/m^2)	30.00 ± 6.88	17.60 – 48.00	35.00

Also, characterization of the study population according to their obesity status as well as family history of obesity (table 2 and table 3) shows that majority (47.26%) of the subjects (30.48% females and

16.78% males) are obese; 22.95% are overweight, 28.77 have normal weight while only 1.03% are underweight.

Table2: Frequency distribution of subjects according to BMI, Obesity status and family history of obesity

Parameter	Obesity Status	Number	Percent
BMI (kgm ⁻²)			
<18.5	Under Weight	3	1.03
18.5-24.99	Normal Weight	84	28.77
25-19.99	Over weight	67	22.95
≥30	Obese	138	47.26
Total		292	100
Positive family history of obesity		227	77.74

Table 3: Distribution of obese subjects in total population studied according to Sex and Age range

Age Range (Years)	Female obese n (%)	Male obese n (%)	Male+Female obese n (%)
20-30	15 (10.87)	10 (7.25)	25 (18.12)
31-40	30 (21.74)	14 (10.15)	44 (31.88)
41-50	21 (15.22)	12 (8.70)	33 (23.91)
51-60	18 (13.04)	6 (2.90)	24 (17.39)
61-70	5 (3.62)	7 (5.07)	12 (8.70)
Total obese	89 (64.49)	49 (35.51)	138 (100)
Total population	(30.48)	(16.78)	(47.26)

These data show that about 70.21% of subjects are either obese or overweight. Also, the sex distribution among the obese population shows that 64.49% are females while 35.51% are males (table 3), showing a higher prevalence of obesity among the female subjects with a male/female ratio of 1:2 among both the obese population and as well as the total population studied. Interestingly about three-quarters

(77.74%) of the study population have family history of obesity (table 2).

The contribution of occupation and diet of subjects in the study population to the prevalence of obesity (figure1) shows that the highest percentage (40.5%) are involved in trading/fishing; followed by civil servants/company workers (18.84%), students (16.78%) and artisans (11.99%), with the least being retirees (2.74).

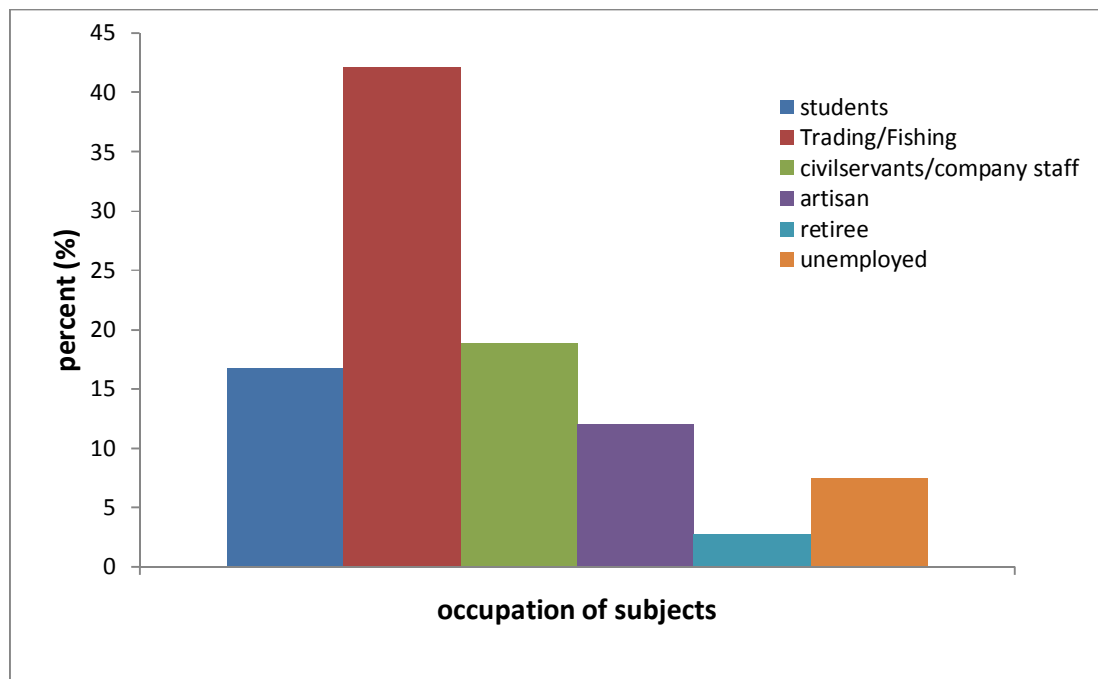


Figure 1: Occupation distribution of subjects in the population studied

Furthermore, analysis of the data also revealed that 78% of the obese population consume mainly carbohydrate rich diet; while 22% consume protein-rich carbohydrate diet. A relationship between the age of subjects and their obesity prevalence was observed, with a peak between 31years and 40 years age range for the male, female and total study populations respectively (table3). Similarly, a correlation study

shows a significant positive correlation ($P < 0.05$; $r = 0.3$) between Age and BMI in both the male and female subjects. In analysing the influence of “fattening room cultural lifestyle” (iria) on obesity (table 4), it was observed that among the 195 total female population, 97 (55.43%) have visited the fattening room while 78 (44.57%) have not.

Table 4: effect of “fattening room visit” culture on the prevalence of obesity among female subjects

Fattening Room Visits	Obese n (%)	Non obese n (%)	Total n (%)
Yes	58 (59.79)	39 (40.21)	97 (100)
No	31 (39.74)	47 (60.26)	78 (100)
Total	89 (50.86)	86 (49.14)	175 (100)

Also, majority (59.79%) of the “iria” participants are obese when compared with those of the non “iria” participants were only 39.74% are obese.

DISCUSSION

This study reports, for the first time, the body mass index and the socio-cultural and economic factors associated with it resulting in high obesity prevalence (47.26%) among indigenous residents of Kalabari communities in the Niger Delta region of South-South Nigeria. It shows that, of the total population 30.48% were obese female and 16.78% were obese males, giving a male: female ratio of 1:2. Bakari et al (2007) in a similar study on urban and suburban communities in

Nigeria had reported contrasting results of a low Obesity Prevalence of 13.1% in northern Nigeria; but however, agrees with the higher prevalence in females than in males as reported in this study. This highlights the fact that in Nigeria, obesity is more prevalent in females than in males. This study also shows that 70.21% of the population are either obese or overweight while only about 1% are underweight. This may be due to high socio-economic activities and peculiar socio-cultural lifestyle among the indigenous residents of Kalabari communities. For instance, majority of the population in this study are engaged in either trading/fishing (40.5%) or are civil servants/company workers (18.1%). These are high economic yielding occupations with less physical exertion. This agrees with the report of McLaren

(2007), who stated that in the developing world, women, men, and children from high social classes are seen to have greater rates of obesity, which is felt to be due to the effects of globalisation. It was also observed in this study that obesity increased with age, similar to an earlier report by Siminialayi et al (2008), but peaked amongst participants between 30-years and 39 years of age, which disagrees with that of Amole et al (2011) who reported a peak in the prevalence between the ages 40 years and 49 years from his study on multi-ethnic population using waist circumference measurement. Our study determined the obesity by Body Mass Index (BMI) among a mono-ethnic population. This may have been responsible for the discrepancy.

In this study, 59.79% of the females that had participated in the "fattening room visit" (iria) cultural ceremony are obese while 40.21% of them are not obese. These, when compared with iria non-participants where 39.74% are obese and 60.26% not obese, show that the iria cultural ceremony may have contributed about 20% obesity burden to the female population. This may be due to the physical inactivity and high food intake that are associated with this cultural lifestyle. Reports show that physical activity levels are a major influence on obesity and its determinants (Butland et al, 2007), while food has become not only a matter of social status but also an important factor in obesity and overweight, especially the high calory food. This was corroborated by Amole et al (2011) who reported that consumption of high-energy diets is one of the major contributing factors to the development of obesity. This assertion was further highlighted by our findings that 78% of the obese population eat mainly carbohydrate rich diet; while 22% consume protein-rich diet. This may have contributed to the high prevalence of obesity observed in this study since carbohydrate-rich diets have been implicated in weight gain and obesity (National Control for Health Statistics, 2008). Although, separating these lifestyle factors from genetic one is often difficult, still, the results from this study which showed that 77.74% of the study population have positive family history of obesity; hence add to the growing evidence pointing to heredity as a strong determinant factor of obesity (Stunkard, 1996).

Worldwide, there has been a large shift towards less physically demanding work, and currently, at least 60% of the world's population gets insufficient exercise (WHO/Physical inactivity, 2009). The interplay between socio-cultural lifestyle, high physical inactivity, high caloric energy intake, genetic and environmental factors observed in this study may have contributed to this high prevalence of obesity among the males (16.12 %), females (33.22%) and total population (49.34%) that participated in this study.

CONCLUSION

This study has revealed the high prevalence of obesity (49.34%) among the indigenous residents of Kalabari kingdom as well as the influence of occupation, diet, genetic and socio-cultural lifestyle as contributing factors. Also, the higher prevalence of obesity among females than in males in Nigerian population has been further affirmed by this study. The indigenous residents of this tribe may therefore be at risk of developing obesity-related health disorders. This necessitates the need for a proper awareness campaign to be carried out by relevant Government agencies, Non-Governmental Organisations (NGO), as well as individuals, to educate the indigenes on the health implications of obesity and some cultural practices and lifestyles, as well as on the need to increase physical activity and reduce intake of high caloric food.

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