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Assessment Of The Prevalence Of Overweight, And Obesity Risk Factors Among Adult Nigerians In Makurdi, North Central Nigeria

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Abstract: ***Overweight and obesity are major health challenges among young adults globally particularly in developing countries including Nigeria. They are significant risk factors for the development of chronic diseases such as cardiovascular diseases, hypertension, stroke, hyperlipidemia, and type 2 diabetes mellitus. The objective of this study was to determine the prevalence and assessment of the knowledge of overweight and obesity among adult Nigerians population in North Central Nigeria. The study recruited 860 subjects (N-450 (58%) male and N-410 (42%) female, using a stratified random technique and administration of questionnaires according to Denge et al (2012). Age was between 18 and 45 years Anthropometric measurements of weight, height, waist circumference, hip circumference ,waist hip ratio (WHR), and mid arm circumference for all the participants were determined under standard condition. BMI calculated based on the standard formula of weight in kilogram divided by the square of height in meter (kg)/m^2), BP was also measured. The Result showed a prevalence of overweight and obesity to be 35.8% and 21.9% and 38.1% and 32.8% in male and females respectively. Females are significantly more overweight and obese than male young adults in Makurdi metropolis with P≤ 0.05. The results indicates that the prevalence of overweight and obesity is on the increased among adults population.***

Keywords: ***Anthropometric profiles overweight, obesity, type 2 diabetes mellitus.***

I. INTRODUCTION

Obesity is rapidly emerging as a major cause of public health challenge in the developing countries including Nigeria. Obesity is a common chronic condition that develops from the complex interaction between the genotype and the environment and involves social, behavioural, cultural, physiological, metabolic and genetic factors (Kotsis et al., 2010). Obesity has a negative implication on health in a population and is characterized by haemodynamic and metabolic alteration. Globally, more than one billion adults are estimated to be overweight and over 400 million of them obese. Although statistics are scarce, the World Health Organization estimated that 12.7% of African children will be overweight or obese by 2020 compare with 8.5% in 2010.(WHO,2014) Obesity is linked closely to increased risk of chronic diseases and reduce life expectancy. In African countries, South Africa was branded as "the fattest nation in Sub-Saharan". Recent report indicates that 26.8% of the 55 million population were obese costing the government R23 billion (1 billion) in prevention and combating obesity related illness (Musa, 2015).

Report from several studies indicates that overweight and obesity are associated with increased risk of diabetes mellitus (Ali et al., 2001). Each year estimated 1.5 million and 5 million adults Nigerian died of causes related to obesity and diabetes respectively. Obesity and diabetes substantially increase morbidity and impair quality of life.

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It is acknowledge internationally that these non-communicable diseases afflict every population in the world. It is now affecting many children, adolescence, and adults in the developing countries, causing a major decline and deleterious impart on individuals, families, society and national productivity (Adeyemi et al., 2012).

Obesity and overweight are major risk factors for several diseases such as cardiovascular disease, hypertension stoke, hyperlipidemia, kidney disorders, and certain form of cancers. (WHO, 2012).

Obesity problems in Africa, could be traced to a change in diet from traditional nutrients-rich food such as maize meal and vegetable to dense high calorie fast food staples such as fried chicken and chips. Increased prosperity has made such foods accessible to more of the population. (Amoah et al., 2003). Despite its impact on health, obesity is not considered a health problem for many countries in Africa, who are more concerned with infectious diseases such as HIV and AIDs and Tuberculosis. Cultural factors play a role, too in many societies, weight gain is viewed as a sign of affluence or well to do in society. (Agyemang et al., 2009)

Documented evidences show that the burden of these disorders is likely to continue to increase globally if effective prevention and control programs are not put in place by state and federal government.

There are several vital risk predictive indicates which been employed in the preventive programmes. One of such is the use of anthropometric profile. This includes the body mass index (BMI), skin fold measurement, waist and hip circumferences, waist-hip ratio (WHR), and mid arm circumference.

Body mass index is the weight in kilogramme divided by the square of height in meter (kg/m^2) is a reliable measure of the degree of fatness and risk of associated chronic illness such as type 2 diabetes mellitus, cardiovascular diseases, hyperlipidemia, arthritis, and cancers (Must et al., 1999). All these diseases are preventable by modification of lifestyles.

There is documented evidence of strong relationship between excess adiposity and increase of type 2 diabetes mellitus. Excess adipose tissue is acknowledged to affect glucose metabolism and insulin resistance (Frederico et al., 2011)

Recent report shows that the risk predictive values of individual adiposity index are gender dependent in the same geographical environment and race. Gender confers large differences in the subcutaneous and visceral adipose tissue with metabolic syndrome and was demonstrated to be strong in men but absent in women (Frederak et al., 2011)

Women generally were noted to have more fat deposits than men; even within normal weight range (Lois et al., 1996). Obesity is more common in women than men. They gain more fat during pregnancy and this fat is not entirely shed after delivery. The increased body fat and weight together with stress, increase their risk of T-2DM.

There is paucity of information about the anthropometric profiles in this study region of Nigeria. The aim of this investigation therefore, is to determine the prvalence of obesity and overweight among adults Nigeria in Makurdi-North Central Nigeria.

II. METHODOLOGY

A. STUDY DESIGN AND POPULATION SAMPLES

This study was conducted among the civil servants and business men and women adult Nigerians resident in Makurdi. It was a cross-sectional study and the study lasted for two years duration (from January, 2016 to December, 2017). Subjects were recruited by stratified random sampling techniques according to standard method of Denga and Ali (1998). A total of 860 subjects [n=480 (58%) male] and [n=410 (42%) female] with age range between 18 and 45 years were selected for the study. Structure questionnaires were administered to the subjects. The questionnaires sought to elicit information on personal data, age, sex, marital status ethnicity and educational level, family history of diabetes mellitus and individuals on medication.

B. CONSENT/ETHICAL APPROVAL

An informed consent was obtained from each participant. Approval for this study was obtained from the research and ethical committee of the Benue State University Teaching Hospital, Makurdi (BSUTH/MKD/HREC/2013B/2017/0038

C. INCLUSION CRITERIA

This includes, subject age between 18 and above and should be in the state of apparently healthy state and must resident in Makurdi metropolis for a period of one year for acclimatization.

D. EXCLUSION CRITERIA

Exclusion criteria include; individuals below 18 and above 45 years of life, pregnant women and physically deform, people on medications such as steroids, anti-diabetes etc.

E. MEASUREMENT OF ADIPOSITY INDICES

In other to obtain an empirical data, anthropometric measurements were performed according to WHO standard (1995) technique. These measurement includes weight, height, waist circumference, hip circumference, waist/hip ratio and mid arm circumference. The weight was measured in kilogram to the nearest 0.1kg using weighing scale (Seca model, Germany) and ensuring that the subject wears light cloth. The height was measured using standiometer in meter square to the nearest $0.1m^2$. Waist circumference was measured to the nearest 0.1cm using a non-stretchable measuring tape while the subject stood in erect posture. The waist measurement was taking mid way between the umbilicus and public symphsis. Mid arm circumferences were taken three times each and the average was used for data computation. BMI was computed using standard formula of weight (kg)/height square (m^2). BMI of 18 to 24.99 was regarded normal, 25 to 29.99 as overweight and BMI≥30 kg/m^2 as obesity.

Waist circumference ≥ 88cm for male and ≥ 102cm for female were regarded as central obesity while Hip

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circumference was measured to the nearest 0.1cm at the point of the highest protrusion of the buttock. Hip circumference of ≥88cm for female and≥94cm for male were regarded as central overweight. WHR was calculated as WC/HC. WHR of 1m men and ≥0.85m women was regarded as indicative of abdominal obesity.

F. STATISTICAL ANALYSIS

Statistical analysis were carried out using window SPSS. Data were expressed as mean±standard error. One way analysis of variance was adopted for comparison and results were subjected to student t. test. P ≤0.05 were considered significant.

III. RESULTS

Body ± mass Index	Frequency	Percentage
Underweight	77	8.9%
Normal weight	383	44.5%
Over weight	230	26.7%
Obese	170	19.7%

Table 1: Prevalence of Obesity

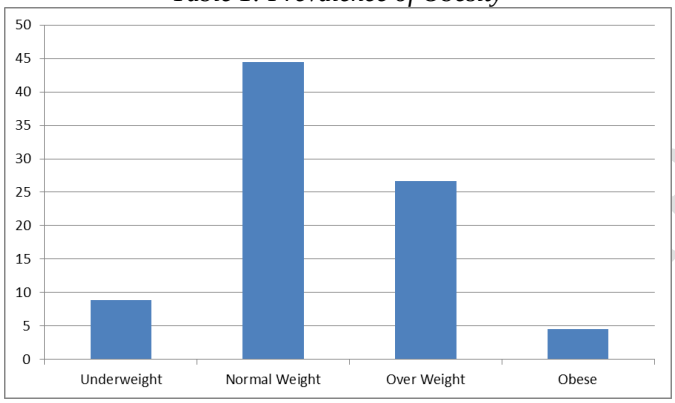

Figure 1: Prevalence of Obesity

Underweight	F (%)	Normal Weight	F(%)	Overweight	F(%)	Obese	F(%)	Total
Male	45(11)	Male	189(48.3)	Male	140(35.8)	Male	86(21.9)	460
Female	24(5.7)	Female	136(32.3)	Female	160(38.1%)	Female	100(23.8)	420
Total	69		325		300		186	860

Table 2: Prevalence of Obesity in relationship to gender

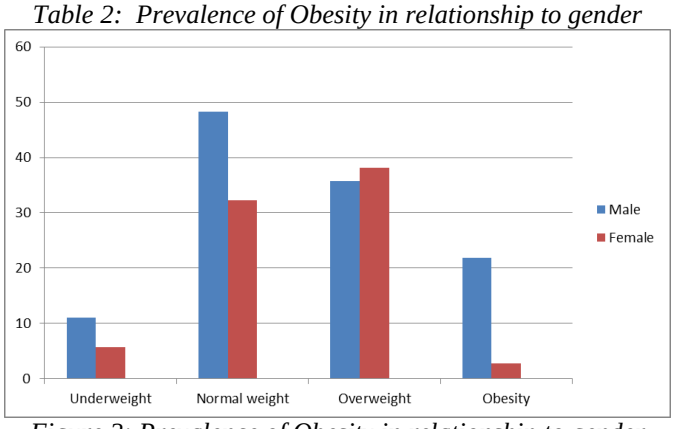

Figure 2: Prevalence of Obesity in relationship to gender

Age	Male	Female
18-25	40	86
26-30	140	140
31-35	102	120
36-45	78	60

Table 3: Age Distribution by sex

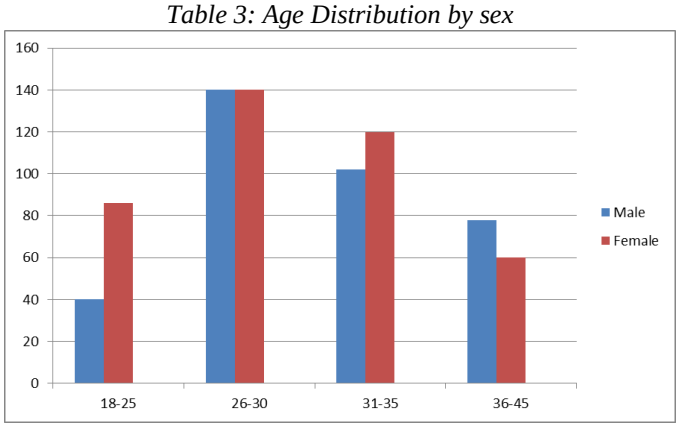

Figure 3: Age Distribution by sex

Variable	OR	95%	CI	P-value
Male	1.00 References	0.861	1.822	0.166
Female	1.99			
Physical activity Active physically	1.00 References	0.414	0.841	0.010
Inactive Physically	0.487			
Educational Level HND	1.613	1.055	1.500	0.017
Degree (B.Sc-Hon)	4.210	2.219	2.311	0.010
Dietary habit Good	1.00 References	1.663	4.30	0.010
Poor	2.626			
Cigarettes Smoking None smokers	1.00 References			
Stopped smoking	12.300	1.821	53.02	0.015
Still smoking	10.620	1.000	4.203	0.001
Alcohol Ingestion Still drinking	1.00 References			
Never drink	2.650	1.413	4.160	0.002
Still drinking	2.520	1.104	6.81	0.001

Table 4: Association between Obesity/Overweight and Various Factors

IV. DISCUSSION

The prevalence rate of obesity and overweight varies among youth populations from various geographic areas of the world-India, USA, China and Nigeria. A significant variation occurs in different ethnic groups, gender, age social status, race and even the level of education in the society.

This great variation demonstrated the multi-factorial pathophysiology Associated with overweight/obesity. Some of these factors includes socio-economic factors-westernized

dietary lifestyle changes, smoking, alcoholism, inactivity (because of new invention such as television, handsets, washing machines remotes) that make an individual not to engage in physical activities, genetic, rapid urbanization and environmental. Others such as socio-demographic-age, sex, marital status and level of education can influence the degree of overweight and obesity in an individual. The role of these factors differ very often from one given population to another and also varies to a great extend among race, ethnic group and genders.

Results showed that the overall prevalent rate of overweight and obesity in male and female were 35.8% and 21.9% and 38.1% respectively among the adult populations. However, the high prevalence in females compared with male adult might not be unconnected with the social and cultural lifesyle of females in general who are expected to stay at home and carry out household chores. These figures however comparatively are higher than values obtained from other parts of Nigeria.

A research by Ibu at al., (2011) in Uyo documented a prevalence of 21.9% and 8.0% overweight and obesity in male and 21.9% and 7.7% for female. In Zaria, the prevalence was 29.6% higher in females with 16.1% than males with 13.5%. In Jos metropolis, prevalence was 21.4% more in female with 23.5% than in male with 19.4%. In Ile-ife, prevalence was 23.3% for males and 16.45 for female (Puepet et al, 2013).

The values obtained from this study among the adult populations however is in agreement with the overall prevalence in Nigeria which was estimate to be between 6 and 8% (Armie, 2004). The male-female prevalence in our study also showed a similar pattern of female being more overweight and obese than male. This however differ from prevalence pattern for gender found at Uyo and Ile-Ife with more men being obese than women (9.8% and 7.7%).

In South Africa one in three adults is overweight or obese, in Ghana, female/male prevalence was estimated to be 34.0% and 14.1% (Adedoyin et al, 2003). In Kenya, 12% of the population are overweight while in Morocco over 40% are overweight (Thandi et al., 2002)

Results from other developed countries such as United State are the same in prevalence pattern, men being more obese while females are more overweight. Those results are lower than values obtained from this study. In general women are more overweight and obese than men in Africa. This is in contrast to what is obtained in the industrialised nations. A similar pattern of rapid increased in prevalence pattern of obesity and overweight were also observed in other continents globally. About 25% of people in the Middle East are said to be obese or overweight.

Factors responsible for these differences can be attributed to changes in lifestyle, environmental, genetic environmental and behavioural factors (modifiable).

It may also extrapolated from this study that most women belong to the category of social women, who are very conscious of their weight, sizes and shape. This fact agreed with the work of Kumanyiku and colleagues who reported that overweight black lady are conscious and wants to remain attractive (Kumanyiku et al., 2004). This assertion however is contract to the work of Ntui (2000). Who reported that most of the obese black women population considered their obese as evidence of good healthy living and affluence in the society

This investigation also demonstrated that physical activity, poor dietary habit, smoking, alcoholism, high sugar processed food, gender and environmental factors are responsible for overewieght and obesity.

From table 4, showed high prevalence rate of overweight and obesity among age bracket of 30 and 40. This agreed with many reports from other parts of Nigeria. In the developed countries overweight and overweight and obesity was predominant within the age category of 35-65 years. (WHO, 2002)

Obesity can drastically be reduced by increased physical activity even in a genetically predispose individuals, particularly when combines with dietary regulation. Many researchers documentation showed that exercise alone does not achieve remarkable weight reduction but when combine with regulated diet and lifestyle modification much fat loss was achieved. Alteration in the body adiposity were also promoted and muscle mass increased (Caterson, 2003).

Table 4, above showed that the physically inactive subjects have higher odd ratio of overweight and obesity than the physically active participants. This is similar to report conducted among black South Africa by Hallingh and colleagues (2003). They observed in their anthropometric index and biochemical profiles that all the women had a fat percentage greater than the normal recommended values. This observation correlated significantly with female low level of physical activity, consumption of high energy food, alcohol, spent more time on handsets, watching television and video games (Ibu et a, 2012). Most of the male youths indulge in physical activities than the female youths in this study.

In the work of Ogunjimi and colleagues (2004) in Akwa Ibom State Nigeria, prevalence of overweight and obesity among adults nurse, demonstrated a closer relationship between eating habits, inactivity and obesity. The high prevalence rate was due to indiscriminate eating habits among the nurse. The study also demonstrated that higher educational level is related to overweight and obesity. The factor was attributed to modern technological invention such as cars computers, washing machines which have taken the place of men.

Smoking and excessive alcohol consumption has a close relationship with development of overweight and obesity. These assertions have been postulated by many scientific researchers.

V. CONCLUSION

The prevalence of obesity/overweight among the youths population of Nigeria is on the increased. These non-communicable diseases are now rapidly emerging as a major public health problem surpassing the prevalence of malarial. Tuberculosis, and HIV and AIDs.

Obesity is associated with significant risk factors such as type two diabetes mellitus, cardiovascular diseases, hypertension, and stoke. Similarly there is loss of self esteem, decline life expectancy and stigmatization among the youths.

Strategic programs should be put in place in reducing the associated factors of obesity in Nigeria by Government Health policy makers and non-governmental organization.

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