



CLINICO – DEMOGRAPHIC PROFILE OF PARTICIPANTS IN A MEDICAL SCREENING EXERCISE IN AN URBAN REGION, SOUTH-SOUTH, NIGERIA

E.M. Bisong¹, H.O. Okpa², N.E. Udonwa¹,

¹ Department of Family Medicine, University of Calabar & University of Calabar Teaching Hospital, Calabar, Cross River State – Nigeria.

² Department of Internal Medicine, University of Calabar & University of Calabar Teaching Hospital, Calabar, Cross River State – Nigeria.

ABSTRACT

Introduction: There is a rise in non-communicable diseases (NCDs) in developing countries like Nigeria with attendant health consequences. This in part is attributable to the adoption of Western habits to traditional ways of life. We seek to screen for over-weight, obesity and hypertension in residents of urban Calabar Metropolis in Nigeria.

Methods: The participants were enlightened on the study protocol and were evaluated for hypertension by measuring their blood pressure while seated. Their height and weight were measured using a stadiometre and their body mass index (BMI) calculated and placed in the respective categories.

Results: Two hundred and twenty six subjects were screened, with more males (61.9%) than females (38.1%) participating. Most of them had normal BMI readings, 28.3% were overweight while 17.3% were obese. Hypertension accounted for 37.2% of screened subjects.

Conclusion: Overweight, obesity and hypertension are on the rise in our environment. Regular screening to detect these conditions and intervene is necessary to checkmate morbidity and mortality associated with them.

Key words: Overweight, Obesity, Hypertension, Urban, Calabar – Nigeria.

INTRODUCTION

Not all health problems show symptoms in their early stages. Screening in medical practice is a strategy used in a population to identify the presence of undiagnosed diseases in individuals by detecting the likely symptoms associated with such diseases. Obesity is a risk factor for major causes of death from cardiovascular disease, some cancers and diabetes. Obesity has also been linked with many sources of morbidity, including osteoarthritis, gall bladder disease, sleep apnea and respiratory impairment¹. Excess weight is a risk factor for cancers of the colon, rectum, prostate, gall bladder, biliary tract, breast, cervix, endometrium and ovary. It is associated with concerns of quality of life including diminished mobility and social stigmatization. Emerging evidence has shown that Non-communicable diseases (NCDs) affect developing nations more than the developed ones². The Nigerian population is becoming more overweight and obese. These changes affect both rural and urban dwellers but it is more pronounced in the urban populace². These changes are brought about by changes in dietary habit, with the adoption of Westernized diet³. Facilitation of social acceptance of fast food by the global media outlets and advert billboards has

potentiated this nutritional transition³. The morbidity and mortality of systemic hypertension related complications are on the rise in Nigeria³. We sought to determine the prevalence of overweight, obesity and hypertension among adults in an urban setting in South-South Nigeria.

METHODOLOGY

A faith based organization has its annual yearly men's week which occasionally involves medical screening. For the 2015 weekly activities, medical screening was carried out in two urban locations of Ediba Qua Town and Marian hill, both in urban Calabar metropolis. Calabar is the capital city of Cross River State in the South-South geopolitical zone of Nigeria. Participants were informed of the screening protocol and were encouraged to participate in it. The exercise was voluntary and at no cost to participants. Adults aged 18 years and above were recruited for the study. Volunteers had their weight, height and blood pressure measured. The screening exercise was conducted on two consecutive Saturdays on the 18th and 25th of July 2015 respectively, from the hours of 8.00am to 4.00pm on each day. They were informed that each participant's results would be discussed. Subjects were

Correspondence: Dr. Elvis M Bisong Department of Family Medicine, University of Calabar and University of Calabar Teaching Hospital, Calabar
E-mail: drelvo@yahoo.com Tel: 08033389875

reminded that confidentiality was of utmost importance in the entire exercise. Participants who came for the outreach were attended to after giving a verbal consent. Participants' weight was measured to the nearest 0.1kg while wearing light clothing without shoes using a portable stadiometre. The height was measured with subjects standing erect with no shoes, headgear or cap to the nearest 0.1cm using a stadiometre. The body mass index was then calculated by dividing the weight in kilogram over the square of the height in meters. Blood pressure was measured with participants seated and relaxed after 5 minutes using an Accoson mercury sphygmomanometer. Hypertension was defined based on the Seventh report of the Joint National Committee on Prevention, detection, evaluation and treatment of high blood pressure (JNC7) classification, as systolic blood pressure greater than or equal to 140mmHg and/or diastolic blood pressure equal to or greater than 90mmHg⁴. Those who could not stand erect, ill persons and pregnant women were excluded from the screening exercise. The statistical package for social sciences (SPSS) version 22 statistical software was used for data analysis.

RESULTS

A total of two hundred and twenty six participants were enrolled for this study. One hundred and forty subjects representing 61.9% of the study participants were males while 38.1% were females. Majority, 52.7% belonged to the 18-38 year age group followed by the 39-59 year range with 38.1%. The least participants were persons who were sixty 60 years and above who were just 9.3% of the total. About a third of the participants, 31.4% had normal blood pressure reading at the time of study, the same number were pre-hypertensive while 37.2% had blood pressure readings suggestive of hypertension. Most of the study subjects, 51.3% had normal BMI range of 18.5-24.9 kg/m², 28.3% were overweight while 17.3% were obese.

Table 1: Frequency Distribution of Participants

Variables	Frequency	Percentage
Sex		
Male	140	61.9
Female	86	38.1
Age Category		
18-38	119	52.7
39-59	86	38.1
60 above	21	9.3
Blood Pressure Category		
Normal (<120/80)	71	32.4
Pre-hypertension(120-39/80-	71	31.4
Hypertension (\geq 140/90)	84	37.2
Hypertension		
Yes	84	37.2
No	142	62.8
BMI Category		
< 18.5	7	3.1
18.5-24.9	116	51.3
25-29.9	64	28.3
\geq 30	39	17.3

Table 2 show that the mean age, systolic blood pressure (SBP) and diastolic blood pressure (DBP) were significantly higher in males as compared to females (42.614.2 Vs 32.4 12.5, 129.822.4 Vs 121.9 21.7, 80.3 13.8 Vs 76.5 13.9, $P < 0.05$).

Also, the presence of hypertension was significantly higher in males than females, $P < 0.05$.

Table 2: Demographic and Clinical Characteristics

Variables	Males (40),%	Females (N=86),%	p-value
Age (years)	42.56±14.22	32.38±12.46	0.0001
Systolic BP (mmHg)	129.79±22.39	121.86±21.72	0.009
Diastolic BP (mmHg)	80.32±13.76	76.51±13.87	0.046
Weight (Kg)	70.40±13.55	68.49±17.64	0.391
BMI (Kg/m ²)	24.82±4.41	26.38±6.59	0.53
Blood Pressure Category			
Normal (<120/80)	36 (50.7)	35 (49.3)	
Pre-hypertension(120-9/80-)	42 (59.2)	29 (40.8)	0.009
Hypertension (140/90)	62 (73.8)	22 (26.2)	
BMI Category			
< 18.5	4 (57.1)	3 (42.9)	
18.5-24.9	73 (62.9)	43 (37.1)	0.239
25-29.9	44 (68.8)	20 (31.3)	
≥30	19 (48.7)	20 (51.3)	

There was positive correlation between Body mass Index (BMI) with age, systolic blood pressure and diastolic blood pressure, $P < 0.05$.

Table 3: Correlation of BMI with Selection Variables

Variables	Correlation value (R value)	p-value
Age (years)	0.193**	0.004
Systolic BP (mmHg)	0.241**	0.0001
Diastolic BP (mmHg)	0.349**	0.0001

Table 4: Clinical Parameters of Participants Based on HTN Category

Variable	Normal BP (n=71), SD,%	Pre-HTN (n=71), SD,%	HTN (n=84), SD,%	P-value
Age (years)	29.71 + 11.32	35.92 + 13.34	48.63 + 11.36	0.243
Weight (kg)	63.30 + 13.74	70.26 + 14.07	74.55 + 5.27	0.058
BMI (kg/m ²)	23.16 + 4.74	25.61 + 5.36	27.16 + 5.27	0.302
Age Category				
18 – 38	58 (81.7%)	46 (64.8%)	15 (17.9%)	
39 – 59	11 (15.5%)	20 (28.2%)	55 (65.5%)	<0.0001
60 above	2 (2.8%)	5 (7.02%)	14 (16.7%)	
BMI Category				
< 18.5	4 (5.6%)	2 (2.8%)	1 (1.2%)	
18.5 – 24.9	53 (74.6%)	33 (46.5%)	30 (35.7%)	<0.0001
25 – 29.9	7 (9.9%)	28 (39.4%)	29 (34.5%)	
30 above	7 (9.9%)	8 (11.3%)	24 (28.6%)	

Table 4 shows that the mean age, weight and BMI were higher in participants with hypertension but this was not statistically significant. However, 65.5% of participants in the middle age group (39-59years) had hypertension, ($p < 0.05$) while over 60% of the participants with hypertension were either obese or had frank obesity (25-29.9, $\geq 30\text{kgm}^2$, $p < 0.05$).

DISCUSSION

We had more male participants in our study. This was not surprising as the screening exercise took place during the men's group yearly activities of a faith based organization. Our study revealed that 28.3% of study participants were overweight. This figure fell within the range of 20.3% - 35.1% obtained in a systematic review among adults in Nigeria.⁵ It was lower than the prevalence of 31.1% and 38% obtained in a multi-centre study among urban Nigerians and Abuja respectively^{6,7}. The overweight value was higher than that obtained in studies in neighboring Benue State 22%, Kalabari in Rivers State 22.95, Zaria 18.5% and Jos 17.2% respectively.^{8,9,10,11}

The prevalence rate of 17.3% of participants being obese in our findings was in conformity with some studies done in Nigeria.^{5,6} In contrast, it was lower than values of 47.26% in a study conducted in Rivers State and 26% in a similar study in Abuja Federal Capital Territory^{7,9}. It was higher than values obtained in other Nigerian studies carried out in Benue, Zaria and Jos. Respectively.^{8,10,11} Majority of the participants were of normal weight category corroborating other studies.^{6,7,8} A similar study in Rivers State, revealed a relatively lower rate of 28.77% study participants belonging to the normal weight category⁹. The least participants belonging to the underweight category was reflected in similar studies^{6,8,9}. Most persons are now abandoning their traditional ways of life in preference to western habits. This is reflected in their choice of meals and physical habits. People now engage more in white collar jobs which are mostly sedentary in nature. Majority of people resides in urban areas and there is extra pressure to meet human needs in urban dwellers than the rural ones in Nigeria. The pressure of paying for house rent, utility bills, transportation amongst others are more on urban residents. Their counterparts in the rural areas are mostly involved in agrarian activities which entail lots of walking and physical labor. They also eat less of Western diets as availability is unlikely and the cost is usually out of the reach of the rural dwellers who are mostly peasants. A combination of the above mentioned factors may make urban residents prone to being overweight, obese and at a higher risk of developing hypertension and other related cardiovascular diseases. A review study by Ogah *et al*, gave the overall prevalence rate of hypertension among urban Nigerians to be between 8%-46.4%¹². The finding of 37.2% prevalence rate in our study fell within this range. However, it was higher than values obtained with prevalence rates of 33.1%, in Ibadan, South-west Nigeria, 32.3%, in Maidugri North-eastern Nigeria and 22.7% in Benue, North-central Nigeria respectively^{13, 14, 15}. It was comparatively lower than studies in Abak in Akwa Ibom State 62.8%, Ogbomosho in South-Western Nigeria 50.5% and Enugu 42.2% in South Eastern Nigeria.^{16, 17, 18}

More males had hypertension than females in our study corroborating findings from some Nigerian studies,^{13,16,17,18} in which male gender has been shown to be one of the traditional risk factors associated with hypertension. Sola *et al* in a rural-urban study in Benue State had almost the same percentage of males and females with hypertension¹⁵. A study conducted in North-eastern Nigeria, showed that females had a higher prevalence rate of hypertension than their male counterparts¹⁴. More male participants were overweight than females in our study. There was a higher percentage of females being obese than males, which was consistent with studies conducted in Nigeria.^{9,10} In keeping with findings from other studies conducted in Nigeria,^{15, 16, 17, 18} hypertension increased with age in our study. Also obesity and overweight increased with age. This finding was in agreement with a multicentre Nigerian study.⁶ The plausible explanation may be that as people grow old, their blood vessels gradually become hardened with associated arteriosclerosis. People also become less physically active as they grow older and age. Increasing age also comes with obesity in some persons as a result of excess accumulation of fat.

CONCLUSION

The incidence of overweight, obesity and hypertension are common in our environment and may rise further in future. These conditions can easily be screened for. There should be sustained public awareness to highlight the importance of screening and detecting these conditions so as to avoid associated complications. This measure could improve on the health status of the populace as the burdens of these conditions on society are enormous.

REFERENCES

1. WHO. What the health consequences of being overweight. Available at www.who.int/feature/99/49/en accessed on 6/10/2016
2. Young F, Critchley JA, Johnstone LK, Unwin NC. A review of Comorbidity between infectious and chronic disease in sub-Saharan Africa: TB and diabetes mellitus, HIV and metabolic syndrome, and the impact of globalization. *Global Health* 2009; 5:9.
3. Oladapo OD, Salako L, Sodiq O, Shoyinka K, Adedapo K, Falase AO. A prevalence of cardiometabolic risk factors among a rural Yoruba South-western Nigeria Population: A population based survey. *Cardiovasc J. Afr* 2010; 21: 26-31.
4. The Seventh report of the Joint National Committee on Prevention, detection, evaluation and treatment of high blood pressure *JAMA* 2003; 289: 2560-72.
5. Chukwunonye I J, Chukwu A, John C, Ohagwu K A, Imoh M E, Isa S.E *et al*. Prevalence of overweight and obesity in adult Nigerians a systematic review. *Diabetes Metab Syndr obese* 2013; 6:43-47
7. Okafor C I, Gezawa ID, Satir AA, Raiomi TH, Enang O.

- Obesity, overweight and underweight among Urban Nigerians. *Niger J Clin Pract* 2014; 17: 743-9
8. Akarolo-Anthony SN, Willett WC, Spiegelman D, Adebamowo CA. Obesity epidemic has emerged among Nigerians. *BMC public Health* 2014; 14:455
 9. Sola AO, Steven AO, Kayodo JA, Olayinka AO. Underweight, overweight and obesity in adult Nigerians living in rural and Urban communities of Benue State. *Ann Afr Med.* 2011; 10:139-43
 10. Adienbo OM, Hart VO, Oyeyemi WA. High prevalence of obesity among indigenous Residents of a Nigerian Ethnic Group: The Kalabaris in the Niger Delta Region of South- South Nigeria. *Greener journal of medical Sciences* 2012; 2(6): 152-156
 11. Bakari A G, Onyemelukwe GC, Sani BG, Aliyu IS, Hassan SS, Aliyu TM. Obesity, overweight and underweight in Suburban northern Nigeria. *Int J Diabebets and Metabolism* 2007; 15:68-69.
 12. Puepet F H, Zoakah A L, Chuhwak E k. Prevalence of overweight and obesity Among Urban Nigeria Adults in Jos. *Highland medical Research Journal* 2002: 1 (1).
 13. Ogah OS, Okpechi I, Chukwunonye II, Akinyemi JO, Onwubere BJC. Blood pressure, prevalence of hypertension related complications in Nigeria Africans: A review *World J. Cardiol* 2012; 4(12): 327-340.
 14. Ajayi I O, Sowemimo I O, Akpa OM, Ossai NE. Prevalence of hypertension and associated factors among residents of Ibadan-North. Local Government Area of Nigeria *J Cardiol* 2016; 13:67-75
 15. Gezawa ID, Musa BM, Mijinyawa MS, Talle MA, Shehu YM, Uloko AE et al. Prevalence of hypertension and its relationship with indices of obesity in Maiduguri, Northeastern Nigeria. *Niger J. Basic Clin. Sci.* 2014; 11:67-71.
 16. Sola AO, Chinyere OI, Stephen AO, Kayode JA. Hypertension prevalence in an urban and rural area of Nigeria. *Journal of Medicine and Medical Sciences* 2013; 4(4): 149-154.
 17. Uwah A F, Ndem J I, Emmanuel U. Prevalence of hypertension among adults attending faith-based centres in Abak Township, Akwa Ibom State, Nigeria. *Merit Research Journal of Medicine and Medical Science* 2015; 3(7): 245-248.
 18. Amole IO, Olorun AD, Owolabi AO. Prevalence of Obesity and hypertension among adults in Ogbomoso, Nigeria. *Internet Journal of Medical Update – E. Journal* 2011; 6(2).
 19. Ulasi II, Ijoma CK, Onwabere BJC, Arodiwe E, Onodugo O, Okafor C. High prevalence and low awareness of hypertension in a market population in Enugu, Nigeria. *International journal of Hypertension* 2011.