

Prevalence and pattern of hypertension and effect of body mass index on blood pressure in six communities of Biase LGA In Cross River, Nigeria



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Abstract

Objective: Hypertension is a major risk factor for stroke, renal failure, and heart failure globally. This trend of complications has been seen even among our rural and urban dwellers in the tropics. This study aims at determining the prevalence and pattern of hypertension and body mass index (BMI) in six rural communities in Southern Nigeria.

Methods: Adult participants, aged 18-80 years of age from six rural Biase communities who presented for a health screening were recruited. This was a rural community-based cross-sectional study involving 419 adults. Information was obtained from questionnaires which were administered to assess and obtain demographic data. Blood pressure and anthropometric indices were measured from participants to assess the BMI and risk factors associated with hypertension, and pattern of blood pressure.

Results: A total of 419 enrolled for the study, but 137 had hypertension (systolic blood pressure ≥ 140 mm Hg and diastolic blood pressure ≥ 90 mm Hg) and this was made up of 86 females (62.8%) and 51 males (37.2%). Only 29 of the hypertensives (21.1%) were aware of their condition. The prevalence of hypertension was 32.7%. Moderate hypertension was the commonest presentation. High blood pressure, obesity and overweight was common among the women folk compared to the men that had isolated systolic hypertension ($P < 0.05$).

Conclusion: In recent times, hypertension is seen to be high even in rural settings; hence strict screening should be enhanced to allow for quicker diagnosis and early intervention.

Keywords: Hypertension, Rural, Blood pressure, Prevalence, Nigeria

Introduction

The era of increased prevalence of non-communicable disease is here with us. The burden of non-communicable disease like hypertension and diabetes mellitus is overwhelming in developing countries (1). Hypertension is the most common non-communicable disease and risk factor for heart failure, stroke, chronic kidney disease, and ischemic heart disease in Africa (2). It is a common and important major global public health problem. It is projected that, in a few years time, about 75% of all hypertensive patients in the world will be from developing countries (2). In Nigeria, it is the number one risk factor for stroke, heart failure, kidney failure and ischemic heart diseases (2). The prevalence of hypertension has increased significantly over the past two to three decades (2,3). Hypertension has been a disease of the affluent but this has changed in the last few years because of varying lifestyles (3-8). The awareness of hypertension ranges from 44% in Western Europe to 28% in North America

(2). It has been documented as a threat to the health of people in sub-Saharan Africa and a major contributor to mortality and morbidity in the sub-Saharan region. In Nigeria, hypertension awareness ranges from 3.5% in Sokoto to 30% in Nsukka (2). This problem is worse in rural settings where availability and accessibility to quality health care is a mirage. The essence of this study was to assess the prevalence and pattern of hypertension and body mass index (BMI) in six rural communities in Biase, South-South Nigeria.

Methods

The study was conducted at the town hall of Adim village in Biase local government area of Cross River state of Nigeria. The Language spoken in Adim village includes the native language called "Arum" along with English and Efik. Biase make up one of the 18 local government areas in Cross River state, Nigeria. It has a population of about 15 000 people. Most of the people are peasant farmers and



a few are working class people. It has a cottage hospital, few private clinics and few health centers for its teeming population. It is about 70 km away from Calabar, which is the capital of Cross River state. Adim Town Hall was the venue of the outreach. Many of the people recruited are peasant farmers by occupation.

Participants were recruited randomly from six rural communities in Biase town and were aged 18-80 years. Permission was sought from the Cross River state Ministry of health and approval was given to carry out a medical outreach from which this study was done. The Village Head (Onun) also took time to encourage the villagers to attend the health outreach and was also intimated about the study and he gave consent to it. Willing participants made themselves available. Informed consent was sought from all participants and the procedures were well explained to each keen participant who was then given the questionnaire. Verbal informed consent was followed by the questionnaire administration.

This was a cross-sectional community-based study done in a semi-rural area of South-South Nigeria. The standard operating procedure for verbal informed consent was followed by the questionnaire and anthropometrics according to local standard practice for participation in observational studies. An interviewer recorded the outcome of the consent procedure on behalf of the participants. A well-structured, detailed questionnaire was used with parameters covering demographic indices. The weight and height were assessed and taken appropriately. The BMI was calculated by dividing the weight in kg by the square of the height in meters. The blood pressure was obtained using appropriate cuff sizes and this was after the patient had been rested for a few minutes to ensure a resting cardiac value of blood pressure. The blood pressure was measured using an aneroid sphygmomanometer (UA767 PLUS, made by A and D Company Tokyo, Japan). This is a validated automatic blood pressure measuring device. Appropriate cuff-sizes were used. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were the first and fifth Korotkoff sounds heard respectively. Each participant had blood pressure taken twice. The SBP and DBP were taken for the two readings and analyzed. Interviewers recorded the outcome of the data on behalf of the participants. Body weight, height, and blood pressure were done using standard methods. For each subject, temperature was measured using manual thermometer in the axilla. Next, a short history and physical examination was followed by the doctor. Drugs were prescribed according to the ailment and the questionnaire was collected. Height was measured by a graduated tape measure for each participant while weight was done by a weighing scale (Accosons, USA). A total of 5 doctors attended to the participants.

In the overall, all the adults (males and females) from the six rural communities that were seen made up a total of 419 patients with ages ranging from 18-80 years. Pregnant

women were excluded from this study since the etiology of pregnancy – induced hypertension is different.

A total of 419 participants consented and enrolled for this study.

Data were collected and analyzed by a statistician. All data were entered into Epi Info. All socio-demographic data were collected and recorded. Systolic and diastolic blood pressure were taken and mean values were calculated and given as mean \pm standard deviation. Hypertension was defined as a measure of SBP >140 mm Hg and/or DSP >90 mm Hg. Isolated systolic hypertension was defined as SBP >140 mm Hg but ≤ 90 mm Hg of diastolic value. Isolated diastolic hypertension was defined as a DBP >90 mmHg and SBP ≤ 140 mm Hg.

Participants who had controlled blood pressure (though known hypertensives) were those with systolic blood pressure less than 140 mm Hg and less than 90 mm Hg for diastolic value. These subjects were actually on blood pressure-lowering drugs. Data analysis was done by using EPI Info version 19.0 (Texas, USA). The prevalence of hypertension was done using relevant descriptive statistics (9).

Results

A total of 419 subjects agreed to participate in this study. They were all adults whose ages ranged between 18 years and 80 years. The mean age was 46.80 ± 17.96 years. Of all the 419 participants, about 58.9% (247) were adult females and 41.1% (172) were adult males (see Figure 1). Hence, more adult females turned out for the outreach than adult males (ratio 1.4:1).

A total of 137 subjects had elevated blood pressure (SBP >140 mm Hg, DBP >90 mm Hg). This amounted to 32.7% of the people screened. Of all the hypertensives, about 86 (62.8%) were females and 51 (37.2%) were males (see Figure 2). The people with hypertension in this study were seen to be higher than 40 years for most of them and increasing age was seen here as a major risk factor for hypertension in both sexes. The mean SBP and DBP values were 144.5 ± 27.3 mm Hg and 89.13 ± 17.96 mm Hg respectively. Stage 2 hypertension (moderate hypertension) was the commonest type of presentation.

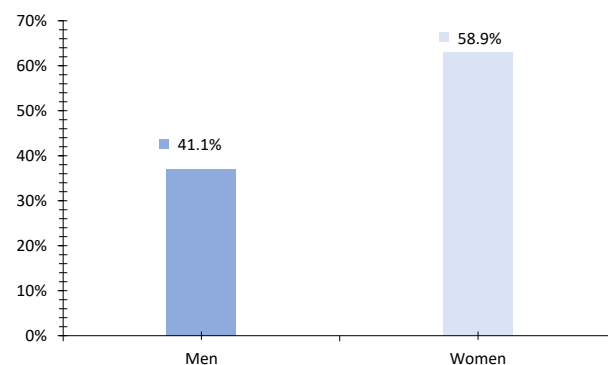


Figure 1. Sex distribution of participants for the study.

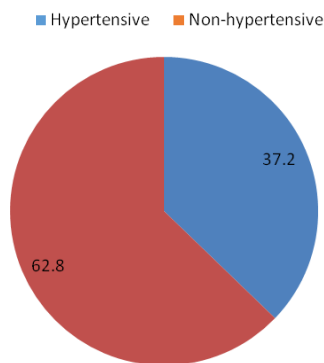


Figure 2. The prevalence of hypertension.

This is defined as a SBP of between 160 and 179 mm Hg and a diastolic value of 100 to 109 mmHg. The mean BMI was 25.5 ± 5.8 and 24.6 ± 4.8 for females and males respectively ($P=0.1149$). A total of 66 people (16%) were obese, while 92 people (22%) were overweight and the rest were of normal BMI (Figure 3). Majority of the people with obesity and overweight were hypertensive. More women were obese (50 women) as opposed to the men (16 women) ($P<0.05$). Similarly, more women were more overweight than men ($P<0.05$). There was a strong correlation between overweight, obesity and high blood pressure given as correlation coefficient: $r^2=0.02$.

And in all, more females were screened, and more females were hypertensive.

Discussion

The major risk factors identified here as the causes of hypertension are increasing age, overweight and obesity; however, other social factors may be contributory. More women are seen here to have an increased blood pressure compared to the males. Also, females have a higher BMI and are more overweight and obese than males. The people with obesity and overweight had higher values of blood pressure. Also, of all the hypertensive, only about 29 (21.2%) knew they were hypertensive and were on medications. The rest of them (78.8%) did not have awareness of their health status in regard to their blood pressure. Hence, increased awareness and emphasis on screening for hypertension should be enhanced as well as emphasizing on the importance of maintaining a normal BMI through right dieting and lifestyle modification. Historically, hypertension and its complications were said to be rare among Africans, but adoption of western lifestyle, dietary change and sedentary lifestyle have led to an increased in this non-communicable disease (4-9). In Africa, there is an increasing urbanization of lifestyles among individuals with attendant cardiovascular morbidity and mortality on the increase (10). Before now, hypertension was thought to be rare among Africans; however, many studies have proved this to be wrong

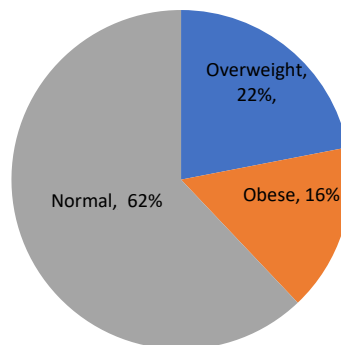


Figure 3. Blood pressure distribution of studied population based on BMI

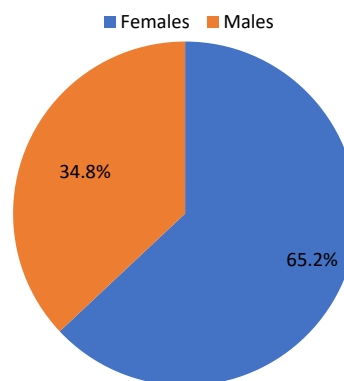


Figure 4. Sex distribution of hypertensive patients

(11,12). This scourge includes also Nigerian in both urban and rural areas. Many studies done in Nigeria to ascertain the prevalence of hypertension over the years have focused attention at the north and south western Nigeria (13-15). In this study, the prevalence of hypertension was 32.7%. This finding is consistent with some other researchers (15-17), but lower than that of some other researchers who carried out similar studies among the Ibibios and Efiks (8) but higher than results from Osun (18), Ghana (12) and South Eastern Nigeria (19). The occurrence of hypertension was higher in females (65.2%) compared to males (34.8%) (see Figure 4) which also agrees with earlier studies (20), but contrary to findings of prior awareness of hypertension by patients; which was extremely low (21). This also agrees with works done by Andy et al (8). Currently, the awareness of hypertension is very low among Nigerians in both urban and rural area (7,14,22). Myriads of complications are associated with poorly controlled or uncontrolled hypertension, hence there is a need to assess the prevalence, risk factors and pattern of blood pressure and BMI among rural dwellers in Nigeria.

Conclusion

The prevalence of hypertension in this community was high, based on this study. Many Nigerians live in the rural setting, and with this pattern of high prevalence of hypertension, aggressive and adequate steps must be

taken to combat this scourge.

Ethical issues

This study was done after obtaining clearance from the State Ministry of Health, Calabar, Cross River State.

Authors' contributions

LE conceptualized the study and wrote the initial manuscript while KO revised the manuscript and made corrections of the final manuscript.

References

1. Taylor R. Non-communicable diseases in the tropics. *Med J Aust* 1993; 159(4): 266-70.
2. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. *Lancet* 2005; 365(9455): 217-23. doi: 10.1016/s0140-6736(05)17741-1.
3. Ahaneku GI, Osuji CU, Anisiuba BC, Ikeh VO, Oguejiofor OC, Ahaneku JE. Evaluation of blood pressure and indices of obesity in a typical rural community in eastern Nigeria. *Ann Afr Med* 2011; 10(2): 120-6. doi: 10.4103/1596-3519.82076.
4. Cook AR. Notes on the diseases met with Uganda, Central Africa. *J Trop Med* 1901; 4: 175-78.
5. Vint FW. Postmortem findings in natives of Kenya. *East Afr Med J* 1937; 13(11): 332-44.
6. Olatunbosun ST, Kaufman JS, Cooper RS, Bella AF. Hypertension in a black population: prevalence and biosocial determinants of high blood pressure in a group of urban Nigerians. *J Hum Hypertens* 2000; 14(4): 249-57.
7. Ulasi, II, Ijoma CK, Onwubere BJ, Arodiwe E, Onodugo O, Okafor C. High prevalence and low awareness of hypertension in a market population in enugu, Nigeria. *Int J Hypertens* 2011; 2011: 869675. doi: 10.4061/2011/869675.
8. Andy JJ, Peters EJ, Ekrikpo UE, Akpan NA, Unadike BC, Ekott JU. Prevalence and correlates of hypertension among the Ibibio/Annangs, Efiks and Obolos: a cross sectional community survey in rural South-South Nigeria. *Ethn Dis* 2012; 22(3): 335-9.
9. National Institutes of Health, National Heart, Lung, and Blood Institute. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Report NO.:04-5230, 2004.
10. van de Vijver S, Akinyi H, Oti S, Olajide A, Agyemang C, Aboderin I, et al. Status report on hypertension in Africa--consultative review for the 6th Session of the African Union Conference of Ministers of Health on NCD's. *Pan Afr Med J* 2013; 16: 38. doi: 10.11604/pamj.2013.16.38.3100.
11. Ansa VO, Anah MU, Odey FA, Mbu PN, Agbor EI. Relationship between parental socio-economic status and casual blood pressure in coastal Nigerian adolescents. *West Afr J Med* 2010; 29(3): 146-52.
12. Cook-Huynh M, Ansong D, Steckelberg RC, Boakye I, Seligman K, Appiah L, et al. Prevalence of hypertension and diabetes mellitus in adults from a rural community in Ghana. *Ethn Dis* 2012; 22(3): 347-352.
13. Ogah OS. Hypertension in sub-Saharan African population: the burden of hypertension in Nigeria. *Ethn Dis* 2006; 16(4):765.
14. Oladapo OO, Salako L, Sodiq O, Shoyinka K, Adedapo K, Falase AO. A prevalence of cardiometabolic risk factors among a rural Yoruba south-western Nigerian population: a population-based survey. *Cardiovasc J Afr* 2010; 21(1): 26-31.
15. Adegoke OA, Adedoyin RA, Balogun MO, Adebayo RA, Bisiriyu LA, Salawu AA. Prevalence of metabolic syndrome in a rural community in Nigeria. *Metab Syndr Relat Disord* 2010; 8(1): 59-62. doi: 10.1089/met.2009.0037.
16. Kokiwar PR, Gupta SS, Durge PM. Prevalence of hypertension in a rural community of central India. *J Assoc Physicians India* 2012; 60: 26-9.
17. Alikor CA, Emem-Chioma PC, Odia OJ. Hypertension in a Rural Community in Rivers State, Niger Delta Region of Nigeria: Prevalence and Risk Factors. *The Nigerian Health Journal* 2013; 13(1): 18-25.
18. Asekun-Olarinmoye E, Akinwusi P, Adebimpe W, Isawumi M, Hassan M, Olowe O, et al. Prevalence of hypertension in the rural adult population of Osun State, southwestern Nigeria. *Int J Gen Med* 2013; 6: 317-22. doi: 10.2147/ijgm.s42905.
19. Ekanem US, Opara DC, Akwaowo CD. High blood pressure in semi-urban community in south- southNigeria: a community-based study. *Afr Health Sci* 2013; 13(1): 56-61. doi: 10.4314/ahs.v13i1.8.
20. Ekore RI, Ajayi IO, Arije A. Case finding for hypertension in young adult patients attending a missionary hospital in Nigeria. *Afr Health Sci* 2009; 9(3): 193-9.
21. Giday A, Tadesse B. Prevalence and determinants of hypertension in rural and urban areas of southern Ethiopia. *Ethiop Med J* 2011; 49(2): 139-47.
22. Omuemu VO, Okojie OH, Omuemu CE. Awareness of high blood pressure status, treatment and control in a rural community in Edo State. *Niger J Clin Pract* 2007; 10(3): 208-12.