

# **BLOOD PRESSURE PATTERN IN A NIGERIAN RURAL COMMUNITY, A PILOT STUDY.**

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## **ABSTRACT**

**BACKGROUND:** There is increased incidence and prevalence of hypertension worldwide due to westernization of the diet and modified life style habits. Hypertension is the commonest cardiovascular disease risk factor and commonest cause of stroke in Nigeria, even in the rural communities.

**METHOD:** This is a cross sectional descriptive pilot study conducted at Ukonu Polo, Opobo, southern Nigeria during an outreach on 31st December, 2012. All participants at the medical outreach were included in the study after consent was obtained.

**RESULTS:** Eighty-five subjects participated in the study with age range of 18-94 years mean age 57.58 + 0.02 years. The frequency of hypertension in the study was 56.47%.

**CONCLUSION:** The frequency of hypertension in this island community is very high and there is therefore urgent need for institution of hypertension control measures including lifestyle modification.

**KEY WORDS:** Hypertension, Communicable Disease, Cardiovascular, Rural.

## **INTRODUCTION**

Nigeria has a population of greater than 120 million and is the largest black nation in the world 1. Arterial blood pressure is the pressure of blood against the walls of the arteries 2. Disease pattern in Nigeria is changing from communicable to non-communicable diseases<sup>3,4</sup>.

Communicable diseases are well established as a leading contributor to the burden of disease in low income and middle income countries 5. Hypertension has become a significant problem in many developing countries experiencing epidemiological transition from communicable to non-communicable chronic diseases 6-13. Almost three quarters of people with hypertension live in developing countries, with limited health resources and where people have a very low awareness of hypertension and poor blood pressure control 14. Hypertension is the commonest non-communicable disease, the leading cause of cardiovascular disease in the world 8,15 a major risk factor for congestive heart failure, ischaemic heart disease, chronic renal failure and stroke<sup>6-8,16-22</sup>. Directly and indirectly, hypertension contributes to the high morbidity and mortality in both developed and developing countries<sup>4,12-13,16,18,23,24</sup>. Hypertension is a major global public health problem, 11,12,16,17,25-28 and is an important threat to adults in sub-Saharan Africa<sup>14,16</sup> particularly in urban areas with evidence of considerable under diagnosis, treatment and control<sup>29</sup>. Hypertension is the number one risk factor for cardiovascular disease in sub-Saharan Africa, 4,18,26,27,30 and a silent killer with obvious risk factors which can be prevented<sup>28</sup>. The prevalence of hypertension varies within different countries and from place to place 12,24,29,31. Hypertension, which was considered to be non-existent or extremely rare in most African societies particularly in rural communities, is now emerging 16,18,24,32. The rise in the prevalence may be as a result of rapid changes in diet, and physical activity related urbanization and modernization which has affected both urban and rural dwellers 2, 4,14,17,18,24,27,30. The prevalence of hypertension is increasing worldwide 8,12,30,14 and but had generally been higher in urban than in rural communities 4, 17,24,29,31.

It is the commonest cause of medical admissions in most tertiary hospitals in Nigeria 30,34; accounts for 25% of emergency medical admissions in a Nigerian urban hospital 35. Hypertension is the commonest non-communicable disease in Nigeria and contributes about 14% of the number of years of life lost 16 ,the medical illness most frequently diagnosed in elderly Nigerians 36, and the most common condition associated with dementia in Nigeria, a most common condition in senior executives 1. People of African descent tend to have higher blood pressure and hypertension related mortality rates than other races 20,30. Hypertension in blacks has long been recognised as occurring earlier in life, more severe and having closer links to pressure related target organ injury such as left ventricular failure, chronic kidney disease and heart failure than in Caucasians 12. This is a study conducted in at a Nigerian island to find out the pattern of blood pressure.

## **RESEARCH METHODOLOGY**

### ***Study area***

The study was conducted at Opobo, an island in Rivers State, southern Nigeria surrounded by salt water rivers. It is of the Ijaw ethnic group of the Ijo tribe. Opobo is the capital of Opobo Nkoro local government area. The kingdom is divided into quarters /wards (not political wards) known as polo in the native language. The study was conducted at the Ukonu polo on 31st December, 2012 during a free medical outreach. Opobo is accessed by water and air from Port Harcourt, the capital of Rivers State. A journey from Opobo to Port Harcourt where the tertiary hospitals are located cost N1500 (\$15) by land and is about a two hours journey.

### ***Study Design***

It is a descriptive cross sectional study during a free medical outreach organised at the community. Adult participants at the medical outreach were included in the study after consent was obtained. A community mobilization was conducted prior to the day of the outreach on arrival of clients. Participation was voluntary after consent was obtained.

### ***Blood Pressure Measurement***

Biodata was entered into a registry, then clients were allowed to rest for five minutes before blood pressure was measured. An electronic device was used and cross checked with a mercury sphygmomanometer. Universal bottle was given to the subjects for collection of urine for urinalysis using a 12 menu glucostrip.

## **RESULTS**

One hundred and five clients voluntarily participated in the study and entered their biodata but only 85 (80.95%) gave consent for their blood pressure to be measured. More than half of the respondents did not give consent for urinalysis. Sex distribution male 26 (30.59%) and female 59 (69.41%). Age range 18-92 years; mean 57.58 + 0.02 years.

**TABLE 1 SHOWING AGE DISTRIBUTION OF SUBJECTS**

AGE IN YEARS	N (%)
<20	1(1.18%)

21-25	3(3.53%)
26-30	6(7.06%)
31-35	6(7.06%)
36-40	8(9.41%)
41-45	2(2.35%)
46-50	7(8.24%)
51-55	5(5.88%)
56-60	10(11.76%)
61-65	7(8.24%)
66-70	13(15.29%)
71-75	3(3.53)
76-80	8(9.41%)
81-85	1(1.18)
86-90	3(3.53%)
> 91	2(2.35%)

### ***Blood Pressure***

The blood pressure pattern of the subjects were analysed using the seventh report of the joint national committee on prevention, detection, evaluation and treatment of high blood pressure JNC 736 classification of hypertension. Normal blood pressure was seen in 11(12.94%) of males and 26(30.59%), while hypertension was seen in 15(17.65%) of males and 33(38.82%) of females. Table 2 shows the age distribution of hypertensives.

	<b>Normal</b> Systolic BP <120mmhg and diastolic BP <80mmhg	<b>Prehypertension</b> Systolic BP 120 139 mmhg or diastolic BP 80 89mmhg	<b>Hypertension</b> <b>Stage 1</b> Systolic BP 140 - 159 mmhg or diastolic BP 90 - 99 mmhg	<b>Hypertension</b> <b>Stage 2</b> Systolic BP >160mmhg or diastolic BP ≥100 mmhg
<b>Age in years</b>				
15 -20	-	1(1.18%)	-	-
21 -25	2(2.35%)	1(1.18%)	-	-
26 -30	2(2.35%)	2(2.35%)	-	2(2.35%)
31 -35	3(3.53%)	-	1(1.18%)	2(2.35%)
36 -40	1(1.18%)	2(2.35%)	4(4.71%)	1(1.18%)
41 -45	-	-	2(2.35%)	-
46 -50	2(2.35%)	2(2.35%)	2(2.35%)	1(1.18%)
51 -55	2(2.35%)	1(1.18%)	-	2(2.35%)
56 -60	2(2.35%)	2(2.35%)	3(3.53%)	3(3.53%)
61 -65	-	1(1.18%)	3(3.53%)	3(3.53%)
66 -70	-	2(2.35%)	6(7.06%)	5(5.88%)
71 -75	1(1.18%)	-	-	1(1.18%)
76 -80	3(3.53%)	-	2(2.35%)	3(3.53%)
81 -85	-	1(1.18%)	-	-
86 -90	1(1.18%)	1(1.18%)	-	1(1.18%)

*More than 50% of subjects did not give consent for their urine to be collected and analysed for the study, therefore it was not included in the study.*

## **DISCUSSION**

Hypertension is usually defined as presence of elevation of systolic arterial pressure above a certain threshold value 21,37. Hypertension is a progressive cardiovascular syndrome arising from complex and interrelated aetiologies 37. Blood pressure increases with age in normal subjects 38,40 as seen in this study. In 5% of cases hypertension is secondary 38. The population distribution of Nigeria indicates a relatively larger rural populace compared to the urban 32. Prevalence of high blood pressure slightly higher in males compared to females 13.

Elevated blood pressure often remains asymptomatic until late in its course 7,28,36 and is the top common cause of sudden unexpected natural death 1. This may be the reason why most of rural populace do not see it necessary for routine blood pressure measure in Nigeria it is generally believed that every disease is associated with spirituality and sudden death caused by witchcraft and voodoo. In this study 11 (12.94%) subjects had systolic blood pressure >180 mmHg which makes them at risk of stroke and sudden death. In many developing countries few people go for routine medical check-ups to monitor the risk factors associated with non-communicable diseases and Nigeria is no exception 33.

There are many calibrated electronic or ambulatory blood pressure devices available in the market and mercury sphygmomanometer remains the gold standard for blood pressure measurement 21. Only professionally validated electronic models should be used for blood pressure measurements. Various countries have their own validating bodies. Example British hypertension society, American association for the advancement of medical instrumentation (AAMI) and German hypertension society 21. Many people with hypertension are unaware of their condition and among those with hypertension, treatment is infrequent and inadequate 8,9. In this study the prevalence of hypertension was 56.47%. In other Nigerian community based studies, Ulasi et al 42.2%, population size 731 8, Ekwunife et al 30%, population size 756 11, and Andy et al 23.6%, population size 3869 17.

In Ghana, earlier studies revealed a hypertension prevalence of 4.3% among rural dwellers 4. In Nigeria, the prevalence of hypertension is becoming alarming high in the rural communities contrary to the existing trend of rarity noted many years ago despite the traditional way of life of these inhabitants 4. In Nigeria awareness is poor as only 33.8% of hypertensives are aware of their condition. In most communities, only about 50% of those who are hypertensive are aware of their condition and less than 50% of those who are aware are receiving adequate treatment 12. In this study 8(9.4%) were known

hypertensives. Out of those with elevated blood pressure only 4(4.71%) were known hypertensives. The main aim of identifying and treating high blood pressure is to reduce risks of complications 21.

Poor compliance with prescribed drugs is a common and important problem in clinical practice which can result in treatment failures and poor outcomes 6,7,9. In a study in Nigeria, it was believed that hypertension could be caused by evil spirits, enemy remote attacks or food poisoning 12. Some patients may begin to titrate medications with traditional remedies concurrently and alternate according to their perceived symptoms 12. Some studies have shown that hypertensive patients have competing problems such as poverty, depression and anxiety from the heavy financial burden imposed by hypertension management 5,12,13,16,26,27 fear especially of premature death and addiction, the lure of alternative (traditional) healers who claim to have permanent cure of hypertension and drug adverse effects 12. Studies on knowledge about hypertension and cardiovascular disease risk factors amongst health workers and patients in hospital based settings have been documented, but there is little information about this in the general population 9. The problems caused by hypertension are made worse, when people are not aware of the necessity for or unable to afford regular blood pressure checks 2.

Nigeria is one of many developing countries where the health services have focused on treating infectious diseases such as malaria and tuberculosis but in recent years non-communicable conditions have been an increased problem 25,33. There is urgent need to develop strategies to prevent, detect, treat and control hypertension effectively in the African region 29.

Prevention programmes start with screening to identify the population at risk and treat 8,14, and subsequently community intervention to educate the populace on the need for early detection, dangers of hypertension and other cardiovascular risk factors is undertaken 4,14,16,22. In developing countries and limited resources settings where the national budget is quite limited, health screening programme with simple, inexpensive, easy to implement screening tools are usually provided 14,26,39. In a study by Ilesanmi et al, median monthly cost of drugs was N900 (N300-N3000) \$6(range \$2-\$20) and transportation costs to health facility 26. The three most important steps to increase hypertension control in developing countries at an individual level are to use primary health care as the key point of control, self-referral for risk assessment and monitoring of the effects of intervention programmes 14. There is need to carry out research on the reasons for regional differences in prevalence of hypertension as well as reasons for lack of urban-rural differences in some areas in the country 16.

## **CONCLUSION**

There is increased prevalence of hypertension in this community and this necessitates periodic screening to prevent subjects from coming down with complications, and avert sudden death which in

most Nigerian societies is believed to be caused by witch craft and evil spirits. Hypertensive patients need to be in constant communication with their physicians through follow up clinics or uses of phones, in cases of long distances.

### **LIMITATION**

The study was not a full scale community assessment as not every household was sampled. Some subjects did not know their biological age. Being a rural community, home delivery is predominant. Age of some subjects was estimated from past historical events such as the Nigerian independence, the Nigerian civil war and coronation and instalment of kings and chiefs.

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