



(RESEARCH ARTICLE)



Changing pattern of high blood pressure in Rumuomasi: A semi-urban community in southern Nigeria

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Abstract

Background: Hypertension is the largest contributor to global burden of disease with uncontrolled hypertension rising from 600million to nearly 1billion. Nigeria, as the most populous country in Africa, is not immune to the trend of global health and is even more vulnerable considering her population growth rate and lifestyle challenges. This study therefore aims to identify the prevalence of high blood pressure in the semi-urban community in southern Nigeria.

Methods: 199 subjects participated in this community-based cross-sectional descriptive study conducted among adults age ≥ 18 years in an outreach held by GoodHeart and life support initiative in November 2023 at Rumuomasi community in Obio/Akpor Local Government Area in Port Harcourt Rivers state, Nigeria. Biodata was collected and blood pressure was measured using a mercury sphygmomanometer.

Results: Of the 199 subjects that participated in this study, 63 (31.66%) were males and 136 (68.34%) females with a mean age of 48.5 ± 14.33 years. The prevalence of high blood pressure in the study population stands at 71.86% ($n = 143$). Among the hypertensive, 100 were females and 43 males. Early detection and treatment are crucial and should be encouraged, especially in an environment where ignorance and poverty hinder proper health-seeking behavior.

Keywords: Hypertension; High Blood pressure; Prevalence; Health Outcomes; Cardiovascular events; Cardiovascular disease; Nigeria; Risk factor

1. Introduction

The World Health Organization (WHO) estimates that around 1.28 billion adults aged 30-79 worldwide have hypertension. Of these adults, 46% are unaware that they have the condition. Additionally, two-thirds of those with hypertension live in low- and middle-income countries.¹ Hypertension is the largest contributor to global burden of disease, accounting for 7% of global disability adjusted life years,² it is an important worldwide public-health challenge because of its high frequency and associated risks of cardiovascular and kidney disease³ along with pre-hypertension and other hazardously high blood pressure, hypertension is responsible for 8.5 million deaths from stroke, ischaemic heart disease, renal disease and other vascular diseases⁴ which resulted in nearly 900,000 deaths (10% of the total deaths on the continent) in 2016 and has increased by 82% since 1990,⁵ with an uncontrolled hypertension rising from 600million to nearly 1 billion,⁶ is associated with a range of adverse health outcomes, including an increased risk of cardiovascular events such as heart attacks and strokes, as well as end organ damage, including renal failure and retinopathy^{7,8}

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The global prevalence of hypertension is on the increase. In 2000, 972 million people had hypertension with a prevalence rate of 26.4%. These are projected to increase to 1.56 billion affected individuals and a prevalent rate of 29.4% in 2025.³ Elevated blood pressures is globally the strongest modifiable risk factor for cardiovascular disease and related disability. Its prevalence and downstream detrimental impact on health are increasing because of longer life expectancy and increased exposure to risk in the population.⁹ Hypertension is a major cause of premature death worldwide and Africa appears to have the highest prevalence of hypertension in the world, amounting to roughly 46% for both sexes combined in individuals over 25yrs of age, with important regional differences.¹⁰

Several studies have reported the increasing prevalence of hypertension in Africa.^{2, 5} Nigeria, as the most populous country in Africa,¹¹ is not immune to the trend of global health, it is the major contributor to the increasing burden of hypertension in the continent as is even more vulnerable considering her population growth rate and socio-economic changes, which has led to ageing populations with dietary and lifestyle modifications.⁶ Between 1995 and 2020, the estimated age-adjusted prevalence of hypertension increased from 8.5% to 32.5%¹² and is similar to the nationwide survey in Nigeria with a prevalence of 38%.¹³ The overall pooled crude prevalence of hypertension in Nigeria was 30.6% the prevalence was slightly higher among women than among men and across both sexes, the pooled prevalence was consistently higher among urban than among rural dwellers.¹² The prevalence of high blood pressure in a semi-urban community in south south was 47.0%⁶ and 20.2% in a rural community in Nigeria delta region.¹⁴

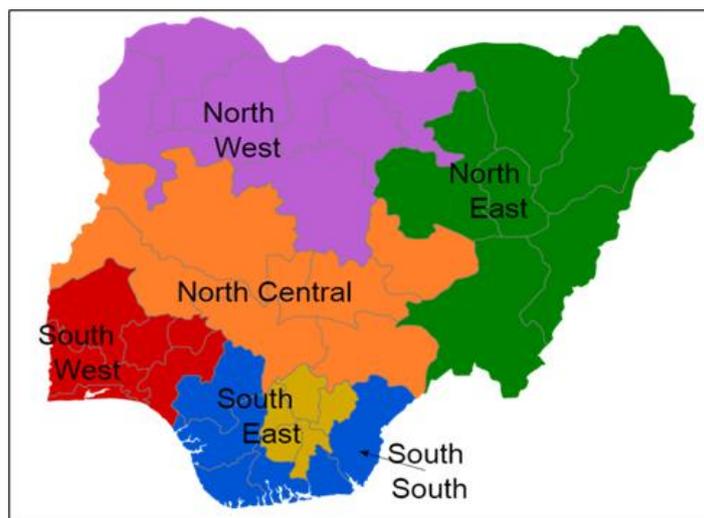


Figure 1 The map of the six geopolitical zones in Nigeria¹⁷



Figure 2 Map showing the south-south state¹⁷

The prevalence of hypertension in Nigeria may form a substantial proportion of the total burden in Africa because of the large population of the country ¹⁵ currently estimated to be around 219 million individuals in 2022,¹⁶ Despite extensive knowledge about ways to both prevent and treat hypertension, its global incidence, prevalence, and (more importantly) cardiovascular complications are not reduced, partly because of inadequacies in prevention, diagnosis, and control of the disorder in an ageing world. ⁹

The goal of this study was to analyze the current prevalence of high blood pressure among adults. Further, we sought to evaluate the disparities in high blood pressure rates among different demographic groups. To evaluate the effectiveness of existing intervention in managing high blood pressure. This study thus aims to identify the prevalence of high blood pressure in the semi-urban community in southern Nigeria.

2. Materials and method

A community-based cross-sectional descriptive study was conducted at Rumuomasi community in Obio Akpor Local Government Area in Port Harcourt, Rivers state, Nigeria by Goodheart and Life Support Initiative in November 2023. A total of 199 adults were screened during the outreach using a convenience sampling technique. The data collection was done using a questionnaire, weight and height were measured while observing the standard measurement procedures.¹⁸

The body mass index (BMI) was calculated using the formula; weight in kilogram divided by the square of the height in meters. Blood pressure measurement was done using mercury sphygmomanometer, on the non-dominant arm of the patient rested on a table, with the subjects sitting on a chair with feet flat on the floor. Blood pressure was said to be high if two or more reading were $>140/90$ mmHg, systolic/ diastolic. Hypertension was defined according to the 2018 ESH/ESC guidelines using a mercury sphygmomanometer, with a systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg.¹⁹

3. Results

The mean age of the population was 48.5 ± 14.33 years, 63 (31.66%) were males and 136 (68.34%) females. The majority 102 (51.3%) of the participants were aged 41-60 years.

Table 1 Baseline characteristics of the participants

Variables	Frequency (%)
Total Participants	199
Age Range	
41-60	102 (51.3)
<40	55 (27.6)
>60	42 (21.1)
Gender	
F	136 (68.3)
M	63 (31.7)
<i>Clinical variables</i>	<i>Mean \pm SD</i>
Age	48.5 ± 14.33
Blood Pressure (mmHg)	
Systolic	141.22 ± 24.74
Diastolic	84.22 ± 11.67
BMI	26.22 ± 5.77

The mean body mass index of the study participants was 26.22 ± 5.77 kg/m² while the mean systolic and diastolic blood pressures were 141.22 ± 24.74 and 84.22 ± 11.67 mmHg respectively. The mean fasting blood sugar and random blood sugar were 6.15 ± 4.03 and 6.36 ± 2.55 mmol/L respectively (Table 1). Overall prevalence of hypertension in the community was 71.86% (n = 143). The prevalence of hypertension by age was 40.20% (n=80) in people within age 41-60 years and 18.09% (n=36) in adults over the age 60 years and the prevalence of hypertension by sex was 50.25% in females and 21.61% in males (Table 2)

Table 2 Prevalence of hypertension by gender, age and anthropometric characteristics

Variable	Hypertensive (%)	Pre-hypertensive (%)	Normal (%)
Gender			
Male	43 (21.61)	8 (4.02)	12 (6.03)
Female	100 (50.25)	5 (2.51)	31 (15.58)
Total	143 (71.86)	13 (21.61)	43 (6.53)
Age group			
18-40	27 (13.57)	6 (3.02)	22 (11.06)
41-60	80 (40.20)	5 (2.51)	17 (8.54)
>60	36 (18.09)	2 (1.01)	4 (2.01)
Body Mass Index			
Underweight	16 (8.04)	0 (0)	8 (4.02)
Normal	49 (24.62)	6 (3.02)	22 (11.06)
Overweight	38 (19.10)	4 (2.01)	7 (3.52)
Obese	40 (20.1)	3 (1.51)	6 (3.02)

Table 3 Prevalence of hypertension among the participants

Variable	Frequency	Prevalence (%)
Normal	43	21.61
Pre-hypertensive	13	6.53
Hypertensive	143	71.86
TOTAL	199	100

Table 4 Distribution of participants according to blood pressure, history of hypertension and medication

BP	Known hypertensive	Known HTN on Medication	Known HTN not on Medication
Normal	-	-	-
Pre-hypertensive	-	-	-
Hypertensive	32	25	7

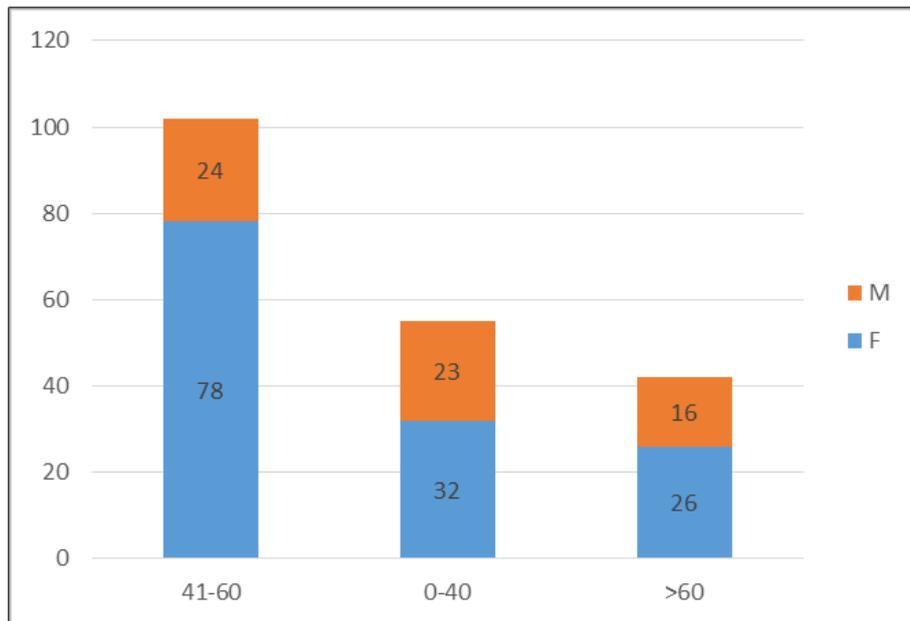


Figure 3 A bar chart showing Age distribution

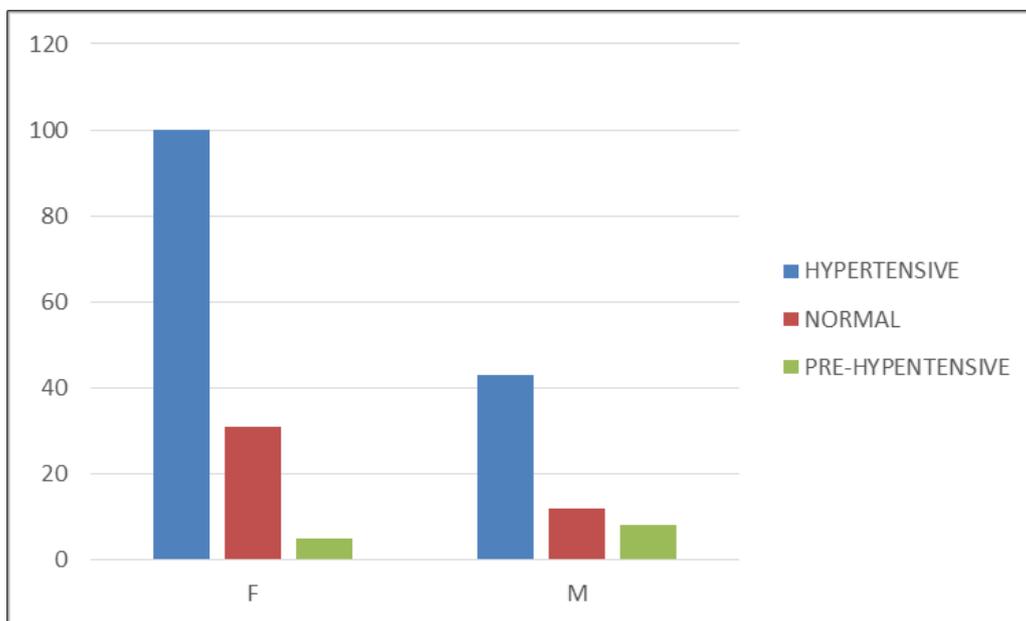


Figure 4 A bar chart showing Blood Pressure distribution

4. Discussion

The prevalence of high blood pressure in this study was 71.86%, this is higher than the descriptive cross-sectional study in a semi-urban community in Abak, Akwa Ibom which reported a prevalence of high blood pressure of 47.0%⁶ and 51.1% in a rural community-based study in Rivers state.²⁰

The prevalence of hypertension is increasing in various geopolitical zones of Nigeria. In an urban community called Kwao in Kaduna state (North west), a cross-sectional study reported a prevalence of 55.9%. In the semi-urban area of Ekiti state in the south-west, the prevalence is 55.5%. In Jos, Plateau state in the north-central region, the prevalence is 48.5%. In the semi-urban area of Abak, Akwa Ibom state in the south-south, the prevalence is 47.0%.⁶ In Enugu state in

the south-east, the prevalence is 42.2%. Finally, in Maiduguri, Borno state in the north-east, the prevalence is 23.1%.²¹⁻²⁵

Different studies conducted in Rivers state have shown varying prevalence rates of hypertension. A study involving 1000 subjects in both oil-polluted communities in Ogoni and non-oil polluted communities in Abua/Odua LGA found that the prevalence of hypertension was higher in oil-polluted communities at 59.8% compared to non-oil polluted communities at 46.6%.²⁶ Another rural community-based study in Port Harcourt, Rivers state, involving 500 adults, found a prevalence rate of 20.2%.¹⁴ However, our current study shows a higher prevalence rate than this. The increase in prevalence may be attributed to factors such as population growth, aging, and behavioral risk factors like unhealthy eating habits, excessive alcohol consumption, insufficient physical activity, obesity, and prolonged exposure to stress,²⁷ this could explain why hypertension is more prevalent in urban communities compared to rural communities.

In our study, we observed that the prevalence of hypertension differed by sex, with 50.25% of females and 21.61% of males being affected. These findings align with previous research, which has also indicated a higher prevalence of hypertension in females compared to males.^{11, 22} However, our study differs from other studies that have reported a higher prevalence of hypertension in males.^{6,25} The higher occurrence of hypertension in females in our study may be attributed to the larger number of female participants in the community medical outreach, which could introduce selection bias as women are more likely to participate in such programs. Furthermore, women generally exhibit greater awareness of hypertension and have better control rates compared to men.^{15, 28}

The prevalence of hypertension was 40.20% (n=80) in people within age 41-60 years and 18.09% (n=36) in adults over the age 60 years (Table 2), and out of the 143 subject with hypertension, only 22.38% of the hypertensive patient were aware of their hypertension and 17.48% of them are already on medication and 21.88% out of the 17.48% subjects are not on medication. This is in line with the general trend of low level awareness of the disease worldwide.

Limitations of the study

The participant's hypertension diagnosis was made after only one contact, which could have been more accurate if additional contacts were made. Additionally, the distribution of free anti-hypertensive medication during outreach may have attracted individuals who were already aware of their condition.

5. Conclusion

The high prevalence of hypertension (71.86%) is attributed to sex and age as predictive factors. This surpasses the reported rates of 47% in Abak, Akwa Ibom, and 51.1% in Rivers State. This is a major concern as it contributes to ill health and premature death among Nigerians, as reported by various researchers. Early detection and treatment are crucial, especially in an environment where ignorance and poverty hinder proper health-seeking behavior.

There is need to conduct further research to understand the underlying causes and risk factor associated with the changing pattern of high blood pressure. There is need for an increase public awareness and education about the risks and prevention of high blood pressure. There is also a need to collaborate with healthcare providers, community organizations to develop comprehensive strategies for preventing and managing high blood pressure.

Compliance with ethical standards

Disclosure of conflict of interest

Authors declared they have no conflicts of interest

Statement of informed consent

Ethical approval for this study was obtained from the Ethical Committee of the University of Port Harcourt Teaching Hospital, Rivers State Nigeria.

Authors' contributions

C.E.N, J.E and R.S performed the clinical examination of the patients, and C.E.N and J.A was a major contributor in writing the manuscript. B.E and J.A collected, analyzed and interpreted the patient data. All authors read and approved the final manuscript.

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