

A cross sectional survey on blood pressure screening at World Hypertension Day Commemoration Health Outreach among adult residents of Life Camp, Abuja, Nigeria

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ABSTRACT

Background: Hypertension is the most common non-communicable and the leading cause of morbidity and mortality from cardiovascular diseases in Nigeria putting a significant strain on families and the country's limited health-care resources. One major issue affecting Nigeria's response to this burden is a lack of awareness, treatment, and control of hypertension. Research findings show that high blood pressure is frequently diagnosed as an incidental finding in people who are seeking treatment for unrelated ailments. Reports also indicate that a nationwide measure to facilitate regular screening and detection of high blood pressure is still lacking. The World Health Organization, however, emphasizes the importance of raising awareness about high blood pressure to reduce the overall burden of the disease. The purpose of this study was to carry out a survey of BP measurements among volunteering adults and examine the relationship, if any, between BP and their age and gender.

Methods: A cross-sectional study conducted among adults who voluntarily attended a Health Awareness Talk. Participants were informed of the BP measurement to be carried out. Those who indicated interest and gave their consent had their B.P and pulse rate measured. Statistical analysis was then carried out using SPSS.

Results: Majority (73.3%, n=120) of the participants were male with the dominant age group being 36 – 50 years (44.2%). While 50% of respondents had normal BP, more than 90% had normal pulse rates. Cross tabulations of gender against BP showed that about 51% of males had higher than normal BP readings compared to 47% of females. Cross tabulations of age against BP readings showed that the age group of 51 years and above had the highest percentage of BP readings greater than normal.

Conclusion: Blood Pressure readings were found to be highest in the oldest age group and for the male gender. Although these associations were statistically insignificant, more in-depth studies are required to further prove these findings.

1. Introduction

Blood pressure and pulse rate are two of the four main vital signs that medical professionals and health care providers routinely monitor¹. The pulse rate, or the number of times the heart beats per minute, is a measurement of the heart rate. The arteries expand and contract with the flow of blood as the heart pushes blood through them². Taking a pulse not only measures heart rate, but it can also indicate heart

rhythm and pulse strength. A healthy adult's pulse rate ranges between 60 and 100 beats per minute³. Exercise, illness, injury, and emotions can cause the pulse rate to rise and fall. Generally, females aged 12 and above have faster heart rates than males⁴. Athletes who do a lot of cardiovascular conditioning, such as runners, may have heart rates near 40 beats per minute and have no problems⁵. Blood pressure is the force of the blood pushing against the artery walls as the heart contracts and relaxes. The heart

pumps blood into the arteries with each beat, resulting in the highest blood pressure as the heart contracts. Blood pressure drops when the heart relaxes⁶. When taking blood pressure, two numbers are recorded. The higher number, referred to as systolic pressure, refers to the pressure inside the artery when the heart contracts and pumps blood through the body. The lower number, or diastolic pressure, indicates the pressure inside the artery when the heart is at rest and filling with blood⁷. Both the systolic and diastolic pressures are expressed in millimetres mercury (mm Hg). This recording shows how much the blood pressure raises the mercury column in an old-fashioned manual blood pressure device called a mercury manometer or sphygmomanometer^{8, 9}. Normal blood pressure (<120/<80mmHg), prehypertension (120-139/80-89mmHg), stage 1 hypertension (140-159/90-99mmHg), and stage 2 hypertension ($\geq 160/\geq 100$ mmHg) are the known four blood pressure ranges¹⁰.

Non-communicable diseases such as high blood pressure (HBP) or hypertension accounted for approximately 22% of total deaths in the Sub-Saharan African region in 2000, accounting for 9.2% of total mortality¹¹. According to Kearney *et al* (12), by 2025, developing countries will account for approximately 75% of the global hypertensive population. It is estimated that high blood pressure causes 7.5 million (12.8 percent of all causes of death) deaths each year¹³. Hypertension (HTN) increases the risk of cardiovascular disease by doubling the risk of coronary heart disease (CHD), congestive heart failure (CHF), stroke, renal failure, and peripheral arterial disease¹⁴⁻¹⁶. The prevalence of hypertension varies by country and sub-population within a country, but it is generally lower in high-income populations¹⁷. In Nigeria, hypertension is the most common non-communicable and cardiovascular disease, putting a significant strain on families and the country's limited health-care resources. It is also the leading cause of morbidity and mortality from cardiovascular diseases in Nigerian families¹⁸⁻²⁰.

One major issue affecting Nigeria's response to this burden is a lack of awareness, treatment, and control of hypertension²¹. As a result, many people with high blood pressure end up in hospitals with cardiovascular complications such as heart failure, ischemic heart disease, and stroke²². Indeed, research findings show that high blood pressure is frequently diagnosed as an incidental finding in people who are admitted for unrelated ailments²³. This has obviously resulted in a high morbidity and mortality rate from hypertension in Nigeria²⁴, and reports indicate that a nationwide measure to facilitate regular screening and

detection of high blood pressure is still lacking²⁵⁻²⁷. The World Health Organization emphasized the importance of raising awareness about high blood pressure in order to reduce the overall burden of the disease, particularly at the national and community levels²⁸. Furthermore, there is a significant economic burden in Nigeria as a result of hypertension and associated cardiovascular complications, as well as healthcare costs^{29,30}. The purpose of this study was to use a random approach and a cross sectional survey to gather information on BP screening among adult residents of Life Camp, Abuja. "The aim of this study was to use a random approach and a cross sectional survey to gather information on BP screening among adult residents of Life Camp, Abuja. The specific objective was to carry out a survey of BP measurements among volunteering adults and examine the relationship, if any, between BP and their age and gender."

2. Methods

A cross-sectional study was conducted in Life Camp Abuja (9.0677° N, 7.4035° E), Nigeria among adult residents that voluntarily participated in the Health Awareness Talk, and granted verbal informed consent, with the goal of screening their blood pressure. A random screening approach was adopted. The parameters of interest captured were subjects' gender, age, B.P and pulse rate. All readings were measured by skilled pharmacists who conducted the exercise using pre calibrated digital sphygmomanometer (Model: Omron[®] M3 Intellisense Automatic Upper Arm Blood Pressure Monitor). Data analysis was then carried out using SPSS for frequencies and percentages of responses. Descriptive and inferential statistical analyses were determined using chi square test. A *p* value of 0.05 or less represented the threshold for statistical significance.

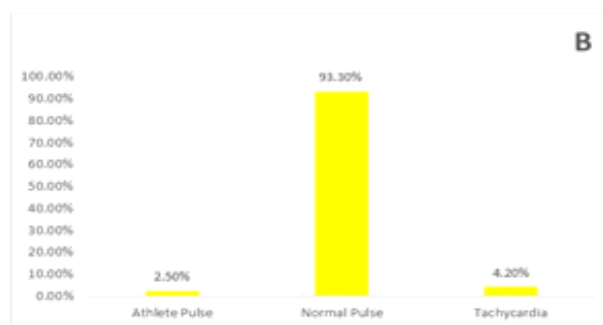
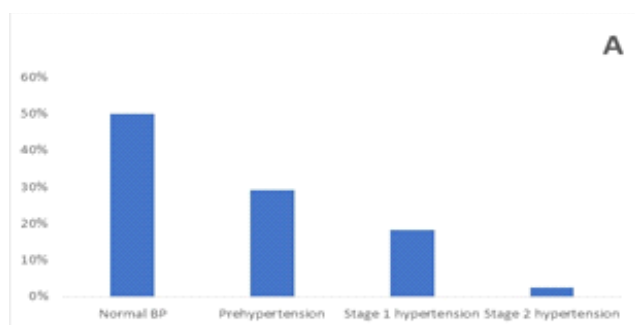
Ethical approval with assigned number NIPRD-HREC NHREC/039/21A-15 was obtained from the Institutional Review Board of the National Institute for Pharmaceutical Research and Development (NIPRD) Abuja. The confidentiality and anonymity of the data were maintained and strictly guarded in compliance with the Ethical Approval.

3. Results

A total of 120 valid test were completed and recorded. Majority (73.3%) of the participants were male, and the dominant age group was 36 – 50 years (44.2%). Half (50%) of the respondents had normal BP while more than 90% of the participants had normal pulse rate. Further details are presented in Table 1 and the figures below.

Table 1 Frequency distribution of Respondents variables of interest

Variables	Frequency(%) (n=120)
Gender	
Male	88 (73.3)
Female	32 (26.7)
Age	
15-25	31 (25.8)
26-35	21 (17.5)
36-50	53 (44.2)
Above 50	15 (12.5)
Pulse rate	
Athlete Pulse	3 (2.5)
Normal Pulse	112 (93.3)
Tachycardia	5 (4.2)
Blood pressure	
Normal BP	60 (50.0)
Prehypertension	35 (29.2)
Stage 1 hypertension	22 (18.3)
Stage 2 hypertension	3(2.5)



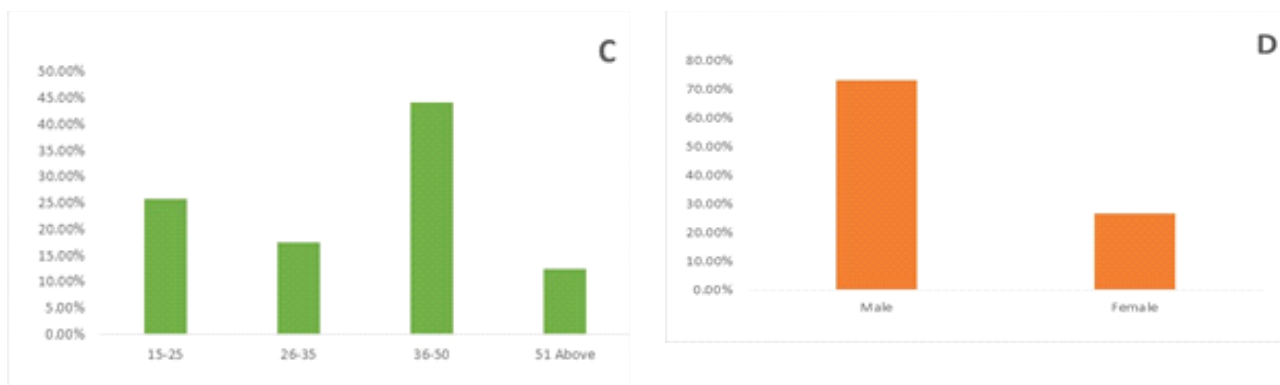


Figure 1 showing (A) Classification of blood pressure readings of respondents (B) Pulse rate of respondents (C) Age of respondents (D) Gender of respondents

Statistical analysis was then carried out using chi square test to determine association between BP readings and gender. The result showed that 48.9% of the male participants had normal BP while 53.1% of the female participants had normal BP. These results were statistically insignificant ($p=0.937$). Further details are presented in table 2 below.

Table 2: Cross tabulation of gender with blood pressure

Statement	Gender	Normal BP n (%)	Prehypertension n (%)	Stage 1 hypertension n (%)	Stage 2 hypertension n (%)	X ²	P-value
	Male	43 (48.9)	27 (30.7)	16 (18.2)	2 (2.3)		
	Female	17 (53.1)	8 (25.0)	6 (18.8)	1 (3.1)		

Furthermore, the results showed that above half of the participants between the age 15 – 25 (54.8) and 26 – 35 had normal BP, close to half (49.1) of the participants between the age 36 – 50 had normal BP whilst participants above 50 years of age had similar percentages for normal BP and Stage 1 hypertension. These results were also statistically insignificant ($p=0.386$). Further details are presented in table 3 below.

Table 3: Cross Tabulation of Age with Blood Pressure

Statement	Age	Normal BP n (%)	Prehypertension n (%)	Stage 1 hypertension n (%)	Stage 2 hypertension n (%)	X ²	P-value
	15-25	17 (54.8)	10 (32.3)	4 (12.9)	0 (0.0)		
	26-35	11 (52.4)	7 (33.3)	2 (9.5)	1 (4.8)		
	36-50	26 (49.1)	16 (30.2)	10 (18.9)	1 (1.8)		
	51 Above	6 (40.0)	2 (13.3)	6 (40.0)	1 (6.7)		

4. Discussion

According to this study, the prevalence of stage 2 hypertension was 2.5 percent compared to 18.3 percent for stage 1 hypertension. Although the majority of the participants had normal blood pressure, a crosstab of blood pressure with age revealed that 40% of those over the age of 51 had stage 2 hypertensions. This result agrees with an earlier study which found a relatively low prevalence of high blood pressure in the younger population as the risk of hypertension increases with age, owing primarily to arterial stiffness as one gets older³¹.

The majority of the study participants (73.3 percent) were male, and over 90% of the participants had normal pulse rates. However, there were BP differences between males and females. The gender differences were observed, with males having higher blood pressure than females. This is consistent with the findings of Kusuma *et al* (32) who found that men have higher BP levels (either systolic or diastolic BP) than women. Smith and Rinderknecht (33) found gender differences in blood pressure independent of body mass index (BMI) in younger (5-8 years) and older (9-18 years) children, with older boys having significantly higher BP than the girls. However, our study found that at 51 years and older, the cross tab between BP values and gender was nearly identical for both genders.

5. Conclusion

The prevalence of high blood pressure was higher in males than females within the study population. Periodic blood pressure screening for populations in our environment will play a significant role in early detection and management of hypertensive heart diseases.

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Conflict of Interest

We declare that there is no conflict of interest to disclose.

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of all pharmacists practising in the Federal Capital Territory Abuja. As its periodic health outreaches, this time to commemorate the 2022 World Hypertension Day on May, 17th 2022 with the Theme: "Measure your Blood Pressure Accurately, control it, Live Longer", a survey was conducted.

The PSN Abuja Branch, as a way of rendering corporate social responsibility to the community, and in line with theme of the day, organised and delivered a targeted health talk to raise awareness on dangers of high blood pressure and alongside conducted a free comprehensive Blood pressure screening for volunteers in attendance, at the branch secretariat located at Life Camp Abuja, Nigeria.

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