Original Research Article

Hypertension in the Young Adults

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Abstract

Background: Hypertension is a non-communicable disease which is an important risk factor for cardiovascular diseases. The prevalence has been documented to be highest in Africa where 46% of the world's population with hypertension reportedly resides. There is a global concern that hypertension in teenagers and young adults are on the increase and cases are not detected because of inadequate screening in this age group. *Objective:* To determine the prevalence of hypertension among undergraduates in Rivers State. *Materials and Methods:* This was a cross-sectional study conducted in Rivers State. The subjects were recruited from University of Port Harcourt, Rivers State University and Ignatius Ajuru University which are the three major tertiary institutions in Rivers State and their ages ranged between 16 and 35 years. Data collected were analyzed using Statistical Package for Social Sciences. *Results:* A total of 1096 respondents were recruited for the study, there were 570 (52%) males and 526 (48%) females. Sixteen (1.5%) of them were married while 1080 (98.5%) were single. The prevalence of hypertension among the respondents was 21%. Adding salt to meal before eating and noodles consumption were significantly associated with hypertension. Other risk factors which included smoking, alcohol consumption, and physical inactivity, family history of hypertension and/or CVD and use of social drugs were not significantly associated with increased prevalence of hypertension. *Conclusion:* The prevalence of hypertension was high in this study there was a significant association between hypertension and risk factors such as salt intake and noodles consumption. Health practitioners should enlighten the public on the presence of hypertension in young people. There is also need to create awareness of hypertension even in young adults and promote early lifestyle changes.
Keywords: Hypertension, young, Rivers State.

INTRODUCTION

Hypertension is a non-communicable disease which is an important risk factor for cardiovascular diseases [1]. It is a silent threat to global health and associated with high morbidity and mortality [2]. In 2010, hypertension reportedly caused more than 7 million deaths worldwide [3] and was responsible for 14% of total deaths in 2015 [1].

Hypertension increases the risk for renal failure, stroke, coronary artery disease, congestive cardiac failure and peripheral artery disease [4].

The prevalence of hypertension has been documented to be highest in Africa where 46% of the world's population with hypertension reportedly reside [5]. This figure is predicted to increase exponentially due to population growth especially the elderly group [6].

A number of modifiable risk factors of hypertension which includes diet, physical activity, diabetes, smoking and obesity might be responsible for the association between increase in systolic blood pressure and increasing age [7].

There is a global concern that hypertension in teenagers and young adults are on the increase and cases are not detected because of inadequate screening in this age group [8].

This study seeks to determine the prevalence of hypertension among young undergraduates in Rivers State.

MATERIALS AND METHODS

This was a cross-sectional study conducted in Rivers State. The subjects were recruited from University of Port Harcourt, Rivers State University and

Ignatius Ajuru University which are the three major tertiary institutions in Rivers State and their ages ranged between 16 and 35 years. Parameters extracted from the subjects included year of study, marital status, religion, use of tobacco, alcohol consumption, addition of salt to meal, noodles consumption, use of social drugs, family history of hypertension and engagement in physical activities.

The blood pressure was recorded after subjects had relaxed for a minimum of 5 minutes. Measurements were taken with the subject being in the sitting position using a mercury sphygmomanometer placed on the right arm. Measurements were done two times and the average reading was recorded.

Body weight was measured using an automated scale and Portable Height Rod Stadiometers were used for body height. The subjects stood straight and feet placed together and flat on the ground. Body Mass Index (BMI) was calculated as body weight in kilograms divided by the height squared in meters (kg/m^2). BMI greater than $30kg/m^2$ were considered obesed.

Data were analyzed using Statistical Package for Social Sciences version 23 and presented as frequency and percentage. Chi-square test was used for group comparison and Pearson's correlation performed to determine linear correlation. The p-value of ≤ 0.05 was considered as significant.

RESULTS

A total of 1096 respondents were recruited for the study; there were 570 (52%) males and 526 (48%) females. Sixteen (1.5%) of them were married while 1080 (98.5%) were single. See table 1.

The prevalence of hypertension among the respondents was 21%. It was higher among females (23.4%) than males (18.8%). The difference was not significant (P=0.061). See table 1. Highest prevalence was found in the 26-30 age groups. The difference was also not significant. See table 1.

First year students were the highest participants in this study (52.8%) and also recorded the highest prevalence (22.8%) but there was no significance difference in the prevalence of hypertension based on the year of study (P=0.418).

Overall, only 16 (1.5%) of them were married. The prevalence of hypertension among the married students was significantly higher than the unmarried population (P=0.024). See table 1.

There was no significant association between hypertension and other sociodemographic factors like age group, religion and institution of study (P>0.05).

Adding salt to meal before eating and noodles consumption were significantly associated with hypertension. The P values were 0.035 and 0.006 respectively. The number of packs of noodles consumed per week was significantly associated with increased prevalence of hypertension. See table 2.

Other risk factors which included smoking, alcohol consumption, physical inactivity, family history of hypertension and/or CVD and use of social drugs were not significantly associated with increased prevalence of hypertension. See tables 2-4.

Table 1: Association between Socio Demographic Characteristics and Prevalence of Hypertension

Characteristics	Total n (%)	Hypertensive n (%)	Normotensive n (%)	X^2	P
1) **SEX**					
Male	570 (52)	107 (18.8)	463 (81.2)	3.509	0.061
Female	526 (48)	123 (23.4)	403 (76.6)		
2) **MARITAL STATUS**					
Single	1080 (98.5)	223 (20.6)	857 (79.4)	5.075	0.024
Married	16 (1.5)	7 (43.8)	9 (56.2)		
3) **AGE**					
16 – 20	603 (55)	123 (20.4)	480 (78.9)	0.877	0.831
21 – 25	465 (42.4)	101 (21.7)	364 (78.3)		
26 – 30	26 (2.4)	6 (23.1)	20 (76.9)		
31 – 35	2 (0.2)	0 (0.0)	2 (100.0)		
4) **INSTITUTION OF STUDY**					
Univ. of PH	658 (60.0)	123 (20.4)	519 (78.9)	0.468	0.791
Riv. St. Univ. (RSU)	256 (23.4)	56 (21.9)	200 (78.1)		
Univ. of Edu.	182 (16.6)	35 (19.2)	147 (80.8)		
5) **LEVEL OF STUDY**					
Year 1	579 (52.8)	132 (22.8)	447 (77.2)	3.912	0.418
Year 2	317 (28.9)	59 (18.6)	258 (81.4)		
3	135 (12.3)	27 (20.0)	108(80.0)		
4	59 (5.4)	12 (20.3)	47(79.7)		
5	6 (0.5)	0 (0.0)	6(100.0)		

Characteristics	Total n (%)	Hypertensive n (%)	Normotensive n (%)	X^2	P
6) RELIGION					
Christianity	1074(98.0)	227(21.1)	847(78.9)	2.787	0.436
Islam	8(0.7)	0(0.0)	8(100.0)		
African Trans Religion	12(1.1)	3(25.0)	9(75.0)		
Others	2(02)	0(0.0)	2(100.0)		

Table 2: Association between Cardiovascular Risk Factors and Hypertension

Risk Factor	Total n (%)	Hypertensive n (%)	Normotensive n (%)	X^2	P
1) SMOKING					
Non-smoker	1041(95)	821.(78.9)	220(21.1)	0.374	0.600
Smoking	55(5)	45(81.8)	10.(18.32)		
2) ALCOHOL CONSUMPTION					
Don't consume alcohol	703(64.1)	583(82.9)	120(17.1)	0.669	0.414
Consume alcohol	393(77.6)	305(77.6)	88(22.4)		
3) SALT CONSUMPTION					
Add salt to meal b4 eating	244(22.3)	63(25.8)	181(74.2)	4.424	0.035
Don't add salt to meal b4 eating	852(77.7)	161(18.9)	691(81.1)		
4) NOODLES CONSUMPTION					
NO	122(11.1)	14(11.5)	108(88.5)	7.488	0.006
YES	974(88.9)	216(22.2)	758(77.8)		
5) PHYSICAL ACTIVITY					
Physically inactive	493(45.0)	388(78.7)	105(21.3)	0.906	0.341
Physically active	603(55,0)				
Aerobic	486(80.6)	389(80.0)	97(20.0)		
Weight lifting	1217(19.4)	89(76.1)	28(23.9)		
1-3 packs/week	474(48.7)	375(79.1)	99(20.9)	9.346	0.025
4-6 packs/week	313(32.3)	254(80.6)	61(19.4)		
7-9 pack/week	72(7.4)	52(72.2)	20(27.8)		
Less than 10 packs/week average	113(11.6)	77(68.1)	36(31.9)		

Table 3: Association between Family History of Hypertension and CVD and Hypertension

Family History	Total n (%)	Hypertensive n (%)	Normotensive n (%)	X^2	P
1) FAMILY HISTORY OF HYPERTENSION					
NO	754(68.8)	594(78.8)	160(121)	0.156	0.693
YES	225(20.5)	180(80.0)	45(20.0)		
N=748					
2) FAMILY HISTORY OF CVD					
NO	708(94.7)	549(77.5)	159(22.5)	1.221	0.269
YES	40(5.3)	28(70.0)	12(30.0)		

Table 4: Association Hypertensive with Use of Social Drugs

Drug	Total n (%)	Normotensive n (%)	Hypertensive %	X^2	P
Cocaine	5(0.5)	5(100%)	0(0.0)	1.334	0.248
Tramadol	37(3.4)	27(73,0)	10(27.0)	0.843	0.359
Ecstasy	6(0.5)	5(83.3)	21(16.7)	0.068	0.794
Marijuana	36(3,3)	27(75.0)	9(25.0)	0.362	0.548
Codeine	38(3.5)	29(76.3)	9(23.7)	0.173	0.678

DISCUSSION

Hypertension is prevalent in all nations of the world and recent studies as well as evidence suggest further increase in the prevalence of hypertension among people [9]. Hypertension has increased progressively in younger age groups in the past 20 years [9]. The hypertension prevalence of 21% found in this study was higher than the findings from previously reported studies in Nigeria [10, 11]. In a developing country like Nigeria, this increase prevalence puts an extra burden on the limited resources and quality of life of the population. Unlike the previous studies that had both young and old population, the participants in our study are young with ages between 16 and 35 years. The increased prevalence in this young population might be due to westernization of our diet and lifestyle

changes in the country. It has been estimated that 1 in 17 young adults below the age of 40 years have blood pressures that exceed the diagnostic threshold with this number rising to 1 in 5 if there are specific predisposing factors such as a family history [12].

Similar to a study carried out in Ghana [13], females had a higher prevalence of hypertension compared to men in our study. This is in contrast to other studies that revealed a higher prevalence in men [14, 15]. The difference in blood pressure pattern in both sexes may be attributed to hormonal changes that occur during puberty which has been noted to occur more rapidly in females than males [9].

Results from this study revealed no significant relationship between hypertension and smoking, alcohol intake, use of recreational drugs and obesity. Similar findings were also seen in a study by Ekore *et al.,* [16]. In that study, diet, smoking, alcohol consumption, physical activity/exercise did not show any correlation with hypertension among young adults attending a hospital in Ibadan, Nigeria. Also, in a South African study carried in a rural setting to determine the impact of lifestyle factors with the onset of hypertension in young adults, none of the lifestyle factors showed any significant relationship or contributed to their hypertension [17]. Ajayi *et al.,* [18] reported that the only significant lifestyle predictor of hypertension among adults was alcohol, and this was mostly related to the older adults. However, some of these lifestyle choices increased the likelihood of other cardiovascular diseases and the chances increase with age.

Unlike what was noticed in the study by Ekore *et al.,* [16], this study revealed a significant correlation between hypertension among young adults and diet/nutrition. Addition of salt to meal before eating was significantly associated with hypertension. Several epidemiological and clinical studies have confirmed that salt intake is an important factor in elevating the blood pressure [19, 20]. Salt is an ionic compound composed of sodium chloride, which is 40% sodium and 60% chloride. Excess dietary sodium predisposes to high blood pressure [21].

Similarly, consumption of noodles which is common among the individuals in the age bracket of this study significantly contributed to the hypertension experienced by participants of this study (p<0.01). The result from this study also showed a corresponding increase in the predisposition to hypertension with every increase in the relative number of packs of noodles consumed daily. Similar to this finding, several studies have supported associations between refined grain consumption including noodles and risk of hypertension [22, 23]. Noodles contain a high amount of sodium which may contribute to increase risk of hypertension [24]. These refined grains are relatively low in nutrients because the bran and germ are removed during the refining process [16], which has negative effects on hypertension.

In the present study, family history of hypertension accounted for 20.8% of cases of hypertension. But there was no significant association. Naim Nur *et al.,* [25] and Abd El-Mohsen *et al.,* [26] in their studies stated that if one parent was hypertensive, the probability of their children being hypertensive is about 28% while if both parents are hypertensive, the chances of their children being hypertensive is around 41.0%.

CONCLUSION
The prevalence of hypertension was high in young adults. There was a significant association between hypertension and risk factors such as salt intake and noodles consumption.

Health practitioners should enlighten the public on the presence of hypertension in young people. There is also need to create awareness of hypertension even in young adults and promote early lifestyle changes.

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