Original Research Article

Prevalence and pattern of hypertension among elderly in Osun state, Nigeria

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ABSTRACT

Background: Hypertension is a major public health challenge worldwide. It is acknowledged as an important risk factor for cardiovascular morbidity and mortality, particularly among the elderly. This study aimed to investigate the prevalence and pattern of hypertension among the elderly in Osun state, Nigeria.

Methods: A descriptive cross-sectional design was used. The study involved 425 respondents aged 60 years and above selected randomly in five local government areas in Osun state. The blood pressure was measured (using a standardized Accoson® type pneumatic mercury sphygmomanometer); weight and height of the respondents were checked and recorded in mmHg, Kg and meters respectively. Data were presented using descriptive statistics, charts and frequency distribution table. Statistical association between categorical variables was assessed using Chi-square method at 5% level of significance.

Results: Prevalence of hypertension among elderly was 44.7%. Among other factors, respondents' body mass index BMI was found significantly associated with hypertension, p=0.009. However, prevalence of hypertension was higher for respondents that were; rural dwellers, female, not living with spouse, without viable source of income and engaging in little or no physical activity compared to their counterparts. Respondent's BMI and sex were also found to be statistically significantly associated, p=0.011.

Conclusions: Prevalence of hypertension was high among the elderly in this study. Health interventions aimed at reducing the diseases should encourage increased physical activities and incorporate financial empowerment schemes particularly for elderly women in rural settings.

Keywords: Elderly, Hypertension, Pattern, Prevalence, Risk-factors

INTRODUCTION

Non-communicable diseases, particularly cardiovascular diseases, are the commonest cause of medical admissions among the elderly in Africa.[1] Hypertension is acknowledged as an important risk factor for cardiovascular morbidity and mortality, particularly in the elderly. It is a significant and often asymptomatic chronic disease, which requires optimal control and persistent adherence to prescribed medication to reduce the risks of cardiovascular, cerebrovascular and renal disease.[2] Globally, hypertension is a major public health problem and a leading cause of death and disability in developing countries. One-quarter of the world's adult population has hypertension, and this may increase to 29% by 2025.

Unlike high-income countries, the prevalence of hypertension has rapidly and continuously risen in the

past decades in low-income countries[3]. The high prevalence of hypertension in Africa is due to both urbanisation and a shift towards western habits such as smoking, unhealthy diets with excess salt and fat intake, physical inactivity and consequential increased adiposity.[3]

In Nigeria, hypertension ranks first among cardiovascular disease with its complications constituting about 25% of emergency medical admission in urban hospitals in the country.[4] Nigeria, currently with a population of over 160 million, is the most populous African country, and the prevalence of hypertension in the country hugely contributes to the overall burden of the disease in Africa.[5] In 2008, the WHO estimated hypertension prevalence of 42.8% in Nigeria. However, various studies have reported disparities in prevalence values of hypertension across groups and settings, this thus explains difference in interventions that may be required across these groups.[6,7] Only very few of such studies had focused on the elderly, 60 years and above.[8] Information on the prevalence and pattern of hypertension among the elderly would not only highlight the extent of the burden of the disease among this vulnerable group but also inform the plan for necessary interventions for control. High illiteracy rates, poor access to health facilities, bad dietary habits, poverty, and high costs of drugs contribute to poor blood pressure control.[9] This study therefore aimed to assess the pattern and prevalence of hypertension among the elderly in Osun state, Nigeria.

METHODS

Study area and participants

The study was carried out in five randomly selected local Government in Osun state. Osun state is located in the Southwestern part of Nigeria and is bounded by Ogun, Kwara, Oyo and Ondo in the South, North, West and East respectively. According to the 2006 National Population Census (NPC), Osun state was estimated to be about 3 Million. The majority of the inhabitants were farmers and traders. The study was carried out from May to August 2017, which spanned the rainy season. All adults that were sixty years and above who consented to be part of the study were included. Overall, four hundred and twenty five study participants drawn across the three senatorial districts in the state were enrolled in the study.

Study design

This was a cross-sectional descriptive survey. A semi-structured questionnaire which assessed their knowledge of hypertension, risk factors, adherence to management as well as demographic attributes were administered to the respondents. The blood pressure was measured (using a standardized Accoson® type pneumatic mercury sphygmomanometer); pulse, weight and height of the respondents were checked and recorded in mmHg, kg and meters respectively.

Blood pressure measurement

Each respondent sat quietly for at least 5 minutes in a chair with their backs supported and their bare arms supported at heart level on a desk. The bell of the stethoscope was placed over the brachial artery pulse, about 2 cm above the cubital fossa. The cuff was inflated to 20 mmHg above the palpated systolic blood pressure (SBP) and deflated at a rate of 2 to 3 mmHg/second. The SBP and diastolic blood pressure (DBP) were recorded. The first sound heard (phase 1) taken as the SBP. The disappearance of sound (phase 5) was taken as the DBP among the subjects. Hypertension was defined as systolic blood pressure recording greater than 140 mmHg or diastolic blood pressure greater than 90 mmHg.

Body mass index

The body mass index (BMI) was calculated by dividing the weight in kilograms (kg) by the square of the height in meters (m^2). BMI less than 18 kg/m^2 is regarded as underweight, BMI of 18 to 24.9 kg/m^2 was regarded as normal and 25-29.9 kg/m^2 and ≥ 30 kg/m^2 were considered overweight and obese respectively.

Ethical issue

Ethical clearance was obtained from the Institutional Review Board IRB of Ladoke Akintola University of Technology, Osogbo, Nigeria. Elderly, aged 60 years and above were individually briefed on the objectives of the survey and were also informed that participation was completely voluntary. Consent was recorded as "yes" or "no" on an individual form designed for the collection of basic demographic data. For those who refused to participate no further questions were asked and no information was recorded.

Statistical analysis

Data collected were analyzed using SPSS 21.0. The data were presented using frequency distribution tables and charts. Crude estimates were reported and Chi-square statistical method used to determine significance of association between categorical variables at 5% level of significance.

RESULTS

Table 1 shows socio-demographic characteristics of the respondents. In the table, sex distribution of the respondents showed larger proportion 328 (77.2%) were female and 97 (22.8%) were male, most respondents 315 (74.1%) were young old, 99 (23.3%) were old and 11 (2.6%) were very old. The socio-economic status of the respondents shows well over half of the respondents 235 (59.3%) had no regular income another 134 (31.5%) earned less than 20,000 naira (about $ 55) and 56 (13.2%) earned at least 20,000 naira (about $ 55) a month. The marital status of the respondents showed that 252 (59.3%)

of the respondents were living with spouse, as regard parity status, 109 (25.6%) of the respondents had 1-4 children and 250 (58.8%) were grand multiparous, 5 and above. Most of the respondents, 297 (69.9%) were illiterate and the remaining had some levels of education, the religion of the respondents showed that 172 (40.5%) of the respondents were Christian and 253 (59.5%) were Muslim by religion. Less than half 183 (43.1%) of the study participants were within the normal BMI range and about one- in-five 82 (19.3%) of the elderly was obessed. Overall, 189 (44.7%) had elevated blood pressure.

Table 1: Socio-demographic characteristics of the respondents.

Variables	Frequency	Percentage (%)
Age groups (in years)		
Young old (60-74)	315	74.1
Old old (75-84)	99	23.3
Very old (≥85)	11	2.6
Sex of respondents		
Male	97	22.8
Female	328	77.2
Marital status new categories		
Living with spouse	173	40.7
Not living with spouse	252	59.3
Monthly income		
<20000 naira	134	31.5
20000 naira and above	56	13.2
No regular income	235	55.3
Location		
Rural	205	48.2
Urban	220	51.8
Number of biological children		
1-4	109	25.6
5 and above	250	58.8
Educational status		
Not educated	297	69.9
Educated	128	30.1
BMI categories		
Under weight (<18.5)	38	8.9
Normal (18.5-24.9)	183	43.1
Overweight (25-29.9)	106	24.9
Obese (≥30)	82	19.3
Hypertension status		
Hypertensive	189	44.7
Not hypertensive	234	55.3

Table 2: Association between Respondents' characteristics and hypertension status

Variables	Hypertension status		χ^2	df	P value
	Not hypertensive	Hypertensive			
	N (%)	N (%)			
Age groups in years					
Young old (60-74)	173 (55.3)	140 (44.7)			
Old old (75-84)	54 (54.5)	45 (45.5)	0.332	2	0.847
Very old (≥85)	7 (63.6)	4 (36.4)			
Sex of respondents					
Male	59 (60.8)	38 (39.2)			
Female	175 (53.7)	151 (46.3)	1.543	1	0.214
Educational status					
Not educated	166 (56.1)	130 (43.9)			0.630
Educated	68 (53.5)	59 (46.5)	0.232	1	

Continued.

| Variables	Hypertension status		χ^2	df	P value
	Not hypertensive	Hypertensive			
	N (%)	N (%)			
Marital status					
Living with spouse	99 (57.6)	73 (42.4)	0.588	1	0.443
Not living with spouse	135 (53.8)	116 (46.2)			
Parity					
1-4	68 (62.4)	41 (37.6)	2.151	1	0.413
5 and above	134 (54.0)	114 (46.0)			
Monthly income					
<20000 naira	77 (57.9)	56 (42.1)			
20000 naira and above	35 (62.5)	21 (37.5)	2.484	2	0.289
No regular income	122 (52.1)	112 (47.9)			
Location					
Rural	112 (54.9)	92 (45.1)	0.028	1	0.868
Urban	122 (55.7)	97 (44.3)			
Ever smoked					
Yes	36 (56.3)	28 (43.8)	0.026	1	0.871
No	198 (55.2)	161 (44.8)			
BMI categories					
Underweight (<18.5)	27 (71.1)	11 (28.9)			
Normal (18.5-24.9)	111 (61.0)	71 (39.0)	11.483	3	0.009**
Overweight (25.0-29.9)	53 (50.5)	52 (49,5)			
Obese (≥30)	36 (43.9)	46 (56.1)			
Satisfied with life					
Yes	191 (54.3)	24 (37.5)	1.488	1	0.222
No	40 (62.5)	161 (45.7)			
Exercise					
Yes	93 (59.2)	64 (40.8)			
No	141 (53.0)	125 (47.0)	1.549	1	0.213
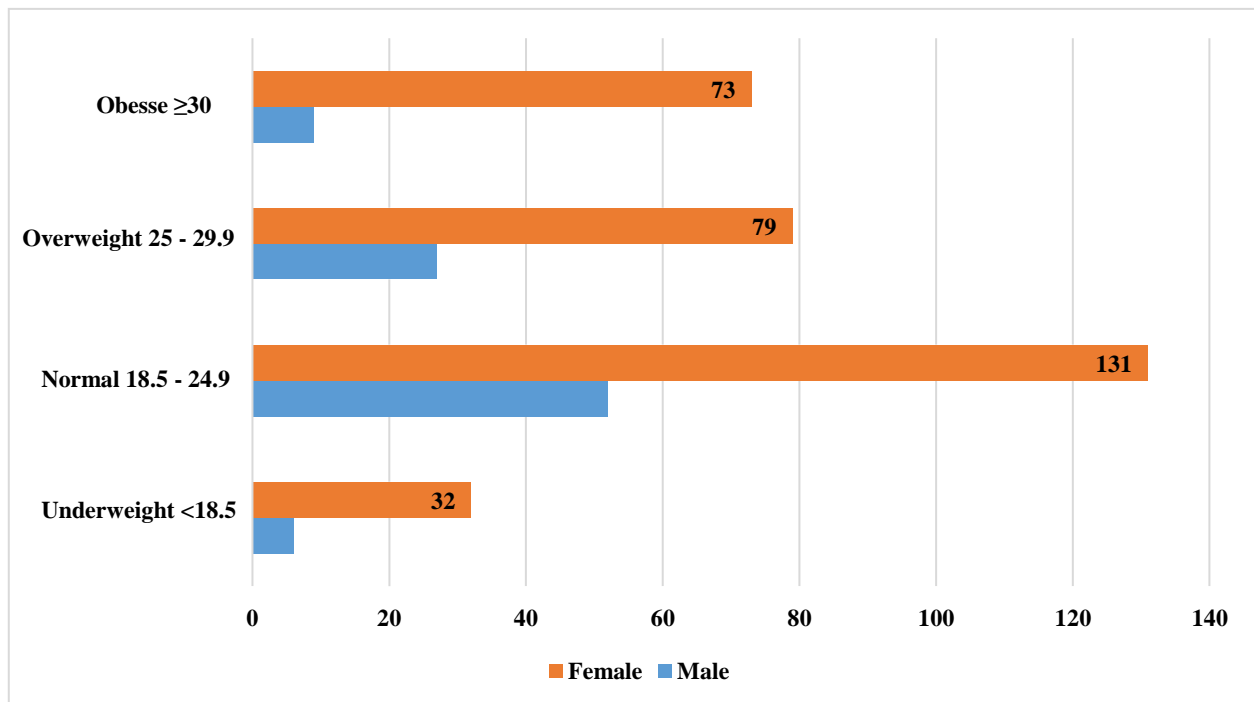
**Significant at 1%.

Figure 1: Association between respondents' BMI and sex.

Figure 1 shows a statistically significant relationship between respondents' sex and their body mass index. Whereas, elderly male respondents were more likely to have a normal body mass index, female had a higher tendency to be obessed, p<0.011.

The result from Table 2 shows that only the body mass index of the study participants has statistically significant association with elevated blood pressure, p<0.05. All other selected respondents' characteristics had non-significant association with hypertension status, p>0.05, in each case. Respondents that were overweight or obese respectively had higher likelihood of having hypertension compared to those that were either underweight or normal. Respondents within 60-74 and 75-84 years of age were found to have higher prevalence of elevated blood pressure 45.5 and 44.7% respectively compared to those above 85 years with a prevalence of 36.4%. Female respondents had higher prevalence 46.3% of high blood pressure compared to male with only 39.2%. Not living with spouse presents with excess elevated blood pressure 46.2% compared to those having spouse 42.4%, so also, respondents having more than 4 children, with prevalence of 46%, and living in the rural setting, with a prevalence of 45.1%. In addition, in respect of respondents' monthly income, those with no regular source of income had highest prevalence of hypertension (47.9%) and followed by respondents with less than 20000 naira (<55$) monthly income, with a prevalence of (42.1%), respondents with monthly income of at least 20000 naira (≥55$) had the least prevalence 37.5% of hypertension. Those who engaged in less physical activities were also observed to have a higher prevalence of elevated blood pressure.

DISCUSSION

In this study, more than three-quarters of the respondents were female 328 (77.2%). The findings appeared to support a better care-seeking behaviour among women compared to men. In spite of the fact that mechanisms were put in place to adequately create awareness in all the selected local government areas about the health-intervention component of the survey, which include; provision of treatment for minor ailments and general medical check-up, a sharp contrast in attendance was witnessed between male and female study participants. Previous studies have reported gender differences in health care seeking behaviour, favoring women.[10-12]

The overall prevalence of hypertension 44.7% is lower compared to the national prevalence rate of 46% in Nigeria.[13] However, the result was quite high compared to findings from previous studies where authors reported prevalence values of 32.56%, 31.4% and 32.8%, 15.7%, 21.5% and 18.3%, respectively.[14-19] The observed low prevalence values in the previous studies could be attributed to difference in the age structure of the populations being studied. Whereas, the population of interest in those studies comprised of all age groups, only

the elderly, at least 60 years, were involved in the current study. Nonetheless, the prevalence of hypertension in this study was also higher than that in a previous study even though both studies were similar in the age range of participants and settings.[8] In this study, similar proportion of hypertensive respondents were observed in both rural and urban settings, although the prevalence value was higher in the rural. This is in contrast with previous finding where authors reported a higher crude prevalence of hypertension in urban area.[20] The preponderance of hypertension in the rural setting recorded in this study could be due to paucity of information that usually characterize rural settings, particularly on risk factors and control measures associated with both communicable and non-communicable diseases, including hypertension, thus, making rural dwellers more susceptible to those health conditions.

High body mass index has been reported to be associated with coronary heart diseases CHD.[21,22] In this study, about half of the study participants were either overweight or obese. This thus shows that a considerable proportion of the elderly is prone to ischemia or cardiovascular heart disease. Similar result was reported previously in a study that also considered elderly individuals that were however above age of 65 years.[23] According to the result, women are more likely to suffer from hypertension compared to men, which further increases pathogenesis of cardiovascular diseases for the women.[24] The sex-BMI distribution in this study indicates elderly women may not be as physically active as their men counterparts. This may also explain the excess prevalence of hypertension found in the elderly women in this study. Similar findings was previously reported in a study of the prevalence, awareness and control rate of hypertension among elderly in northwest of Iran who were 60 years or older.[25]

This study presents a pattern of prevalence in hypertension among the elderly that increases with economic or financial insecurity. Elderly with no stable financial source had higher cases of hypertension compared to those that had stable source. A most economically stable group presents with the lowest prevalence. Other studies have also reported that both health and living conditions of the elderly persons were affected by several factors related to demography, economic, social network and support.[26,27] Elderly persons are clearly at an elevated risk of hypertension because of poverty, especially in a country where no social security or disability pension is available to the vast majority of the citizens.

CONCLUSION

The finding of this study shows that although prevalence of hypertension in older population is lower compared to the national average, the value is still unacceptably high. Body mass index was identified as a major risk factor to hypertension in this study. Higher likelihood of the

disease exists in less economically viable women dwelling in rural setting who engaged in little or no physical activities. Health interventions aimed at reducing hypertension should encourage increased physical activities and also incorporate financial empowerment schemes particularly for older women dwelling in rural settings. Future research is needed to identify health interventions that will help reduce hypertension among the elderly.

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