The prevalence of hypertension among the adults in a semiurbarn community in south west Nigeria

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Abstract

Recent studies have shown an increasing trend in the prevalence of hypertension in rural communities. This study aimed to investigate the prevalence of hypertension among the residents of Likosi town, Sagamu local government area, Ogun state, Nigeria.

A descriptive cross-sectional design was used. 350 respondents aged from 20-80 years were recruited. Hypertension was defined as Systolic blood pressure (SBP) $\geq$ 140 and/or Diastolic blood pressure (DBP) $\geq$ 90mm Hg. statistical analysis was performed using the SPSS package.

The prevalence of hypertension was 23.3% (male 11.2% and female 12.1%). The mean age of the respondents was 37.5years. The body mass index of the respondents was 18.5%, 45.1%, 15.1% and 24.3% for underweight, normal, overweight and obese respectively. Alcohol and tobacco use were found in 34.5% and 15.4% respectively. Hypertension was significantly associated with age groups 30-49 years (OR 2.258, 95% CI: 1.311 - 3.884), overweight or obesity.

Keywords: hypertension, prevalence, body mass index

Introduction

Hypertension also known as high blood pressure occurred as a result of environmental influences acting over time on the genetically predisposed individual [1]. Hypertension is an important public health challenge worldwide [2]. It has become a significant problem in many developing countries, with majority of them experiencing epidemiological transition from communicable to noncommunicable chronic diseases. The emergence of hypertension as a public health problem in these countries is strongly related to the aging of the populations, urbanization and socioeconomic changes that favors sedentary habits, obesity, alcohol consumption, and salt intake among others.

Though the exact causes of hypertension are usually unknown, smoking, obesity or being overweight, diabetes, sedentary lifestyle, lack of physical activity, high levels of salt intake (sodium sensitivity), insufficient calcium, potassium, and magnesium consumption, vitamin D deficiency, high levels of alcohol consumption, stress, aging, medicines such as birth control pills, genetics and a family history of hypertension, chronic kidney disease, adrenal and thyroid problems or tumours have been highly associated with the condition [3]. In addition, hypertension often coexists with other cardiovascular risk factors, such as tobacco use, diabetes, hyperlipidemia and obesity, which compound the cardiovascular risk attributable to hypertension. Unfortunately, these coexistent risk factors are inadequately addressed in patients with hypertension, resulting in high morbidity and mortality [4]. It has become increasingly evident that hypertension which is one of the risk factors of stroke, ischemic heart disease and renal failure are not confined to a subset of the population with particularly high levels of blood pressure, but rather, it is a risk factor even in a continuum moderate level of blood pressure [5].

The burden of chronic diseases is rapidly increasing worldwide. In 2001, chronic diseases contributed approximately 60% of the 56.5 million total reported deaths in the world and approximately 46% of the global burden of disease. [6] The proportion of the burden of non-communicable diseases is expected to increase to 57% by 2020 [7]. Hypertension is recognized as a silent killer due to the damages it causes on the target organs on a continuous and progressive basis until symptoms are manifested [8] it increases the chance of an individual's risk of having various cardiovascular diseases by two to three times with devastating consequences. [9] Recently, the prevalence of predisposing factor to hypertension, is rising in developing countries and the burden is worse in persons with lower socioeconomic status.[6] Hypertension is becoming an increasingly common health problem worldwide because of increasing longevity and prevalence of contributing factors. [10],

The current prevalence in many developing countries particularly in urban societies is already as high as those seen in developed countries [11]. There are usually no symptoms associated with high blood pressure, so many people with high

blood pressure are unaware they have it [12]. This was established in a study in New Zealand, where 10% of adults reported that they were on drugs for high blood pressure, but when measurements were taken a further 4% were found to have high blood pressure in apparently healthy population [12]. Likewise, in Nigeria, awareness is poor as only 33.8% of hypertensive are aware of their condition [13, 14, 15].

Moreover, the more worrisome situation is the trend of poor blood pressure control worldwide.A study revealed that slightly more than half of adults with hypertension were aware of their disease, fewer than half were treated for their hypertension with medications; and less than two-thirds were controlled to <140/90 mmHg with medication [16].Futhermore, a situation that has been called "the rule of halves" is becoming rapant.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[16].Recent surveys revealed continuing deficiencies in the awareness and control of hypertension. In many cases, failure to achieve blood pressure goals may be attributable to the poverty of patients' knowledge, perception, attitudes and lifestyle practices. [13 14, 15].

In Nigeria, the prevalence of high blood pressure was between ten and fourteen percent based on a national survey conducted over a decade ago [13, 14]. Since that survey, social and demographic changes have taken place which may influence changes in the prevalence and epidemiology [15].

A recent community based study of rural and semi-urban areas in Enugu, Nigeria, put the prevalence of hypertension in Nigeria at 32.8% [17], while a meta analytical study published recently estimated the country wide prevalence to be between 12.4% and 34.8%, this means that 20 to 56million Nigerians are hypertensive [15]. The aims of the study is therefore, to determine the prevalence of Hypertension and its associated risk factors in the semi urban community.in order to reduce the risk of developing cardiovascular diseases and associated morbidity and mortality.

Methodology
Description of the Study Area
The study was carried out in Likosi town of Ogijo community under the Sagamu Local Government Area of Ogun State. Ogijo community is in the North East Area of Sagamu with a geographical coordinate of 6˚42' 0" North, 3˚31' 0" East and shares boundaries with Ikorodu and Sagamu main town. It has a population of about two hundred and fifty thousand. The study population consisted of adults (males and females) in Likosi area of Ogijo between the ages of twenty (20) and eighty (80) years.

Eligibility Criteria: Inclusion and exclusion criteria
Adults in Likosi community between the ages of twenty (20) and eighty (80) years who were willing to participate in the study were recruited into the study. Those who were less than 20 years as at last birthday were excluded from the study.

Study Design
The study was a cross sectional descriptive survey aimed at vdetermining the prevalence of hypertension among adults in Ogijo Community of Sagamu, Ogun State.

Sample Size Determination
The sample size was determined using the formula: $n = \dfrac{z^2 \, p.q}{d^2}$ Where,
n = desired sample size
z = the standard normal deviate set at1.96 confidence interval
p = proportion estimated to be obtainable in target population (34.8%)
q = proportion that does not have the characteristic being investigated i.e. q = 1- p
d = degree of accuracy required = 0.05
Therefore,

$$n = \frac{(1.962)^2 \,(0.348)\,(0.652)}{(0.05)^2}$$

$$n = \frac{3.84 \times 0.348 \times 0.652}{0.0025} = 348.5$$

Approximately 350

Sampling Methodology
A multi-stage random sampling technique was used for the selection of respondents for the questionnaire.
Stage I: The selection of Likosi community was done by random sampling method.
Stage II: Fourteen streets were randomly selected and 25 respondents were randomly selected in each of the selected streets.
Stage III: A total of three hundred and fifty (350) respondents were given questionnaires and their blood pressure measured. Participants were recruited from the market / work place(s)and from their residences.

Data Collection Instruments
An interviewer administered questionnaire method was used. The questionnaire was developed after a review of the literature. It was pretested in Simawa community in Mowe Local Government Area. The pre-test was conducted on a sample size of 50 respondents.

Data Collection Techniques Procedures
The survey was conducted among adults between the ages of twenty (20) and eighty (80) years old in the Likosi area of Ogijo community. The study was introduced to the respondents and they were informed that questionnaires will be filled following which their blood pressure, weight and height will be measured. They were assured of confidentiality.
Respondents were selected at random from the market, offices and from places of residence.
The method/ instrument used in collecting data was questionnaire (privately filled face to face questionnaire). Face to face interview is preferred to self-administration of questionnaire because field experiences in Nigeria show that the former usually yield better rates of responses and produces good quality data than the latter [84, 28].

Data Analysis
The data collected were collated and statistical analysis was performed using the SPSS 16.

Results

A total of 350respondents participated in the study with majority of them were male (193) accounted for 55.1% compared to 157 (44.9%) female. the M: F was 1.3:1. The Mean age was 37.5years. The highest proportion of the respondents 136(38.9%) were found in the 31-40 years. in addition, 253 (72, 3%), 79 (22.5%) and 9 (2.5%) had Primary, secondary, and tertiary education respectively. The majority of the respondents were married 215 (61.4%), 98 (28%) were single and 37 (10.6%) were separated. Table 1

Majority of the respondents have heard of high blood pressure 336 (99.1%) and hypertension 347 (99.1%). most of the respondents believed that high blood pressure is different from hypertension 218 (62.3%).Also, quite a number of them had their blood pressure checked regularly 293 (83.7%) but only considerable respondents 203 (58%) knew the cut off for hypertension. Most of the respondents were sure that the blood pressure needed to be checked at the hospital to be confirmed as being hypertensive 301 (86%). (Table 2)

Most of the respondents were not hypertensive. However the age range of 31 – 40 years had the highest of hypertensive. While the prevalence rate of hypertension for this study was found to be 23.7% (Table 3).

Although, agreater had high blood pressure but it was not statistically significant. Using the BMI (kg/m ^{2}) of the respondents18.3%, 45.1%, 15.1%, and 21.4%, were. underweight, normal, overweight, and obese respectively (table 4). More than half (63.4%) of the respondents were either underweight or normal while 36.5% were either overweight or obese. 15.4% of respondents engage in drinking of alcohol, cigarette smoking 34.6%, as well as inactivity in 55.1%.

Out of the 83 respondents that had hypertension, majority of them attained tertiary education 58 (69.9%), 40 (48.2%) were obese while 21 (26.3%) were overweight (Table 5)

Table 1: Socio-demographic Characteristics of respondents

Biodata	Frequency (n = 350)	Percentage (%)
Age in years		
20 – 30	81	23.1
31 – 40	136	38.9
41 – 50	75	21.4
51 – 60	40	11.4
61 – 70	15	4.3
71 – 80	3	0.9
Gender		
Males	193	55.1
Females	157	44.9
Educational Level		
None	9	2.5
Primary	9	2.5
Secondary	79	22.5
Tertiary	253	72.3
Religion		
Christianity	176	50.3
Islam	172	49.1
Religion	2	0.6
Marital Status		
Single	98	28
Married	215	61.4
Seperated	37	10.6

Table 2: Knowledge of hypertension and blood pressure measurement Frequency and Percentage

Knowledge of hypertension	Yes	No	No response
Have heard of blood pressure	336 (96%)	14 (4%)	
Have heard of hypertension	347 (99.1%)	3 (0.9%)	
High blood pressure is different from hypertension	132 (37.7%)	218 (62.3%)	
Have had BP check	293 (83.7%)	57 (16.3%)	
BP > 140/90 mmHg is considered hypertensive	203 (58%)	100 (28.6%)	47 (13.4%)
Signs of hypertension			
Headache	119 (34%)	231 (66%)	
Fast Heart Beat	98 (28%)	252 (72%)	
Not sleeping	103 (29.4%)	247 (70.6%)	
BP check at the hospital	301 (86%)	49 (14%)	

Table 3: Blood Pressure Profile Within Age Groups

Age groups Frequency and Percentage		
	Normal	**High**
20 – 30 years	72 (20.6%)	9 (2.6%)
31 – 40 years	106 (30.3%)	30 (8.6%)
41 – 50 years	57 (16.3%)	18 (5.1%)
51 – 60 years	23 (6.6%)	17 (4.9%)
61 – 70 years	6 (1.7%)	9 (2.6%)
71 – 80 years	3 (0.9%)	–
Total	**267 (76.3%)**	**83 (23.7%)**

Table 4: Association between gender and blood pressure profile

Gender	Blood Pressure (Frequency and Percentage)				
	Normal	**High**	**Total**	**X^2**	**P – Value**
Females	114 (31.9%)	43 (12.1)%	157 (44.9%)	2.63	>0.10, <0.20
Males	155 (44.8%)	40 (11.2%)	193 (55.1%)		
Total	267 (76.7%)	83 (23.3%)	350 (100%)		

Table 5: Effects of level of education and other risk factors in the development of hypertension

Variable	Hypertensive	Nonhypertensive	Total (%)
Level of education			
None	3	6	9(2.57)
Primary	4	5	9(2.57)
Secondary	26	53	79(22.57)
Tertiary	58	202	253(72.29)
Total	83	267	350
Family history of hypertension			
No	31	186	217(62)
Yes	52	84	136(38.8)
Total	83	267	
Body mass index			
<25.0	4	60	64(18.3%)
25.0- 29.9	18	140	158(45.1%)
30.0-34.9	21	32	53(15.1%)
>35	40	35	75(21.4%)
Total	83	267	
Met who physical activity recommendation			
No	58	135	193(55.1)
Yes	25	132	157(44.86)
	83	267	
Tobacco use			
Never	23	188	211(60.28)
Stopped	26	59	85(24.29)
Still smoking	34	20	54(15.4)
	83	267	
Alcohol use			
Never	18	125	211(60.28)
Stopped	26	60	85(24.29)
Still drinking	39	82	121(34.6%)
	83	267	

Discussion

The total number of respondents in this study was 350. The age range with the highest percentage of respondents was between ages 31 – 40 years (38.9%) This was similar to 38.02 ± 13.3 years found in a survey of hypertension and its awareness amongst traders and artisans in Ogbete Market, Enugu State [18]. There were more male respondents, 193 (55.1%) as against 157 (44.9%) female respondents. This was similar to the survey in China and the USA where more men were involved.[19, 20] This agrees with the sex distribution of respondents in a survey of hypertension among residents of Ajegunle community, a popular slum in Lagos State, Nigeria: 34.2% (male) and 65.8%(female) [21]

It was noted that the respondents were mostly Christians and Muslims with the percentage almost at par. 61.4% of the respondents in this survey were married which was noted to be a contributory factor to the increased knowledge of hypertension in the Chinese survey [19]. There was no statistical significant risk of having hypertension between the male and female gender. This was not consistent with previous studies where men were found to be at a greater risk of being hypertensive [4, 15, 22]. However a study by Adediran et al. [23]

did not also find any statistically significant gender difference in tendency of being hypertensive in their study of hypertension prevalence in an urban and rural area of Nigeria. In our study, more females (12.1%) had hypertension compared to males (11.2%). This was different with the findings in several community-based studies: Survey of hypertension among residents of a rural community in South-East Nigeria, where it was (50.2%) male and (44.8%) female[22] a survey of hypertension in a rural community in Eastern Nigeria: Male (49.3%), female (42.3%) [24]; in a survey of hypertension amongst herdsmen living in Tibet, China: Male (66.1%), female (48.3%) [25]. Our finding was similar to prevalence of hypertension was higher among females (79.6%) compared to males (74.4%) in a survey of hypertension in an older adult population in South Africa [26].

Normal BP were recorded in 267(76.3%). The overall prevalence of hypertension in this study was 23.7%, this was lower than what was found in 95 geographical clusters in Mozambique [27] as well as 32.8% found in three communities in Enugu North LGA of Enugu State, Nigeria[28]. The overall of prevalence of hypertension in this study was higher than 18.3% found in Kegbara-Dere; a rural community in the Niger-Delta Region of Nigeria [29]. 9.3% found among urban workers in Ibadan city [30] and 10.3% found in a civil service population in Ibadan city [30]. However this is similar to 23.6% found among the inhabitants of three rural communities in Akwa-Ibom and Cross-River States [31]. This wide margin further confirmed the upsurge of hypertension in communities across Nigeria. The overall prevalence of 23.7% was however lower than 36.6% found among adult residents of Ile-Ife in Osun State, Nigeria [32] and 38.2% found among adult residents of Ajegunle in Lagos State, both in the same southwestern part of Nigeria [21]. However, prevalence of hypertension in this study was lower than 46.0%; the estimated prevalence of hypertension for WHO African Region [33].

In our study, the age range of 31 – 40 years had the highest hypertensive. prevalence of hypertension increased with age. This was different from findings in most recent community-based studies conducted in Nigeria [24, 28, 29], where Age was the only sociodemographic factor that was significantly associated with hypertension. Our finding was different from the result of a survey of hypertension among adult residents of Ajegunle community, Lagos State, Nigeria [21] a survey of hypertension among adults patients attending a Missionary Hospital in Ibadan, Oyo State, Nigeria [34] and in a survey of BP gradients and cardiovascular risk factors in urban and rural populations in Abia State, Nigeria [34]. However our finding was similar to a survey conducted in a rural community in Eastern Nigeria [24]. Using the BMI (kg/m ^{2}) of the respondents18.3%, 45.1%, 15.1%, and 21.4%,were.underweight, normal, overweight, and obese respectively. More than half (63.4%) of the respondents were either underweight or normal while 36.5% were either overweight or obese. Numerous studies had established the association between BMI and hypertension [21, 35, 36]. BMI is one of the most accurate ways to determine when extra body weight translates into health risks [37]. BMI as a risk factor was significantly associated with hypertension. In our study out of 75 Obese respondents 40 (53.3%) had hypertension. This agreed with the findings in a survey of hypertension among adult patients attending a Missionary Hospital in Ibadan, Nigeria [34]; survey of hypertension among herdsmen living in Tibet, China [25]. In a survey of hypertension among residents

of Ajegunle, Lagos State, Nigeria [21]. Thus being overweight or obese was a predictor of hypertension. Compared to those with BMI in the normal category, the odds of developing hypertension was 2 times more among those in the overweight/obese category.

The overall prevalence of family history of hypertension in the population was 38.9 % (n =350, 95 % CI), irrespective of blood pressure status. A family history of hypertension was present in 62.7% (n = 83, 95 % CI) of patients with hypertension and 31.4% (n = 267, 95 % CI) of participants without hypertension. Presence of a family history significantly increased the risk of hypertension (OR: 1.29; 95 % CI: 1.13-1.47). this was similar to other studies

In this study the prevalence of hypertension was the lowest 3,6%, in subjects with no formal education and the highest, 69.9%, in those with tertiary education, this is different from findings in previous studies but similar to that of cross country studies where educated health workers (nurses) were found to have highest prevalence [38].

The prevalence of alcohol consumption in the study was 34.6% This was lower than 43.4% found in Delta State [34]. The prevalence of alcohol consumption in Ogijo community was very high; this can be attributable to the fact that in the community alcoholic beverages is a common feature of many social gatherings, also among oil workers and those working in the industries. Heavy alcohol consumption, on the other hand carries adverse health and social consequences due to its intoxicating and addictive properties [34]. Alcohol consumption showed significant association with hypertension prevalence in our study this was similar to another study where consumption showed significant association with hypertension. There were inconclusive evidences of the effect of alcohol on hypertension in most studies in Africa; some show association of regular and moderate alcohol intake and others show no association.

The prevalence of cigarette smoking in the study was 15.4%. This is similar to that found in a rural community in Delta State where the prevalence was 15.8% [34], and Edo State where the prevalence was 16.8% [22, 29], as well as that found among U.S adult citizens in 2011, where the prevalence was recorded as 19.0% [39]It is not surprising that the prevalence of smoking from studies in Nigeria are close to that of the United States. This can be attributed to modernization and westernization of our culture, where the western culture and style of living are copied and emulated regardless of its negative effect on health.Several studies have acknowledged smoking especially cigarette smoking as one of the major causes of non-communicable and chronic disease [39, 40]Although it has been reported that regular and long time cigarette smoking is associated with higher blood pressure, this study did not show any statistically significant difference between smokers and nonsmokers. Previous studies reported that regular and long cigarette smoking is associated with hypertension [39, 40].

Surprisingly, hypertension was diagnosed more frequently in sedentary subjects 25 (29.76%) than in physically active subjects 59 (70.24%) although the finding did not attain statistical significance. This study was limited in that it was based on self-reporting of physical activity where the trend to overreport the actual level of physical activity is well known. Physical activity can be assessed subjectively using self-reported questionnaire or objectively (directly measured) using equipment such as pedometers or accelerometers. Self-reported questionnaires are commonly used in primary care

centre because they are cheap and easy to use. However, both methods have drawbacks and are subjected to potential bias. Self-reported questionnaires may not be able to capture all types of physical activity, whereas certain devices may not be worn in activities such as swimming to measure physical activity. Previous literature recommended using both objective and subjective measurements to validate the results for better measurements and physical activity recording [22, 38].

Conclusions
A high prevalence of hypertension was recorded in this study. About one-third of the respondents were hypertensive. This finding has public health implication as it puts one in every three adults in the community at-risk of cardiovascular disease (s). It was also found that majority of the hypertensives were not aware of their status prior to the survey. This underscores the need for urgent steps to create awareness and implement interventions for prevention and early detection of hypertension especially among those aged ≥30 years and the overweight/obese.

Study limitation
The major limitation of this study was the sole reliance on the respondents' reports and the assumption that the questions were well understood by the respondents.

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