

Prevalence Of Hypertension And Awareness Of The Causes And Effects Of Hypertension In Rural And Urban Communities Of Enugu State Nigeria

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ABSTRACT: Developing countries face the double burden of communicable and non-communicable diseases and of the later, hypertension is the most common. It is a major public health challenge with an ever increasing global prevalence which inherently increases the global disease burden whereas awareness of this disease and its determinants are poor. It contributes to about 500,000 deaths every year. This was a cross-sectional descriptive community survey carried out in urban and rural communities of Enugu southeast Nigeria. A multi-staged sampling technique was used to recruit 260 participants and data was collected by administering questionnaires. Blood pressure measurement and weight of all the subjects were done. These were analysed using EPI info statistical software version 6.04. The result shows that the prevalence of hypertension in urban and rural areas was 15.4% and 13.8% respectively but was not statistically significantly different. About 17.6% and 23% were perceived hypertensives for urban and rural areas respectively. From the study 17% and 44.5% of urban and rural respondents respectively have suffered from hypertension related illnesses (stroke, kidney disease, heart disease and eye problem). Approximately 45% of urban respondents and 83.7% of rural respondents believed that hypertension can be cured. The source of information and general knowledge of hypertension in urban and rural area was statistically significant ($p \leq 0.05$). In the urban area, their method of cure include drugs and lifestyle modification while in the rural areas, drugs and spiritual means was their way of curing the disease. Prevalence and awareness of hypertension is higher in the urban areas, however both communities are grossly unaware of the hypertensive associated diseases. Proper health education is recommended to reduce the prevalence of complications of the disease, change the trend and ultimately reduce the death in our environment.

Key Words: Awareness, Enugu, hypertension, prevalence, rural, urban.

1 INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death with 17 million deaths worldwide from a total of 57 million annually and 80 percent of all CVD deaths now occur in low and middle income countries (LMIC). While the CVD epidemic is receding in high income countries, CVD mortality rates tend to be higher in many LMICs (e.g. up to 300-600 CVD deaths per 100,000 population) than in Western countries and the burden is expected to increase further [1]. According to World Health Organization (WHO) an estimated 17.5 million people died from CVDs in 2012, representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke. Over three quarters of CVD deaths take place in low- and middle-income countries. Out of the 16 million deaths under the age of 70 due to non-communicable diseases, 82% are in low and middle income countries and 37% are caused by CVDs.

High blood pressure (or hypertension) is by far the commonest underlying risk factor for cardiovascular disease. Its prevention, detection, treatment and control in sub-Saharan Africa are haphazard and suboptimal. This is due to a combination of lack of resources and health-care systems, non-existent effective preventive strategies at a population level, lack of sustainable drug therapy, and barriers to complete compliance with prescribed medications. The economic impact for loss of productive years of life and the need to divert scarce resources to tertiary care are substantial. The number of adults with hypertension in 2025 is predicted to increase by about 60 % to a total of 1.56 billion, with disproportionate prevalence in developing countries including sub-Saharan Africa [2]. The overall prevalence of hypertension in Nigeria ranges from 8%-46.4% depending on the study target population, type of measurement and cut-off value used for defining hypertension. The prevalence is similar in men and women (7.9%-50.2% vs 3.5%-68.8%, respectively) and in the urban (8.1%-42.0%) and rural setting (13.5%-46.4%). The pooled prevalence increased from 8.6% from the only study during the period from 1970-1979 to 22.5% (2000-2011) [3]. The associated risk factors of hypertension include genetic or strong family history and other factors which include increasing age, obesity, smoking/use of tobacco, diabetes mellitus, dietary consumption of high salt content and saturated fat, sedentary lifestyle, stressful life, poor sleep and pregnancy. Most times hypertension is symptomless and rarely accompanied by any clinical symptom; and in such circumstances usually discovered following a routine screening or accidentally when seeking healthcare for an unrelated problem in a hospital. Many patients only become aware of their hypertensive status after the development of target organ damage like stroke, hypertensive retinopathy, ischemic heart disease, congestive heart failure, peripheral vascular disease or chronic kidney disease [4]. In developing countries like Nigeria where they show rising prevalence, the need for a more vigorous public health

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awareness and action against hypertension is particularly urgent. Public health practitioners therefore need data on the levels and trends in BP as well as its prevalence. Furthermore, to reduce the burden of hypertension, community participation in its control is needed and this can only be achieved better if the level of knowledge on the prevalence of hypertension as well as the control practices in rural and urban area is assessed. This will form the basis for instituting interventions to ameliorate the problem. The study therefore sets out to determine the prevalence and awareness of hypertension and the factors that affect the distribution in rural and urban communities of south east Nigeria.

2 MATERIALS AND METHODS

2.1 Study area:

The study was undertaken in urban and rural area in Enugu state. The urban area is represented by Enugu North Local Government area and the localities represented are Iva-valley, GRA, New Haven, Ogbete, Asata, Ogui New Layout and Independence Layout. These areas are all located within the capital city. The rural areas are Ituku and Ozalla communities. Enugu North has a projected population of 244,852 based on the 2006 population census, with GRA and Independence layout having a projected population of 27,241 and 13,372 for the year 2001 respectively. In the rural areas, Ituku and Ozalla are two different communities which share a common boundary. Ituku is in Agwu LGA while Ozalla is located in Nkanu West LGA. The two communities are about 15km from Enugu town. The University of Nigeria Teaching Hospital (UNTH) is located in Ituku-Ozalla. The indigenes are predominantly farmers living in a typical rural area setting with poor road network, lack of pipe borne water supply, and absence of primary health care facilities. The projected population of Ituku-Ozalla for the year 2001 based on the 1991 population census of Nigeria is 4,550 and 11,123 for Ituku and Ozalla respectively.

2.2 Study design

The study was a cross sectional descriptive community survey involving 130 subjects each in the rural and urban areas, with a total of 260 participants.

2.3 Sampling and sample size calculation

For the urban area, 2 layouts (independence layout and GRA) were randomly selected from a sample frame of seven layouts and for the rural area, the two communities Ituku and Ozalla were randomly selected from a sample frame of ten communities. In the urban area, selection of households was done by simple random sampling from a sample frame of a list of street numbers. In each

household, subjects within the age range of 15-86 years were chosen and interviewed. In the rural areas a list of the households was obtained using the PHC house numbering system and from this, households were selected by simple random sampling. In each household, subjects within the age range of 15-86 years were chosen and interviewed. An appropriate sample size of 130 per site (total = 260) was determined using the formula for sample size determination for comparison of two proportions. The variables for the determination are power of 80%, confidence level of 95% and prevalence of hypertension in Nigeria which is 9.22%.

2.4 Data collection

Using self-administered questionnaires for literate subjects and interviewer administered for illiterate subjects mostly in the rural area information was collected on their socio-demographic characteristics, their knowledge of hypertension, its causes and control. In addition, the blood pressure and body weight of each respondent were taken. Two measurement of blood pressure on each study participant with the aid of mercury column sphygmomanometer was taken by two separate persons and the average recorded. The 1st blood pressure measurement was taken before administering the questionnaire and the 2nd blood pressure measurement taken after completion of the questionnaire. The measurement followed the standard measurement method. (The body weight was measured with the aid of a weighing scale to the nearest 0.5kg) with the subject standing motionless on the weighing scale, with feet about 15 cm apart and weight equally distributed on each leg. Subjects were instructed to pull off their foot wears while their weight was being measured.

2.5 Data Analysis:

This was done with the aid of SPSS statistical software version 22. Tabulations, non-parametric tests and mean tests were used to compare the blood pressure and weight of urban and rural respondents, while the Chi-square test was used to determine the statistically significant differences in the data between the rural and urban areas. Statistical significance was tested at the 0.95 confidence level.

3 Ethical Clearance:

This was obtained from the ethical review board of the University of Nigeria Teaching Hospital Ituku Ozalla before commencement of the study. All participants gave their signed informed consent before the study commenced

4 RESULTS:

Table 1: Demographic characteristics of respondents

Category	Urban N=130 (%)	Rural N=130 (%)
Sex:		
Male	68 (52.3)	53 (41)
Female	62 (47.7)	77 (59)
Age Groups:		
15-24	37 (29.3)	5 (3.8)

25-34	30 (23.6)	13 (10)
35-44	17 (13.1)	7 (5.4)
45-54	24 (19)	43 (33.1)
55-64	8 (6.3)	40 (30.7)
65-74	8 (7.9)	18 (13.8)
75-86	1 (0.7)	4 (3.1)
Educational Qualification:		
No formal education	1 (0.7)	68 (52.3)
Primary education	5 (3.9)	38 (29.2)
Secondary education	31 (24.2)	17 (13.0)
Post-secondary	91 (71.1)	7 (5.2)
Occupation:		
Farmer	7 (6)	80 (69.5)
Civil Servant	34 (29.5)	8 (7.0)
Trader	7 (6)	25 (21.8)
Business	20 (17.4)	2 (1.7)
Student	44 (38.2)	0 (0)
Applicant	3 (2.8)	0 (0)

The highest number of subjects in the urban area were within the 15-24 age group while in the rural area, a greater percentage was drawn from the 45-54 age groups. In the urban area majority of the respondents had post-secondary

education (71.1%) comprising mainly students (38.2%) and Civil Servants (29.5%). On the other hand, the rural areas were made up of mostly subjects without any formal education, 69.5% being farmers and 21.8% traders.

Table 2: Urban Vs rural Prevalence of Hypertension

Sex	Urban		Rural		χ^2	P-value
	frequency	%	frequency	%		
Male	13	10	7	5.4		
Female	7	5.4	11	8.4		
Total	20	15.4	18	13.8	0.04	0.841

The prevalence of hypertension for urban respondents was 15.4% while that for rural respondents was 13.8%. The

prevalence of hypertension is not statistically significant ($\chi^2 = 0.04$, $p = 0.841$)

Table 3: Awareness and knowledge of hypertension in rural and urban areas.

Variables	Category	Urban (%)	Rural (%)	χ^2	P-value
Awareness of Hypertension		118 (91.4)	97(74.5)	9.07	0.003*
Knowledge of hypertension as a	Disease of the elderly	54 (35.6)	35 (35)	0.02	0.882
	Life-long disease	73 (48.1)	10 (10)	35.1	0.001*
	Curable	22 (14.5)	30 (30)	6.45	0.011*
	excess blood	3 (1.8)	24 (24)	21.40	0.004*

Majority of the urban dwellers were significantly aware of hypertension and were equally more knowledgeable about hypertension when compared to the rural dwellers who

thought hypertension was caused by excess blood, as well as being a curable disease. ($\chi^2 = 9.07$, $p = 0.003$)

Table 4: Most commonly perceived hypertension related illness suffered

Category	Urban Freq (%)	Rural Freq (%)	χ^2	P-Value
Stroke	8 (6.5)	2 (1.9)	2.91	0.088
Kidney disease	4 (3.2)	4 (3.8)	0.15	0.700
Heart disease	1 (0.8)	17 (16.3)	14.46	0.0001*
Eye problem	8 (6.5)	23 (22.5)	10.04	0.0015*
None	102 (82.9)	56 (55.9)	17.20	0.00337

Heart disease and eye problem were the perceived predominant hypertension related illnesses suffered mostly in the rural areas and this was significant ($P=0.0001$ and 0.0015) respectively, while stroke and eye problem were more common in the urban area.

Table 5: Perceived causes of hypertension

Category	Urban Freq (%)	Rural Freq (%)	χ^2	P-value
Smoking	22 (10.9)	16 (8.2)	0.52	0.469
Eating Too Much	2 (0.1)	3 (1.6)	0.34	0.56
Thinking Too Much	90 (44.5)	89 (46.3)	0.02	0.887
Spiritual/evil forces	3 (1.5)	10 (5.2)	1.33	0.248
Talking Too Much	4 (1.8)	8 (4.1)	0.69	0.407
Alcoholism	7 (3.5)	17 (8)	2.06	0.152

Majority of the respondents both in the rural and urban areas felt smoking and thinking too much caused

hypertension. However this perception is not statistically significant.

Table 6: Perceived effects of hypertension

Category	Urban Freq (%)	Rural Freq (%)	χ^2	P-value
Perception of effects	116 (90.6)	94 (79.6)	4.88	0.0271*
Heart	39 (4)	35 (16.3)	0.16	0.692
Diabetes	10 (33.5)	5 (2.3)	34.69	0.0000*
Blindness	4 (5)	10 (4.7)	0.00	1.00
Stroke	91 (32.5)	52 (24.2)	1.99	0.1586
Kidney disease	28 (10)	10 (4.6)	1.8	0.179
Death	97 (34.7)	101 (47.1)	2.98	0.084
Effect on your life	38 (34.6)	18 (18.8)	6.49	0.0108*
Uncomfortable life	7 (24.1)	11 (40.7)	6.59	0.0102*
Weariness Tiring	4 (13.7)	1 (3.7)	6.11	0.0134*
Depression	0 (20.6)	4 (14.8)	1.22	0.2694

Both urban and rural dwellers felt hypertension had an effect on a person, although, a greater number of the urbanites had this perception ($P = 0.0271$). The rural dwellers had a contrary view to the urban dwellers where a greater majority of the urban dwellers felt hypertension was

linked with diabetes ($P= 0.0000$) and had a bad effect on one's life thereby causing tiredness, majority of the rural dwellers felt it just made a person's life more uncomfortable.

Table 7: Shows the Perception on the methods of cure and the possible methods of cure

Variables	Urban Freq (%)	Rural Freq (%)	χ^2	P-Value
Perception on the possibility and methods of cure	53 (44.9)	98 (83.7)	33.21	0.0000*

Orthodox (Drugs)	33 (30.5)	75 (36.1)	0.56	0.4538
Native medication	9 (8.2)	33 (15.9)	3.03	0.0817
Both above	10 (9.3)	19 (9.1)	0.00	1.0
Changing life style	35 (32.3)	22 (22)	13.06	0.0003
Spiritual (Prayers)	32 (20.4)	58 (28.1)	1.75	0.185

Of the urban respondents, 44.9% felt that hypertension could be cured and 83.7% of the rural respondents felt the same. (P=0.011) A greater percentage of the urbanites felt that hypertension could be cured by a change in life style (P<0.05) while the rural dwellers had contrary views with majority perceiving that hypertension could be cured by orthodox medicine.

Table 8: Shows the sources where respondents obtained information about hypertension

Variables	Urban Freq (%)	Rural Freq (%)	X ²	P – Value
Patent medicine dealer	1 (5)	1 (3.6)	0.12	0.733
Nurse	5 (25)	2 (7.1)	12.05	0.000517*
Doctor	12 (60)	23 (82.1)	11.69	0.0006268*
Friends and Relatives	2 (10)	0 (0)	10.53	0.00117*
Mass Media	0 (0)	2 (7.1)	7.25	0.00707*

Majority of the urban and rural dwellers got their information from the doctor. The nurse was equally a good source of information. In the rural areas, some of the respondents got

their information from the mass media and all were significant.

5 DISCUSSION

From the study the prevalence of hypertension for urban and rural areas were 15.4% and 13.8% respectively which is similar to another study in University of Nigeria Teaching Hospital which showed a prevalence of 15.2% among medical admissions [5]. These figures are however lower than prevalence estimates in some other studies in Southeast and southwest Nigeria which showed a prevalence of 21.0% [6] and 27.3% [7] respectively and other African countries like Burkina Faso with an urban rural prevalence of 24.81% and 15.37% respectively [8]. This difference could be as a result of our smaller sample size of 260 versus that of a much larger population used by the above mentioned studies. Our findings also provided direct evidence of an increasing burden of hypertension in both urban and rural areas compared to studies from different parts of Nigeria by the expert committee on NCD survey which stated that 9.22% of people 15 years and above had hypertension and crude prevalence of 11.2%, with the rates for urban and rural communities being 11.4% and 9.8% respectively [9]. The lower prevalence in the rural area might not necessarily be because less people have hypertension it could be because of the dearth of data which is a problem in developing countries especially the African sub region [10]. It can also be attributed to the fact that the people in the rural areas have a more natural and healthier diet than those in the urban areas who tend to eat a lot of junk food which are notorious for their high salt content, predisposition to obesity, and a risk factor for hypertension [11]. In the urban area, the prevalence noticed as compared to the rural area could be due to the availability of more health facilities which invariably boils down to availability of more specialized expert care and information about the disease, thus more data on the disease will be available. Migration from rural to urban area has been associated with rising blood pressure levels [9, 11]. This might also account for the difference in prevalence rates between urban and rural areas. The effect of

psychosocial stress in the urban area as compared to the rural areas cannot however be overlooked as contributing to the difference in prevalence rates between urban and rural areas [11]. From the results, the awareness of hypertension was higher in the urban than rural areas and this can be attributed to the fact that the literacy level in the urban area is more than in the rural, which can be attributed to the large number of students, civil servants, professionals and entrepreneurs as compared to the rural areas where the population was largely made up of farmers with little or no formal education. Majority of the population especially those in the urban areas believed that hypertension was a lifelong disease of the elderly caused by stress and thinking too much, which generally made life uncomfortable and leads to diabetes, stroke and death. On the other hand, the rural dwellers were more inclined to believe that hypertension is a curable disease of the elderly associated with excess blood. Surprisingly a large percentage of the rural dwellers did not also believe that hypertension was caused by evil forces but that it was caused by stress. This finding is consistent with the findings elsewhere in Nigeria where it was observed that the public awareness of hypertension and its determinants were still very poor [12]. Even with the level of education the urban dwellers were supposed to have attained, most of them like in the rural areas were ignorant of the complications of hypertension such as kidney disease. This perhaps is because very few of them admitted to having suffered those complications and insinuated that eye complications and heart disease were the most common problem. This is in contrast with the findings from previous studies which showed that hypertension is a cause of end stage renal failure and chronic renal failure, it is also an important cause of morbidity and mortality and that most patients were not aware of this [13, 14]. In a study done in hypertensive patients attending University of Ilorin Teaching Hospital, knowledge of the enrollees on possible complications of High blood pressure was abysmally poor.

Up to 60% of the patients could not mention three possible complications and only 7.1% could give up to five different complications and these were mostly retired medical personnel and the well-educated ones among them [15]. Our study shows that both communities felt there was a possibility of a cure for hypertension with a greater percentage in the rural areas and they also opted for native medication and spiritual prayers. While a greater number of the respondents in the urban areas believed, the best possible cure was to change one's lifestyle and use orthodox medicines. However, hypertension can only be controlled and not cured. The response of the rural dwellers was not surprising because of their level of education as compared to the urban dwellers that had a higher level of education. This low level of awareness can be attributed to the quality of advice given to the patients and the accessibility and affordability of physicians in both public and private health facilities in developing countries [16, 14]. Hypertension has been known to cause significant number of deaths in both communities, and this can be attributed to lack of knowledge and awareness of the disease called hypertension. The doctor and nurses are the most common source of information in both rural and urban areas and so more time and care should be taken by these health professionals to disseminate this information [11]. The mass media also plays a role however small in disseminating information especially in the rural areas. Surprisingly though, more than the patent medicine dealers. From the data obtained, friends and relatives seem to also be a strong source of information and this complements the study done in Edo State in the Niger Delta region of the South-South Zone of Nigeria, 80 (74%) attested to the fact that hypertension is correctly detected by BP measurement usually in a health facility, 16 (15%) were told by the traditional healers that they were hypertensive and 12 (11%) first believed they were hypertensive from what they learnt from friends / relatives or electronic and print media [12].

6 CONCLUSION AND RECOMMENDATIONS

The study has demonstrated that there was a higher prevalence and awareness of hypertension in the urban than rural areas of Enugu state Nigeria. The perception of hypertension as a curable disease and ignorance of the hypertensive associated diseases especially end stage renal failure is of grave consequence to the health of the nation, because a proper awareness of the causes and consequences of hypertension will go a long way in reducing the morbidity and mortality associated with the disease. Hypertension is a very serious health problem in Nigeria. The need for adequate awareness, knowledge and early diagnosis of the disease cannot be overemphasized. The following are recommended:

- 1) Proper health education especially in the rural areas to increase awareness of the disease.
- 2) Education of hypertensive patients about drug compliance and hypertension related diseases.
- 3) Organization of health talks in schools, offices and market places to increase awareness.
- 4) The mass media and health professionals should be properly educated so as to disseminate the right information and a regular outreach visit to various communities to measure blood pressure should be

encouraged so that people are aware of their BP status.

All these might reduce the prevalence of complications of the disease, change the trend and ultimately reduce the death in our environment.

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