



## IMPACT OF HYPERTENSION ON THE ECONOMY OF NIGERIA: A CASE STUDY OF NSUKKA AND AWKA IN ENUGU AND ANAMBRA STATES RESPECTIVELY

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### Abstract

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The objectives of this study was to ascertain the impact of hypertension on the economy of two notable states in the South Eastern Nigeria-Enugu and Anambra states; to determine the incidence of hypertension with various predisposing factors and to compare the level of awareness. A total of 200 subjects, aged 18 years and above were sampled using the non-testing instruments of data collection; questionnaires and direct observation using blood pressure measurement instrument, sphygmomanometer. Nsukka urban in Enugu State was grouped into sixteen clusters based on geographical locations as established by a map designed by Nsukka Graduates Association. Six selections or clusters were randomly selected from the sixteen clusters using random sampling technique. In each cluster, the first house in each street was identified followed by systematic sampling of the next three houses. The same procedure was carried out in Awka urban in Anambra State and after the study the data were analyzed statistically.

The study showed that hypertension greatly affected the economy of the two states as the work force group (26-50years) have the highest percentage of hypertensive patients when compared to other age groups leading to absence from work places and high expenditure as most patients bore the burden of drug procurement.

## **INTRODUCTION**

### **STATEMENT OF THE PROBLEM**

Hypertension is a public health priority in developed countries and worldwide, and is strongly associated with increased risk and progression of cardiovascular and renal diseases; with its disabling complications is a frequent health problem affecting the well-being of people worldwide especially the elderly<sup>1</sup>. It is diagnosed when at least two blood pressure readings on separate occasions are 140/90mmHg<sup>2</sup>. Patients with blood pressures higher than 130/80 mmHg with concomitant presence of diabetes mellitus or kidney disease require further treatment<sup>3</sup>. Hypertension is classified as resistant if medications do not reduce blood pressure to normal levels<sup>3</sup>. Normal blood pressure is at or below 120/80 mmHg<sup>4</sup>. Hypertension can also be classified as either primary (essential) hypertension or secondary hypertension; about 90–95% of cases are categorized as "primary hypertension," which means high blood

pressure with no obvious medical cause<sup>5</sup> and the remaining 5–10% of cases; secondary hypertension are caused by other conditions that affect the kidneys, arteries, heart or endocrine system<sup>6</sup>. Worldwide prevalence estimates for hypertension may be as much as 1 billion individuals and approximately 7.1 million deaths per year may be attributable to hypertension<sup>7</sup>. A number of important causal factors for hypertension have been identified; including excess body weight, excess dietary sodium intake, reduce physical activity, inadequate intake of fruits, vegetables, potassium and excess alcohol intake<sup>8, 9</sup>. A systematic review and meta-analysis were conducted to examine the association between elevated blood pressure and its impact on patients in Enugu and Anambra States. Hypertension represents one of the most common conditions associated with increased cardiovascular risk, including stroke,

myocardial infarction and heart failure<sup>10</sup>. Numerous experimental and clinical research data have shown that hypertension is associated with significant endothelial dysfunction, which may represent a major pathogenic link between hypertension and coronary artery disease<sup>11-13</sup>. It is now being widely reported in Africa and is the most common cause of cardiovascular diseases on the continent and in recent study hypertension prevalence is 16 % in West Africa having implicated obesity and dietary intake of sodium and potassium<sup>14</sup>. Hypertension is becoming more common as urbanization increases; in several studies in African population, have shown a positive correlation between blood pressure, age and gender. Prevalence rate increases with age, however 2 % of children have hypertension while another 5 % are borderline hypertensive; and is higher in blacks (30 %) than in whites (25 %)<sup>15</sup>. The population specific prevalence of hypertension in Nigeria is not known with certainty however in a countrywide survey in 1990-1991, it was reported a rate of 11.2 % in those aged 15 years old and above<sup>16</sup>. The degree of hypertension varies among

the sexes and this study showed that while there was more of the mild hypertension in the females (55.4 %), more of the moderate and severe categories occur in males. Lack of categorization of the degree of hypertension limits easy comparison with previous studies.

A grave fact about hypertension is that despite its wide prevalence and impact on cardiovascular health, only about 5-10 % of its incidence has an identifiable etiology (secondary hypertension) whereas the rest is idiopathic (primary hypertension) which has some contributing factors that modify the course like age, sex, sex, race, serum, cholesterol, weight and plasma activity. The essential factors that play a role in their development include family history, cigarette smoking, alcohol intake, environmental and community-related factors like family size and overcrowding<sup>17</sup>. Moreover, many of the available drugs for its management are not affordable especially for many people in Sub-Saharan Africa as well as many third world countries<sup>18</sup>.

Owing to the turbulent political history of Nigeria, many works have been dedicated

to the importance of political stability as far as the success of the nation's ailing economy is concerned<sup>19</sup>, however no efforts have been made to ascertain the health status of the citizenry. Literatures abound highlighting the harmful effects of lost "man-hours" on the economies of various countries through either due to absence from work as a result of illness and hospitalization or due to the premature loss of experienced hands to "silent killers" like cardiovascular diseases e.g. hypertension and stroke <sup>20</sup> . On the economic implications, the patient may be hospitalized, lose some work days, be taken to hospital for check-ups and may spend money on daily drugs and all the expenses incurred by attending to these needs are a direct cost which is a major evaluating technique in pharmaco-economics <sup>21</sup> whose major goal is to determine which health care alternative provide the best healthcare outcome <sup>22</sup>. This man hour loss can be avoided as done in developed countries through public health programs like awareness lectures and public screening for early detection and prompt management of the silent killers that eliminate our trained personnel in their prime. Unfortunately,

hardly any such information is available for Nigeria and none whatsoever for any state of the country which would have yielded helpful information for the economic growth and preservation of our younger generations.

Considering the paucity of information on the prevalence and management of hypertension, the data provided will assist the health professionals on the impact of this condition on the economy as well as enable a more rational approach to clinical solution thus curbing unnecessary loss of "man hours".

#### *METHODOLOGY*

A simple cross sectional sample survey was employed. Because the people in both areas were characterized by both literate and illiterate people with poor educational background, non-testing instrument of questionnaires and direct observation were applied. Simple and clarified questions were asked in a systematic but informal manner thereby creating a relaxed atmosphere for the respondents. Direct measurement of blood pressure was done with sphygmomanometer

### **Informed consent**

The human experimental protocols were approved by our institution's Animal Ethics Committee of the Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka and were in compliance with the Federation of European Laboratory Animal Science Association and the European Community Council Directive of November 24, 1986 (86/609/EEC)<sup>23</sup>. The patients who agreed to participate were explained the nature and objective of the study and informed consent was formally obtained. The information about the patient's identity like names and addresses were strictly avoided in order to boost cordial relationship and confidence of the respondents. Only the principal investigator had access to this information and no reference to the patients' identity was made at any stage during data analysis.

### **Sample size**

A total of 200 subjects, aged 18 years and above were sampled using the non-testing instruments of data collection; questionnaires and direct observation using blood pressure measurement.

### **Inclusion and exclusion parameters**

The target population of the study reflects the characteristics of most patients with the disease. Only participants that reached 18 years and above were used for the analysis. Few numbers of responses were obtained compared to the target population because some people refused supplying any information to the researcher.

### **Analysis of data**

The data collected were analyzed statistically using Tables and Bar Charts with percentage representations included and also entered into the Statistical Package for Social Sciences (SPSS) version 16 and descriptive statistics were generated.

## **RESULTS AND DISCUSSION**

The percentage distribution of both states with respect to sex, age, marital status, lack of access to medication, cost of medication, hypertension status, missed work due to hypertensive crises are surveyed. In both states 53 % were male and 47 % female. The ages were 18-25 years, 26-50 years, 50 years and above were 7 %, 79 % and 34 % respectively. A 15.2 % of the respondents were single, 82.8 % married and 2 % divorced. About 84.5 % lack very much

access to medication, 7.2 % lack access while 8.3 did not lack access to medication. The percentage distribution of the complaint from respondents based on cost of medication showed that 58.8 % complained very much, 18.6 complained much and 22.6 did not complain. The distribution based on hypertension status gave 97 % answering YES and 3 % NO. The distribution of loss work days due to crises showed that 72.3 % responded YES and 27.7 % responded NO to absence from duty.

### **Discussion**

The relationship between sex and hypertension followed the trend revealed by literature with hypertension being more in males than females this might be because males seem to be much more involved in physical business related activities, risks, psychological stress and unhealthy social life styles and this could explain the rationale for a higher proportion of this disease in males than females. Evidence from the literature revealed an association between increasing age and hypertension but the reverse seems to be the case relating hypertension with age in this study which may be as a result of different age

groups and decreases progressively for other age groups. Higher incidence of hypertension was observed in married than single individuals; which could be apart from the predisposing factors still face special problems like family responsibilities, marital crises, “cold wars” and special circumstances like childlessness and house-help palavers. The surveyed showed that the cost of hypertension management was quiet exorbitant compared to their income they earn and inaccessibility of some antihypertensive drugs thereby making management of the disease very difficult. Majority of the populace bore the payment burden by themselves, leading to emotional stress and reduction in their potential utilization. The sampled result showed that most of the populace are hypertensive and have experienced an attack may be because of ignorance or non-compliance to their medication. This may lead to death of competent workers which directly affects the productivity and economy of the country. The percentage of those that were absent from work because of hypertension were high (72.3 %) this will lead to low productivity and loss of experienced hands

to this “silent killer” hypertension which affects the economy of the nation.

Alcohol consumption of three or more drinks per day clearly raises blood pressure, and is one of the most important cardiovascular risk factors<sup>24</sup>. As a result, consumers of three to five drinks per day have a roughly 50 percent higher risk of high blood pressure (i.e., hypertension); risk increases even more with heavier intake. Lighter intake, however, has generally not been associated with blood pressure and, in a few studies, has actually been associated with a modestly lower risk of hypertension<sup>25</sup>. The relationship between smoking and blood pressure is less clear, in part because smokers tend to be leaner than non-smokers. However, in some laboratory studies and well-controlled population studies, smoking appeared to raise blood pressure or risk of hypertension to a modest degree<sup>26</sup>. There are similar relationships between alcohol and tobacco use and levels of triglycerides, a fat in the blood that has been linked to risk of coronary heart disease in some studies. Alcohol intake has long been known to increase triglyceride levels, apparently in a dose-dependent manner<sup>27</sup>. Interestingly,

many clinical trials of alcohol consumption have documented this increase in triglyceride levels, but it may pertain only to men. Some recent trials among women have surprisingly found that moderate consumption may reduce triglyceride levels<sup>28</sup>. Cigarette smoking also increases triglyceride levels, and studies of young adults have identified early use of alcohol and tobacco as key determinants of subsequent levels of serum triglycerides<sup>29</sup>. Lifestyle like alcohol intake and smoking are factors that increase the risk of hypertension and most of the respondents were aware of the fact while some are ignorant of this.

### *CONCLUSION*

From the study, it was shown that hypertension greatly affected the economy of the two states. This was because the work force group (26-50years) have the highest percentage of hypertensive patients when compared to other age groups. Cost of procurement of most antihypertensive drugs were quite exorbitant and most of the hypertensive patients were absent from work most times which directly affected the

productivity and economy of the two states and the nation at large.

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#### The percentage distribution of payment burden for both states

Table 1

Percentage distribution of payment burden for both states

Number of Responses	Both states (%)
S	79.2
NHIS	2.1
F	11.4
W	1
E	6.3

\* Self = S, National health insurance scheme = NHIS, Family = F, Welfare/Charity = W, Employer = E

#### The effect of alcohol on hypertensive status and their responses in the two states

Table 2

The effect of alcohol on hypertensive status and their responses in the two states

Number of Respondents	Enugu (%)	Anambra (%)
SA	64	58
A	26	36
SD	10	0
D	0	4

\*SA= strongly agree, A= agree, SD = strongly disagree, D = disagree

#### The effect of smoking on hypertensive status and their responses in the two states



Table 3.

The effect of smoking on hypertensive status and their responses in the two states

Number of Respondents	Enugu (%)	Anambra (%)
SA	68	57.1
A	28	40.8
SD	4	0
D	0	2.1

\*SA= strongly agree, A= agree, SD = strongly disagree, D = disagree

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