

East African Medical Journal Vol. 84 No. 7 July 2007

ADMISSION OF HYPERTENSIVE PATIENTS AT THE UNIVERSITY OF BENIN TEACHING HOSPITAL, NIGERIA
V.A. Ukoh, MBBS, FWACP, Senior Lecturer, Department of Medicine, University of Benin, P.O. Box 10756, Benin 300312, Benin City, Nigeria

ADMISSION OF HYPERTENSIVE PATIENTS AT THE UNIVERSITY OF BENIN TEACHING HOSPITAL, NIGERIA

V.A. UKOH

ABSTRACT

Background: There is a suggestion of an identifiable impact of hypertension on all cause mortality in rural Africa. There is however paucity of hard data on the impact of morbidity or modality from this disease.

Objective: To determine the contribution of hypertension (HT) to adult morbidity and mortality at the University of Benin Teaching Hospital (UBTH) in Benin City, Nigeria.

Design: Retrospective study.

Setting: University of Benin Teaching Hospital.

Subjects: Adult hypertensive admissions (HTA) in Benin City, Edo state, Nigeria during the period January 2000 to December 2002.

Results: There were a total of 2,852 adult medical admissions during the study period out of which 575 were because of hypertension related morbidity. Only 302 (52.5%) of these were previously diagnosed as hypertensives). The most common hypertensive complication was cerebrovascular accident followed by congestive cardiac failure and chronic renal failure in order of decreasing frequency. The annual adult mortality rate from medical admissions was 5.6%. Mortality due to hypertensive complications constituted 10.5% of overall hospital adult mortality and 16.1% of deaths from medical causes. The annual mortality rate among HTA was 22.1% (252/1000) with a male:female ratio of 2:1.

Conclusion: The contribution of systemic hypertension to adult morbidity and mortality is very significant. There is need for more concerted effort to create hypertension awareness, and to achieve good control and prevention of hypertensive complications.

INTRODUCTION

Systemic hypertension is the most prevalent cardiovascular disease globally (1). It affects about 10 to 15% of adult African population and cuts across every socio-economic group (2,3). Essential hypertension (HT) which is the commonest form in Africa, is volume dependent and is characterised by low plasma rennin activity, high salt taste threshold, high urinary sodium, low potassium excretion and high plasma aldosterone. Like any other black population, hypertension related complications are very common and tend to run a severe course in

Africans (4). There is a suggestion of an identifiable impact of HT on all cause mortality in rural Africa (5). There is however paucity of hard data on the impact of morbidity or mortality from this disease (5,6).

The present study is an attempt to determine the contribution of HT to adult morbidity and mortality at the UBTH in Benin City, Nigeria. Being a tertiary institution and serving the Edo-Delta, Ondo and Ogun states of Nigeria, the results of this study will serve as a benchmark for looking at the burden of this disease and for comparing population studies in the West African sub -region and other parts of Africa.

MATERIALS AND METHODS

This was a retrospective period prevalence analysis of HTA during the period between January 2000 and December 2002. All the patients admitted into the medical wards of UBTH between January and December 2002 (male and female medical plus medical cases in the intensive care unit) were included in the study. UBTH is a tertiary health institution with 30-bed male and female medical wards respectively. All information was obtained from the ward register and inpatient case notes and included: age, sex, initial clinical diagnosis, blood pressure (BP) on admission, final diagnosis, treatment outcome, deaths and discharges. A hypertensive admission (HTA) in this study was one who was admitted due to hypertension related morbidity, that is, the patient who was a known hypertensive and was admitted because of hypertensive complication(s), or one who was admitted because of known complications of HT in the presence of moderate to severe HT. Data analysis was done using simple proportion and standard statistical methods (7). The student t-test was used to examine the differences between the means of two variables and values of $p < 0.05$ were regarded as significant.

RESULTS

The total number of hospital admissions during the period of study was 20,931 (all ages) (male and female) (Table 1). A total of 575 (284 males, 291 females) of mean age 57.58 ± 17.12 years [(56.80 \pm 17.81 years (males), 59.26 \pm 16.42 years (females))] were admitted with hypertension related conditions during the study period. There was no significant

age difference between the sexes. Only 302 (52.5%) of these were previously diagnosed as hypertensive. The annual HTA of 192 constituted 2.7% of annual hospital admissions giving an incidence of 27/1000. HTA also accounted for 20.2% of annual medical admissions. Deaths due to hypertensive complications accounted for 16.1% of annual deaths due to medical causes. Annual mortality rate among hypertensive admissions was 22.1%. Medical mortality due to HTA was 4.5% with a male to female ratio of 2:1. Overall annual hospital mortality from HTA was 0.6% (6.0/1000). Figure 1 is a graph showing the mean blood pressure (BP) of the patients at the time of admission. On the average the admitting BP level was in the stage II hypertension (8) range with the highest values being recorded for hypertensive encephalopathy (HTEn) followed by severe hypertension (SHT) and cerebrovascular accident (CVA) respectively. Patients in these three groups on the average were admitted with severe stage II hypertension. Figure 2 shows the period prevalence of HTA. The highest indication for admission in order of decreasing frequency was CVA > CCF > CRF > SHT (period prevalence of 6.6% 5.1%, 3.1%, and 2.6% respectively). There was no significant difference between the frequencies of admissions in both sexes. Figure 3 is a graphical representation of the age incidence of HTA. Apart from multi- infarct dementia, most of the patients were in their fifth and sixth decades. The annual mortality rate due to specific complications is shown on Figure 4. The highest mortality was recorded in myocardial infarction, and multi infarct dementia, followed by those of ARF, CRF and CVA. Overall, mortality was significantly highest among males (male: female ratio of 2:1, $p < 0.001$).

Table 1

Demographic characteristics of hospital admissions between 2000 and 2002

	3-year admission	Annual hospital admission	Deaths in 3 years	Annual-mortality (per 1000)
Hypertensive ♂ and ♀	575	192	127	221
All adult medical 1 ♂ and ♀	2 852	951	790	56
All adults ♂ and ♀	14 105	4 716	1 208	85
All hospital ♂ and ♀	20 931	6977	1790	86

DERIVATIONS:

$$\text{Period prevalence of HTA} = \frac{\text{Total number of HTA over 3-year period}}{\text{Total population (defined population)}} \times 1000$$

$$\text{Mortality Rate} = \text{No. of deaths per thousand population} = \frac{\text{Total deaths}}{\text{Total population}} \times 1000$$

e.g, Annual adult mortality from medical causes = $\frac{\text{Total adult deaths due to medical causes}}{\text{Total adult population}} \times 1000$

$$\text{Annual medical mortality due to HTN} = \frac{\text{Total deaths due to hypertensive complications}}{\text{Total number of medical admissions}} \times 1000$$

$$\text{Mortality rate from HTA} = \frac{\text{Total deaths due to hypertensive complications}}{\text{Total population (total hospital admissions)}} \times 1000$$

$$\text{Annual mortality among HTA} = \frac{\text{Total deaths due to hypertensive complications}}{\text{Total number of hypertensive admissions}} \times 1000$$

Figure 1

Mean blood pressure of hypertensive admissions (mmHg)

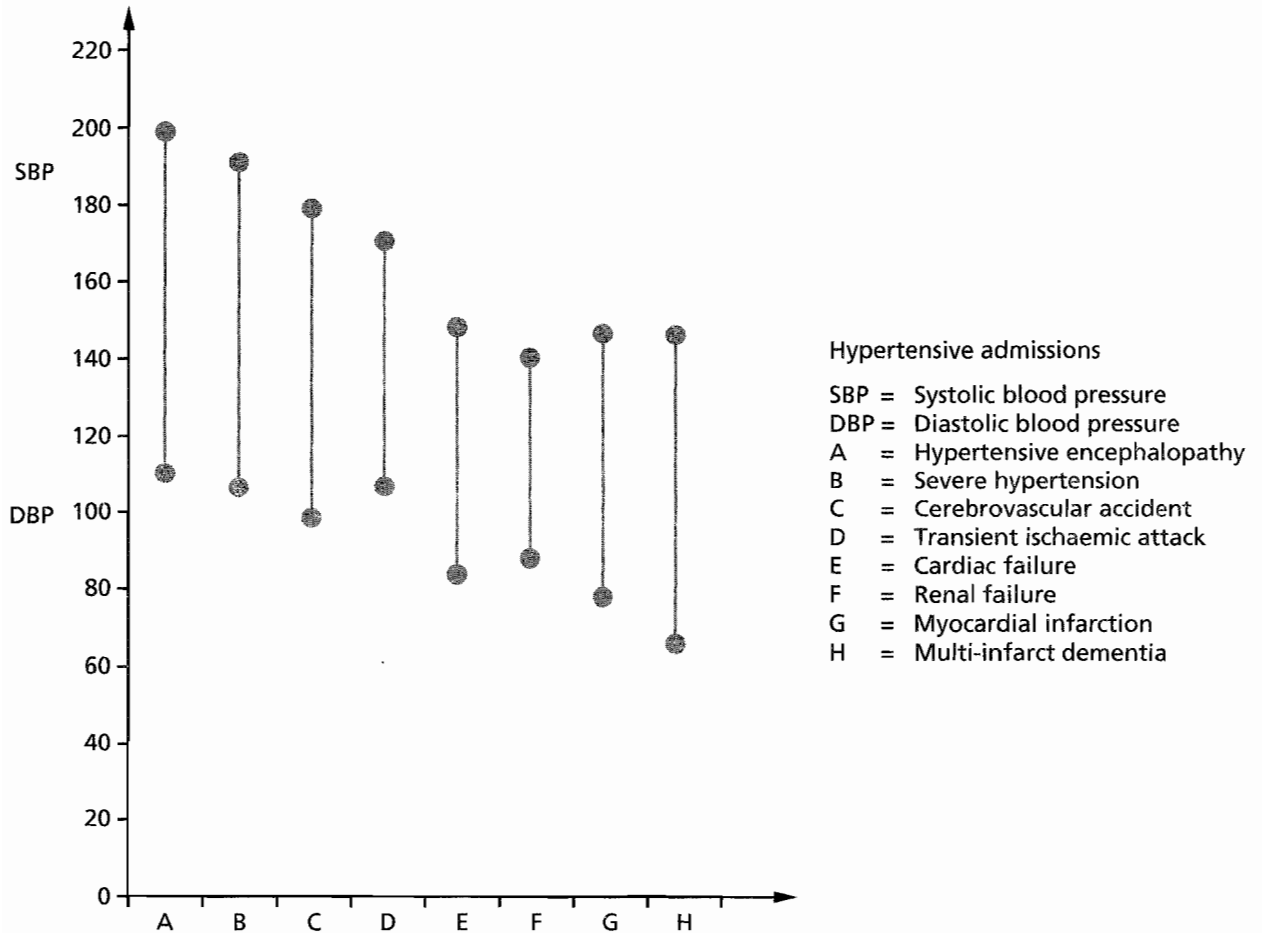
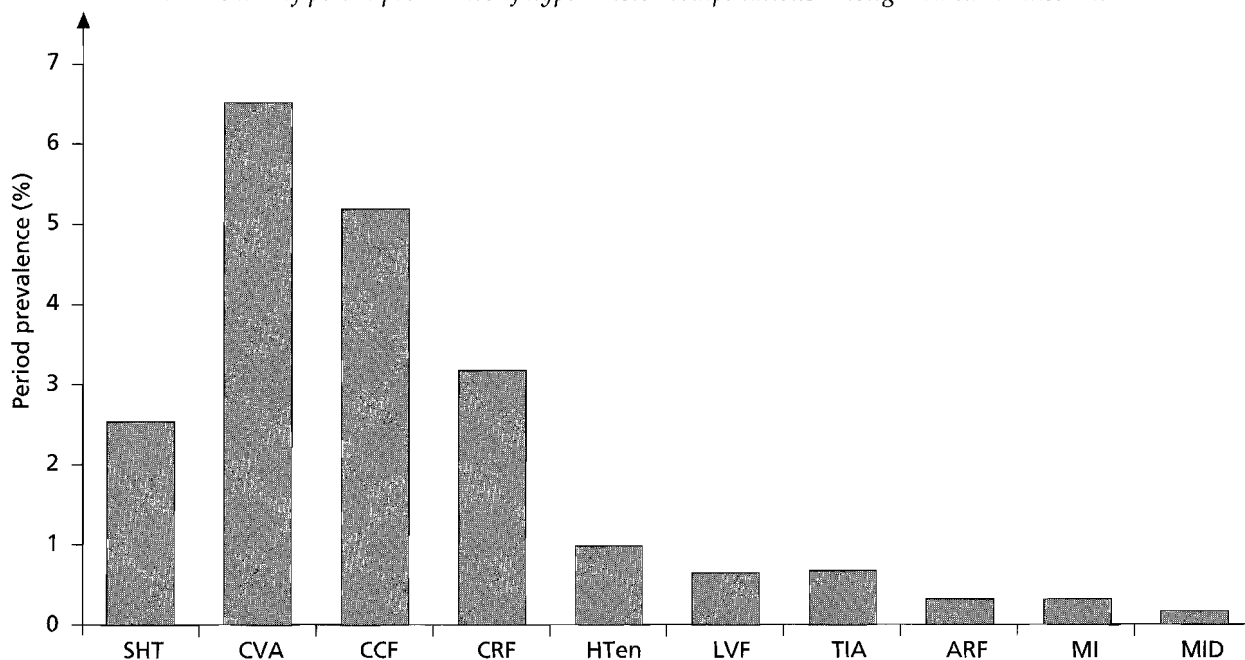


Figure 2

A bar chart of period prevalence of hypertensive complications among medical admissions

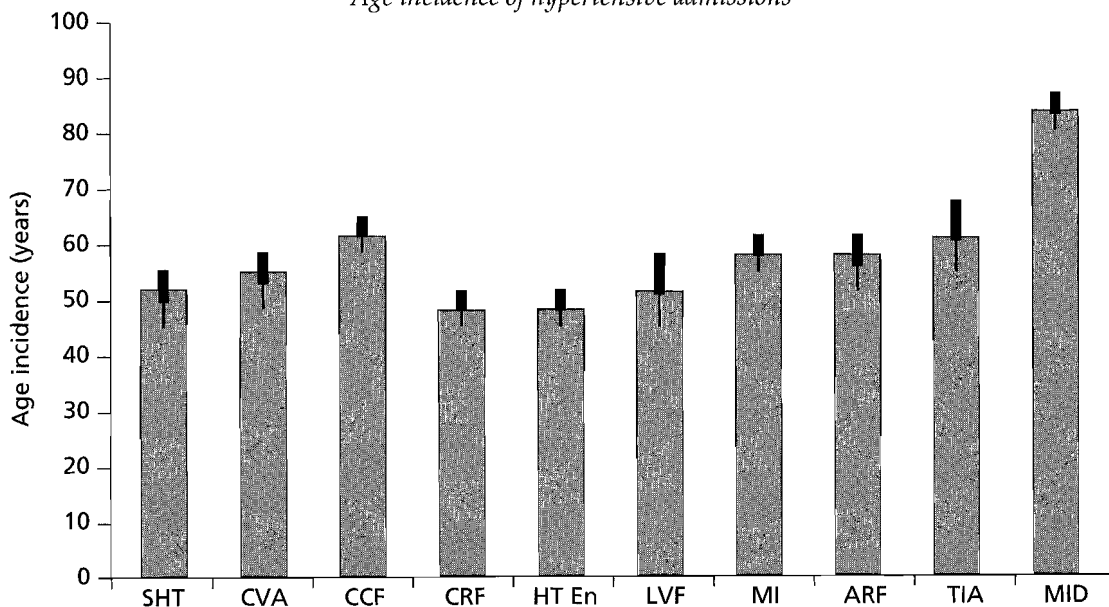


Hypertensive complications

- | | |
|--|-------------------------------------|
| SHT = Severe hypertension | CVA = Cerebrovascular accident |
| CCF = Congestive cardiac failure | CRF = Chronic renal failure |
| LVF = Left ventricular failure | HT En = Hypertensive encephalopathy |
| MI = Myocardial infarction | ARF = Acute renal failure |
| TIA = Transient cerebral ischaemic attacks | MID = Multi-infarct dementia |

Figure 3

Age incidence of hypertensive admissions

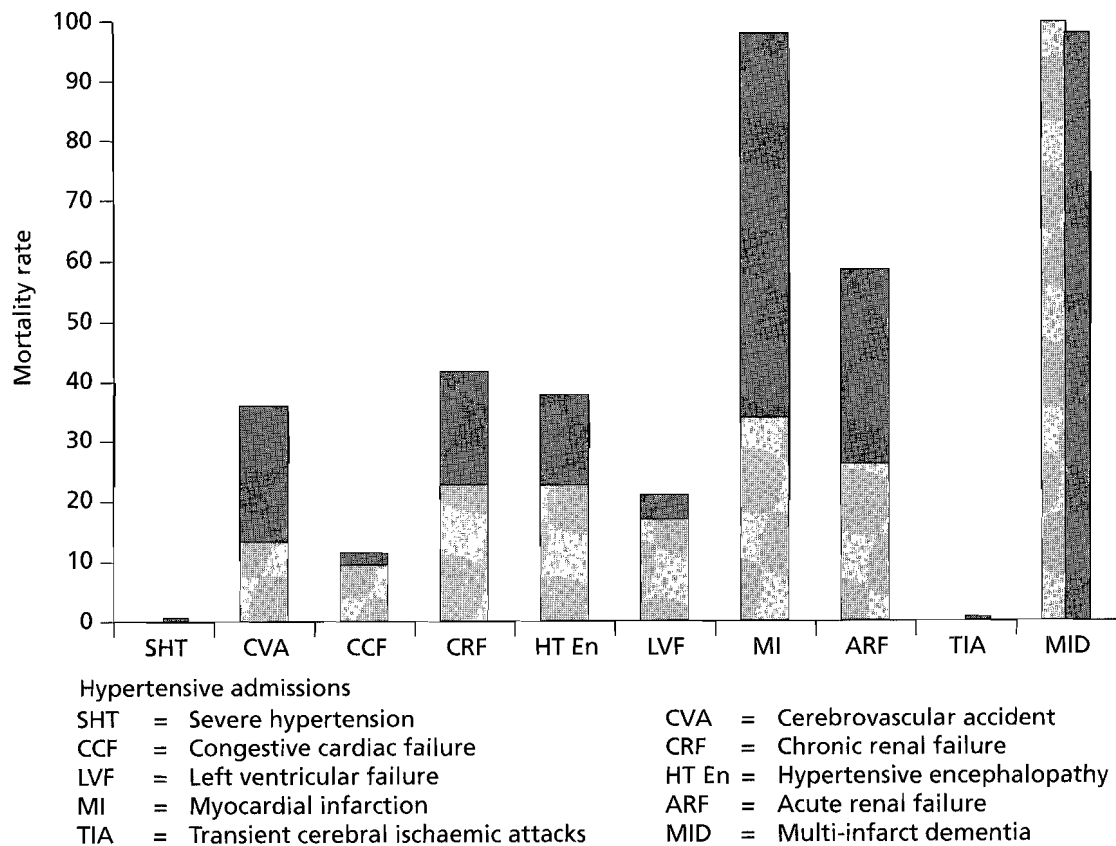


Hypertensive admissions

- | | |
|--|-------------------------------------|
| SHT = Severe hypertension | CVA = Cerebrovascular accident |
| CCF = Congestive cardiac failure | CRF = Chronic renal failure |
| LVF = Left ventricular failure | HT En = Hypertensive encephalopathy |
| MI = Myocardial infarction | ARF = Acute renal failure |
| TIA = Transient cerebral ischaemic attacks | MID = Multi-infarct dementia |

Figure 4

Annual mortality rate of different hypertensive admissions during the study period



DISCUSSION

Systemic hypertension is the most prevalent of cardiovascular diseases not only in Africa but also globally (1). Its complications are protean and include congestive cardiac failure, cerebrovascular disease, chronic renal failure, ischaemic heart disease and many others (1,2). This study showed that HTA accounted for 16.1% of annual medical admissions and 2.9% of total hospital admissions. This figure is higher than the 7% of medical admissions provided by Isezuo (3). The seeming rising incidence of hospital admissions due to HTN appears to be in keeping with the rising incidence of HTN in the diaspora (9). In the 1980s and 1990s, the incidence was about 15 to 19% but today the incidence of HTN has risen to 25% or more in some parts of Africa (10). A large majority is still undiagnosed by the time complications set in (3). In this study 47.5% were not diagnosed before the day of admission. Isezuo in his study

reported 56.5% undiagnosed and this is despite hypertension awareness campaigns that have been on since the 1990s (3). Ignorance, poor access to health facilities and dwindling economy in many African countries all contribute to late presentation and high morbidity associated with hypertension (3,4,6). Of late in West Africa and Nigeria in particular, the increased out-put of fake drugs, increase in registration fees and subsequent high cost of genuine drugs have greatly reduced availability of drugs to the common man.

In this study systemic HTN contributed significantly to the medical cause of death. The findings demonstrated an annual medical death due to HTN related morbidity of 16.1% and an annual mortality rate of 45/1000 (4.5%) and constituting 0.6% of overall hospital mortality. Kaufman *et al* (11). also recorded 20% mortality among the HTA in Burkina Faso over a three-year period. In Kumasi, Ghana, mortality from cardiovascular causes of medical admission; was recorded as 28.8% but they

were not all due to HTN (12). Taking the population estimate of 2001 and assuming 68 million adult Nigerians (13) of whom 25% are hypertensive, it means that 4.25 million Nigerians die annually from HTN. The higher mortality recorded for men is in accordance with known increased morbidity from HTN associated with the male gender (8,14) despite absence of significant gender difference in admission rate. This probably emphasises a more aggressive course associated with manhood. The absence of significant gender difference is in agreement with previous studies (3). The commonest complications of HTN recorded in this study in order of increasing frequency were CVA > CCF > CRF (32.9%; 25.2% and 15.3% respectively). This finding appears to be at variance with what is found in literature, the commonest complications being in the order CCF > CVA > CRF (15). This may be accounted by the fact that in this country majority of the patients arrive late to the hospital after initial trials of traditional medications and visits to herbal and spiritual homes. Most of the patients with CCF may actually be in type III heart failure (8) when they will not be differentiated from dilated cardiomyopathy at the time of admission and would have recorded low blood pressure values. Inability to procure cost of investigation on the one hand and failure of the clinician to document important changes in the BP profile make patients who move from type III to type I heart failure difficult to identify from the clinical records. Most patients with cerebrovascular accident are usually readily sent to the hospital probably because of the accompanying disability.

In conclusion, this study has shown that a significant percentage of hypertensives die annually from hypertensive complications. The age incidence involved paints a rather gloomy picture for the workforce in the population. A continuing campaign for the awareness of systemic hypertension and its complications cannot be overemphasised. More indebt study into the contribution of risk factors of hypertensive complications and confounding variables such as traditional medications, inappropriate drug use and non-compliance to treatment need to be done in order to achieve better goals.

ACKNOWLEDGEMENT

My sincere gratitude to the medical records department of U.B.T.H. for the information they provided in the process of writing this paper.

REFERENCES

1. Akinkugbe O.O. Current epidemiology of hypertension in Nigeria. *Arch. Ibadan Med.* 2000; **1**: 3-7.
2. Kadiri S., Walter O., Salako B.I. and Akinkugbe O. Blood pressure, hypertension and clinical correlates in urban workers in Ibadan, a revisit. *J. Human Hypert.* 1999; **13**: 23-27.
3. Isezuo S.A. Seasonal variation in hospitalisation for hypertension related morbidity in Sokoto, North-West Nigeria. *Int. J. Circumpolar Hlth.* 2003; **62**: 397-408.
4. Timmers G.J., Schouten J.A., terWee P.M. and Gans R.O. Hypertension in the Negro patient. *Ned. Tijdschr Geneesk.* 1999; **143**: 229-234.
5. Kaufman J.S., Rotimi C., Brieger W.R., *et al.* The mortality risk associated with hypertension, preliminary results of a prospective study in rural Nigeria. *J. Human Hypert.* 1996; **10**: 461-464.
6. Resume O. Monitoring cardiovascular diseases in Zimbabwe; a review of needs and options. *Central Afr. J. Med.* 1996; **42**: 120-124.
7. Kirkwood B.R. and Sterne J.A.C. *Essential Medical Statistics 2nd Edition.* 2003; 138-147.
8. Guidelines Sub-committee. World Health Organisation International Society of Hypertension Guidelines for the Management of Hypertension. 1999; 11-26.
9. Araoye M.A. and Olowoyeye O. The clinical spectrum of hypertensive heart failure; a point score system for solving an old problem. *East Afr. Med. J.* 1984; **61**: 306-315.
10. Kaufman J. and Barkey N. Hypertension in Africa: An overview of prevalence rates and causal factors. [Review][154 refs] ethnicity and disease 1993; **3 Sup S8**: 3-10.
11. Kaufman J.S., Owoaje E.E., James S.A., Rotimi C.N. and Cooper R.S. Determinants of hypertension in west Africa: Contribution of dietary factors to urban-rural and socioeconomic gradients. *Amer. J. Epidemiol.* 1996; **143**: 1203-1218.
12. Planges-Rhule J., Phillips R., Achimpong J.W., Saggarmalik, Cappucio F.B. and Eastwood J.B. Hypertension

- and renal failure in Kumasi, Ghana. *J. Human Hypertension*. 1999; 13: 37-40.
13. Ogunbo B.I., Gregson B., Mendelow A.D. and Walker R. Cerebrovascular disease in Nigeria: What do we know and what do we need to know? *Trop. Doct.* 2003; 33: 25-30.
 14. Salako L.A. Editorial: Hypertension in Africa. *J. Clin. Expe. Hypert.* 1993; pg 1.
 15. Kaplan N.M. Systemic hypertension: Mechanisms and Diagnosis, in Braunwald E. Heart Disease – A text book of cardiovascular medicine, 4th Edition, W.B. Saunders's Co. 1997; 1: 817-850.