

The Prevalence and Correlates of Hypertension in a Theological College In Africa

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ABSTRACT

Background: The Theological College is a peculiar setting. This is due to the nature of the job, studies, attitudinal leaning (faith) and influence. There has been no known work to date done on the cardiovascular status in institutions of this nature-both in the country and in the continent of Africa. This formed the basis for evaluating the prevalence of hypertension and its correlates in one of the foremost theological colleges in Africa, the Trinity Theological College, Umuahia.

Method: The entire constituent working-student population in the sandwich program of August 2004 at the Trinity Theological College, Umuahia, were recruited in the study. Their biodata, demographic distribution, anthropometry, pulse rate and blood pressure measurements were recorded under standard conditions. Their lifestyle habits were evaluated. Structured questionnaires were used with self administered screening done by medical doctors.

Results: Eighty five subjects, with mean age 43.7(±9.9) years, were screened. The prevalence of hypertension was found to be 28.3%. Only 8 subjects admitted being known hypertensives, out of whom 6 were on treatment. Fifty three percent (45) of them checked their blood pressure irregularly, while 28 (33%) never did. Twenty six respondents (31%) admitted taking extra table salt, while 39 (46%) never engaged in any form of exercise.

Conclusion: The prevalence of hypertension in this community is higher than that of the general Nigerian population. There is a great need for adequate health education especially with regard to regularity of blood pressure check and lifestyle modification, in the Theological Colleges, given the influence they wield in the larger society.

Key Words: Prevalence, Correlates, Hypertension, Theological College, Africa

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INTRODUCTION

Hypertension, estimated to cause 4.5% of the current global disease burden, 7.1 million global premature deaths and one third of global deaths, is as prevalent in many developing countries, as in the developing world.^{1,2}

Thus hypertension is a major cause of cardiovascular morbidity and mortality, and all-cause mortality.^{3,4}

In Africa, hypertension is the commonest cardiovascular problem,^{5, 6} as well as the commonest cardiovascular cause of morbidity and mortality⁷. Moreover, blacks all over the world, have a higher prevalence, more severe form and more associated target organ-damage of hypertension, when compared with Caucasians.^{3,8,9}

The prevalence of hypertension is estimated at between 15 - 20% worldwide,¹⁰ with 60 million individuals (25%) affected in the United States of America (USA).^{11,12} It is estimated at more than 14% in Africa,¹³ and currently between 16 - 25% in Nigeria.^{14,15} Despite this gloomy scenario evidence a bounds that treating hypertension, by drug therapy and lifestyle modification, has been associated with about a 40% reduction in the risk of stroke and about a 15% reduction in the risk of myocardial infarction.^{16,17}

The priests/gospel ministers are regarded to be at higher than normal risk for stress, obesity, high cholesterol, hypertension and other heart diseases¹⁸. They use tremendous amounts of energy to meet the demands of multiple roles in their unique position in the work environment. The sense of being "on call" demands a lot of energy. According to Almocera,¹⁹ the priest has a role overload. He is a preacher, an educator, a counsellor, a theologian, a project promoter, a financial adviser, and more rolled in, week after week. This rapid expenditure of, or even borrowing from, energy stores leads to burnout. As Harbaugh²⁰ noted, a burned-out priest physically continues to pump adrenaline into his system which will negatively affect the body, and can lead to hypertension, stroke and atherosclerosis.

There has been no known work to date done on the cardiovascular status of priests in theological colleges, both in Nigeria and in the continent of Africa. This study, therefore, is set out to evaluate the prevalence of hypertension and its correlates in one of the foremost theological colleges in Nigeria, and Africa, the Trinity

Theological College, Umuahia, Abia State, in the South Eastern region of Nigeria.

MATERIALS AND METHODS

DESIGN: This was cross-sectional community-based study.

STUDY AREA: The study was done at Trinity Theological College, Umuahia, capital of Abia State in South East Nigeria. The college was established in 1948 to train pastoral staff of the church (initially Anglican, Methodist and Presbyterian, but since September 2001, mainly Anglican), train student-priests for the military chaplaincy of the Nigerian Armed Forces, as well as provide courses for those interested in theological education. It is affiliated to the Department of Religion of the University of Nigeria, the first indigenous university in the nation, of over 140 million black people.

SUBJECTS: The study population was drawn from all the clergy lecturers and students (who were both already ordained priests and ordinands) as well as the non-tutorial working staff of the college. All the August 2004 sandwich program students, all the lecturers (all priests) and about half of the non-tutorial staff: administrative, catering, security and drivers, who were on duty during the period, were studied.

The study group was made up of consecutive subjects of all the student-priests who were in residence over the four weeks of the sandwich program, the lecturer-priests who all resided in the college compound, and the other non-tutorial non-priest staff. Awareness mobilization had been started two weeks prior to the exercise, with four separate sessions of these. Details of the study were explained, highlighting the benefits of blood pressure measurement, enquiry into lifestyle habits and other cardiovascular risk factors, as well as reassurance on the non-invasive nature of the procedure. The authority figures including the rector of the institution, the dean of academics, the student union president and the class monitors were used to reinforce the message, informing them of the exact days, time, and venues for the study. Informed consent was obtained from the participants after explaining the objectives and procedure.

DATA INSTRUMENT AND COLLECTION: Eighty-five self-administered questionnaires covering every participant were used, and all the questionnaires were duly filled out and returned, giving a response rate of 100%. The combination of questionnaire, measurement, interview and direct observation techniques²¹, was used.

The study was carried out in four consecutive days, between the hours of 11.00 hours and 12.30 hours.

Structured questionnaires, employing both forced-response and open-ended questions, were used. The survey was administered with the assistance of five medical doctor-specialists, who were also theological students at the time of the study. They directly administered the protocol questions and carried out the blood pressure and pulse rate measurements. The anthropometric measurements of height and weight were carried out by a postgraduate student of the college, educated on what to do.

MEASUREMENTS: Some of the questions, such as biodata, were open-ended, while most of the others were forced-response type. History was taken as per the structured questions. The biodata were also recorded using the proforma questions.

Anthropometric measurements of height (in centimeters) and weight (in kilogrammes) were taken. These were done in a separate room from that used for blood pressure measurement with the subjects in light dressing and without shoes.

The WHO criteria for measuring blood pressure, and diagnosing hypertension, were used.^{2,22} Diagnosis of hypertension was based on systolic blood pressure of 140 mmHg or greater and/or a diastolic blood of 90 mmHg or greater, in subjects who were not taking antihypertensives. The blood pressure recording was done, staying in a quiet environment, the college library, in sitting position. Diagnosis was made and those who needed treatment had antihypertensive prescriptions made out for them. The pulse rate was counted using the radial artery.

APPARATUS: These included:

- (i) Standard mercury sphygmomanometer (Accoson model, made in England)
- (ii) Weighing scale (Hospital brand)
- (iii) Properly marked-out wall-calibrated rulings for height measurement.

STATISTICAL ANALYSIS: Data analysis was by computer using SPSS for windows version package.^{23,24} Data storage was in Microsoft Office Word 2003.²⁵ Data were expressed as mean (standard deviation). Descriptive analyses were done to elucidate the frequency profile of the clinical and demographic characteristics. Chi-square was used to test for

statistically significant associations. Comparison among the groups was done using One Way Analysis of Variance (ANOVA). Linear and multiple regression analyses were performed to assess the strength of relationships between blood pressure and other correlating factors. Statistically significant level was set at $p = 0.05$.

ETHICAL APPROVAL: The study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki as reflected in *a priori* approval by the managing authority of the college.

RESULTS

The overall mean age was 43.7 ± 9.9 years. The mean age for males was 43.9 ± 9.9 years while that for females was 41.3 ± 11.2 years. There was no statistical difference between the mean ages of those hypertensive and the normotensive group.

Eighty nine percent (76) of the subjects were of the Igbo ethnic group. The Urhobo and Tiv ethnic groups both outside the South Eastern region of the country had 1 representative each.

Table I: Age, Sex And Frequency Of Hypertension Distribution Of Subjects

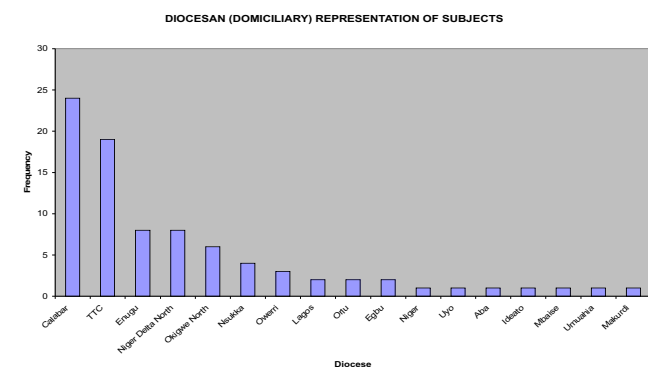
Age group (years)	Hypertensive			Non Hypertensive		
	Male	Female	Total	Male	Female	Total
21 30	-	-	-	6	1	7
31 40	6	1	7	24	3	27
41 50	4	-	4	16	-	16
51 60	9	2	11	7	-	7
61 70	2	-	2	4	-	4
Total	21	3	24	57	4	61

$X^2 = 14.08$ Df = 4 P > 0.05

$X^2 =$ Odds ratio

Df = Degree of freedom

P = P value



KEY

TTC = Trinity Theological College, Umuahia

FIG 1: DIOCESAN (DOMICILIARY) REPRESENTATION OF SUBJECTS

Table II: Clinical Characteristics Of Subjects

Variable	Mean ± (SD)	
	Hypertensives	Non Hypertensives
Age (Years)	50.1 (5.8)	41.0 (4.1)
Weight (kg)	78.2 (6.5)	72.4 (4.6)
Height (cm)	157.4 (4.2)	169.3 (3.4)
BMI (kg/m ²)	28.8 (1.4)	20.5 (2.5)
Pulse (beats/min)	76.4 (3.6)	73.1 (4.7)
SBP (mmHg)	156. (11.1)	118.2 (6.3)
DBP (mmHg)	90.2 (6.7)	73.6 (6.8)

KEYS

BMI = Body mass index

DBP = Diastolic blood pressure

SBP = Systolic blood pressure

Table III: Frequency of BP Check

Frequency	Number	(%)
Weekly	4	4.7
Monthly	1	1.2
3 monthly	5	5.9
6 monthly	2	2.4
Irregularly	45	52.9
Never	28	32.9
Total	85	100

Table IV: Disposition To HBP

DISPOSITION	FREQUENCY	%
Praying/Taking Drugs	48	56.5
Visit Doctor for Treatment	26	30.6
Only Pray About It	3	3.5
Reject it by Faith	2	2.4
No Response	6	7.1
Total	85	100

Table V: Relationship Between BP and extra table Salt

SBP	(a)			(b)			
	No	Yes	Total	No	Yes	Total	
90	2	2	4	50	3	3	
100	4	6	10	55	2	2	
110	10	10	20	60	5	11	
115	1	1	2	65	2	2	
120	14	1	15	70	7	28	
125	2	1	3	75	2	2	
130	10	1	11	80	7	18	
140	7	2	9	85	1	1	
150	3	3	6	90	4	6	
160	2	2	4	95	1	1	
170	2	2	4	100	2	9	
180	1	1	2	110	1	1	
Total	58	26	84	Total	58	26	84

(a)	Systolic Value	Extra T. Salt Df	Total Asymp. Sig. (2-sided)
Pearson Chi-Square	18.659a		
Likelihood Ratio	21.482	11	0.068
N of Valid Cases	84	11	.029*

* p < 0.05

(b)	Diastolic Value	Df	Asymp.Sig (2-sided)
Pearson Chi-Square	13.141	11	0.284
Likelihood Ratio	16.066	11	.139*
N of Valid Cases	84		

* p > 0.05 (NS)

Table VI: Correlation of BP with continuous Variables

Variable	Corr. Coeff	P Value
SYSTOLIC		
Age	0.437	0.0001*
Height	-0.118	0.293
Weight	0.314	0.004*
BMI	0.409	0.0001*
Pulse	0.209	0.068
DIASTOLIC		
Age	0.313	0.004*
Height	-0.060	0.594
Weight	0.371	0.001*
BMI	0.441	0.0001*
Pulse	0.066	0.571

* Statistically significant

Table I is a frequency table of hypertension by age and gender. It shows that a total of 85 subjects, 78 males (91.8%) [42 ordained priests, 31 ordinands, 5 other non-tutorial staff] and 7 females (8.2%) [non-tutorial staff] were studied. Their ages ranged from 26 to 64 years.

Twenty four (28.3%) of the study group were hypertensive. Of those hypertensive, only 8 (33%) were aware of their condition, and 6 (25%) were on treatment.

Fig. 1 shows the Calabar diocese to have the highest number of representations (24; 28%). Seven of the diocese have only 1 representative each.

Table II displays the clinical characteristics of the subjects. The mean body mass index (BMI) is in the overweight category. Majority are in the normal weight (33; 39%) and overweight (31; 37%) categories, respectively. The mean blood pressures fall within the normal BP range (SBP 123 mmHg and DBP 75 mmHg).

More than two-thirds of the study population (67%) had acquired up to tertiary level of education prior to attending the theological college. Six (7%) of them had only primary level education.

Table III reveals that majority of the respondents were irregularly checking (45; 53%) or have never checked their blood pressures (28; 33%). Fifty two percent (44) of the subjects admitted engaging in regular exercise.

Table IV shows that 87% of the respondents are disposed to visiting the doctor (31%) and continuing on their treatment regimen (56%) should they have high blood pressure.

Table V reveals that 26 (31%) of the respondents usually demanded extra table salt at meals. While this was statistically significant ($p < 0.05$) with the systolic blood pressure measurements, it was not with the diastolic ($p > 0.05$). The blood pressure-occupation cross tabulation showed statistical significance with the systolic ($p < 0.005$) and not the diastolic ($p = 0.64$) blood pressure.

Table VI shows marked statistical significance and correlation between age, BMI and weight against both systolic and diastolic blood pressure in the study population.

DISCUSSION

The prevalence of hypertension in this theological college is 28.3%. This is higher than that of the national estimate of Nigeria.^{14, 15} This study's prevalence rate is also higher than the prevalence of 26.3% in Egypt,²⁶ and 27.2% in China,²⁷ but lower than the 33.7% from the Ansan study in Korea,²⁸ 32.7% among African Americans in the Maywood Cardiovascular study,²⁹ as well as the 55.4% in the black Afro-Caribbean population study.³⁰

This study also shows the majority of the hypertensives (45%) to be in the 51-60 years age group. This is in keeping with the other studies in the region,³¹ and country.⁴ The increasing prevalence of hypertension progressively with age is well documented by similar prevalence studies.^{14, 26, 27, 30, 31} This trend follows from well-documented physiological mechanisms.

In this study 33% of the hypertensives were aware of their condition and only 25% of them were on treatment. This compares reasonably with 33% (awareness) and 33% (on treatment), of the Nigerian Non-communicable Disease Expert Study;¹⁴ 37.5% awareness and 23.9% on treatment in Egypt;²⁶ and 44.7% awareness and 28.2% on treatment in the China Inter Asia study.²⁷ Korea, however, contrasts with a low awareness of 24.6% and high treatment rate of 78.6%.²⁸

The fact that 71% (15) of the male hypertensives in this study are serving priests brings to clear attention the need to strongly consider the role of psychosocial stress in the development of cardiovascular disorders such as hypertension.³² These include the demand on the priests of "role overload"¹⁹, their predisposition to more than normal risk¹⁸ for stress and hypertension and being psychological distress helpers.¹⁸

The number of female subjects in the study, which is 7 (8.2%), is due to the nature of the study population; a predominantly male dominated seminary. This is too small to lend to significant statistical comparisons, with regard to the role of gender.

The study showed no statistical difference between the mean ages of those hypertensive and the normotensive group.

The level of education of the respondents with 67% attaining tertiary level; ethnic origins and sending dioceses do not appear to have any influence on the outcome of this study.

The study shows, however, that only age, BMI and weight are correlated with the level of blood pressure. This is in keeping with other studies in different geo-racial parts of the world. The North Karelia 25 years Hypertension Care Project in Finland noted obesity as one of the main contributing risk factors for hypertension³³. Murray et al, from Australia, observed that the prevalence of obesity is progressively increasing in the third world.³⁴ The African-American community study in Chicago showed age, education and BMI as the only factors significantly associated with blood pressure in their target community.³⁵ Likewise, the Korean Ansan study revealed that age, BMI and abdominal circumference (for weight) were the factors significantly associated with prevalence of hypertension both in the men and women population.²⁸

A great number of the study population (86%) irregularly or never checked their blood pressure. Almost half (46%) had no regular exercise; and up to 31% regularly demanded extra table salt at meals. These are lifestyles that significantly affect the blood pressure. Clinical trials have established that physical activity³⁶, reduction of dietary sodium (salt) intake³⁷, among others, lower blood pressure and reduce the incidence of hypertension, and in the long-term, lead to reduction in risk of cardiovascular disease.³⁸

The study by Pavlik et al³⁹ showed that lack of awareness was associated with less frequent blood pressure measurement, whereas the majority of aware hypertensives reported frequent physician contact and high compliance with medication. Fortunately, 87% of the subjects in this present study claimed to be disposed to healthcare utilization-visiting the doctor and being compliant with their medications, should they have high

blood pressure.

The WHO recognizes the benefits of lifestyle modification and health care utilization in prevention, treatment and control of hypertension. It has thus recommended that all individuals should adopt appropriate lifestyle modifications. Unlike drug therapy which may cause adverse effects and reduce quality of life in some patients, lifestyle modifications have no known harmful effects. They improve sense of well being of patients and are often less expensive.²

LIMITATION OF THE STUDY

This study is a cross-sectional study that elicits information about hypertension from the subjects at a period in time. A longitudinal study would have been more revealing, to follow up the progress of hypertension and its risk factor correlates, but this was not possible due to the nature of the Sandwich program.

CONCLUSION

The prevalence of hypertension in this seminary community is higher than that for the general Nigerian population. Enlightenment and awareness seminars should be planned and actively encouraged by the authorities of the church and the training colleges for the priests, lecturers, the theological college communities, and indeed the churches. These should include particularly epidemiology of hypertension and its risk factors, health behaviour characteristics and healthcare utilization with respect to hypertension, among others. This would help prevent morbidity and reduce premature mortality associated with hypertension and its cardiovascular complications.

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