

Profile of Cardiovascular Risk Factors among Priests in a Nigerian Rural Community

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SUMMARY

Objective: Cardiovascular disease (CVD) is reaching near epidemic proportions in Africa. Achieving significant reduction in the CVD burden requires aggressive population-based lifestyle-related risk factors modification. No studies have been done in this developing country on the cardiovascular risk factor profile among priests. The authors thus set out to evaluate the CV risk factor profile among priests in the rural diocesan setting of Oji River in Enugu State, Nigeria.

Methods: All the available serving priests of the diocese were recruited for the study. Their biodata, demographic and clinical characteristics were recorded under standard conditions and their lifestyle habits were evaluated. Laboratory investigations of blood glucose, serum electrolyte, urea, creatinine and cholesterol were carried out.

Results: Fifty priests were studied, with mean age 45.5 (\pm 9.1) years. Fourteen percent of them were hypertensive and 16% were obese. Eighty percent either checked their blood pressures irregularly or never at all, while only 40% were regularly on their antihypertensive medications. Only 40% regularly engaged in any form of exercise while 18% admitted taking extra table salt at meals. Eighteen percent were inclined to rejecting/denying the fact of their hypertensive status "by faith". The mean values of all the biochemical parameters were within the normal range.

Conclusion: This study has shown low level of modifiable and unmodifiable cardiovascular risk factors, with a poor level of observance of lifestyle habits among the study population. It also shows a higher prevalence of hypertension in this rural setting among priests than for the rest of the country of study. *Niger Med J. Vol. 48, No. 4, Oct. – Dec., 2007: 79 – 84.*

Keywords: Cardiovascular Risk Factors, Priests, Nigerian

INTRODUCTION

Cardiovascular Disease (CVD) is becoming increasingly common worldwide¹. CVD is responsible for one third of global deaths and is a leading and increasing contributor to the global disease burden². Importantly, however, CVD is eminently preventable³.

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In Africa, CVD has reached near epidemic proportions. The World Health Report 2002 documented CVD as accounting for 9.2% of total deaths in the African region in 2001. The number of disability adjusted life years lost to CVD in sub-saharan Africa rose from 5.3 million for men and 6.3 million for women in 1990 to 6.5 million and 6.9 million, respectively, in 2000, and could rise to 8.1 million and 7.9 million, respectively, by 2010. What more, CVD has higher mortality in developing countries than in developed ones^{2,4}.

Numerous factors increase cardiovascular risk, including age, male sex, family history, hyperlipidaemia, tobacco use, physical inactivity, obesity, diabetes mellitus, unhealthy diet, as well as hypertension and left ventricular hypertrophy^{3,5}. A patient's prognosis for CVD depends more on the sum of the risk factors⁶. To achieve significant reductions in this CVD burden, a combination of population-based and these lifestyle-related risk factors are targeted in a comprehensive approach^{3,7,8}. It has been documented that increasing urbanisation and changing lifestyles in the past four decades are the factors that have raised the incidence of non-communicable chronic diseases, especially cardiovascular disease, in Africa⁹.

Incidentally, fewer studies have been done on the cardiovascular risk status in the rural areas¹⁰⁻¹³, and none among the priests who live and minister in these rural communities. This was what prompted the authors to evaluate the profile of cardiovascular risk factors among priests in a predominantly rural setting in the Oji River Diocese of the Anglican Communion, in Enugu State, Nigeria.

METHODS

Design: This was a cross-sectional community-based descriptive study.

Study Area: The study was carried out at Oji River town, the headquarter of this rural Anglican diocese, in Enugu State, Nigeria. Oji River Diocese comprises priests serving in 3 local government areas of Udi, Ezeagu and Oji River, of Enugu State. This rural diocese, with its headquarter, and communities under it, is located about 40 kilometres south of Enugu, the state capital. The diocese was created in July 1999; and serves a population of about 450,000 rural people, which is about 21% of the estimated population of the state, set at 2.2 million.

Subject: The study population included all the priests serving in the diocese. Out of the 53 priests serving in the diocese, including the Bishop, 3 of them were unavailable for the study, with 50 priests eventually participating. Awareness mobilization

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had been started prior to the exercise at different fora of the clergy. Details of the study were explained highlighting the need of blood pressure measurement, enquiry into lifestyle habits and other cardiovascular (CV) risk factors, as well as the necessary blood tests to be carried out. Informed consent was obtained from the participants after explaining the objectives and procedure of the study.

DATA INSTRUMENT AND COLLECTION

Fifty interviewer – administered questionnaires, covering all the participating priests, were used. All the questionnaires were duly filled out and returned, giving a 100% response rate. The combination of questionnaire, measurements, interview and direct observation techniques, were used. The study was carried out on two different days, between July and September, 2006, between the hours of 11.00 and 13.00.

Structured questionnaires, employing both forced-response and open-ended questions, were used. The survey was administered by the three authors, with the assistance of four medical doctors in their housemanship during the period of the study. These all directly administered the protocol questions and carried out the blood pressure, pulse rate and anthropometric measurements.

MEASUREMENTS

The biodata and family history, with comorbid conditions were in open-ended protocol format, while the history and other lifestyle habits were as per the structured questions. Anthropometric measurements of height (in centimetres) and weight (in kilograms) were taken. These were done in a separate room from that used for the blood pressure measurement, with the subjects in light dressing and without shoes.

The WHO criteria for measuring blood pressure, and diagnosing hypertension^{3,14}, were used. The blood pressure recordings were done at two different occasions, in a quiet environment, the vestry of the cathedral, in sitting position. The average of the two recordings was taken to make diagnosis. Those who needed treatment had antihypertensive prescriptions written out for them. The pulse rate was counted using the radial artery.

The laboratory scientist collected the blood samples for assay of the fasting blood glucose, serum cholesterol and serum electrolyte, urea and creatinine.

APPARATUS: These included:

- (i) Five standard mercury sphygmomanometers (Accuson's model, made in England).
- (ii) Five Littman stethoscopes, 3M, made in United States of America.
- (iii) A weighing scale, stadiometer (Hospitex brand).
- (iv) Properly marked-out wall-calibrated rulings for height measurement.

STATISTICAL ANALYSIS

Data analysis was by using SPSS for Windows version 11.0 package. Data were expressed in frequencies, percentages and mean (standard deviation).

ETHICAL APPROVAL

Clearance was obtained from the presiding bishop of the diocese.

RESULTS

Out of the 53 priests in the diocese, 50 were available to participate in the study. They were all males, of the Ibo ethnic group in Nigeria. Their ages ranged between 30 to 62 years, with mean of 45.5 (± 9.1) years. Ninety four percent of them attained up to tertiary level of education. Seven (14%) of the respondents were hypertensive, with 4 of them having both systolic and diastolic hypertension. Sixteen percent (8) were obese, with 1, a hypertensive, in the grade 2 obese range (Table 1). As shown in table 2, more than 80% of the priests either checked their blood pressure irregularly (33; 66%) or never at all (9; 18%). Five of the hypertensive priests (71%) had never checked their blood pressures previously. Of the 5 known hypertensives, only 2 (40%) were on their antihypertensive medications regularly.

Table 3 reveals the lifestyle habits of the priests. None was currently on any form of tobacco usage and only 12% used alcohol once in a while. Only 40% of the priests regularly engaged in any form of exercise, while 9 of them still indulged in usage of extra table salt. Thirty six (72%) of the respondents had no regular rest schedule, among which were 5 (71%) of the hypertensive subjects.

As table 4 shows, up to one-third (32%) of the priests did not know about past history of hypertension and 14% did not know about past history of stroke, in their families. Four (8%) were diabetic with 3 of them on treatment. The only priest with stroke was also hypertensive. The attitude of the respondents to high blood pressure is reflected in Figure 1. About 80% admitted they would consult a doctor (9; 21%) or both pray and continue taking their drugs (26; 59%), among them 6(86%) of the hypertensive subjects. However 8(18%) of them would rather reject the fact of their hypertensive state, "by faith". The mean values of the biochemistry tests for all the subjects are displayed in table 5. These were the fasting blood glucose, the serum electrolytes, urea and creatinine, and total cholesterol. The mean values of these tests are within normal levels, though 3 of the respondents had hyperglycaemic levels of 8.5, 10 and 10.1mmol/L, respectively. There was no significant difference between the values of the normotensives and hypertensive subjects. Six of the subjects had their total cholesterol levels between 6.1 and 6.5mmol/L and one measured 7.0mmol/L. None of the hypertensive subjects had hyperglycaemia, hypercholesterolaemia or abnormal electrolyte levels.

Table 1: Sociodemographic and Clinical Characteristics

Parameter	Among all Subjects		Frequency		Among the Hypertensives	
	Number			(%)		
Male gender	50			(100)	7	
Ethnicity – Ibo	50			(100)		
Educational Level						
Primary	1			(2.0)	-	
Secondary	2			(4.0)	1	
Tertiary	47			(94.0)	6	
Total	50			(100.0)	7	
Clinical Symptoms						
Headache	8			(16)	2	
Dizziness	6			(12)	1	
Tingling Sensation	5			(10)	-	
Nocturia	4			(8)	1	
Easy Fatigue	4			(8)	2	
Palpitation	3			(6)	-	
Numbness	2			(4)	-	
Light headedness	2			(4)	1	
Insomnia	-				-	
Other Measurements						
	Mean(SD)					
Age (years)	45.5	(9.1)			47.7	(9.5)
Height (cm)	169.0	(7.3)			Elevated Systolic BP	1
Weight (kg)	76.0	(11.9)			Elevated Diastolic BP	2
Pulse rate (beats/min)	78.6	(11.8)			Both (S + D) BP Elevated	4
Systolic BP (mmHg)	117.0	(13.1)			Total	7
Diastolic BP (mmHg)	75.6	(11.2)				
BMI						
Mean	26.5	(3.5)			BMI	28.7 (5.5)
< 20	3	(6.0)			-	
20 – 24.9	14	(28.0)			2	
25 – 29.9	25	(50.0)			2	
> 30	8	(16.0)			3	

Key: BMI - Body Mass Index
 BP - Blood Pressure
 S + D - Systolic and Diastolic
 SD - Standard Deviation

Table 2: Blood Pressure Status Awareness

Frequency of Checking BP	Among All Subjects		Among the Hypertensives
	No	(%)	
Weekly	0	0	
Monthly	1	(2.0)	1
Every 3 months	2	(4.0)	1
Every 6 months	5	(10.0)	
Irregularly	33	(66.0)	5
Never	9	(18.0)	
Total	50	(100.0)	7
Awareness of BP Status			
Whether a known hypertensive	5	(10.0)	5
Whether on any antihypertensive	5	(10.0)	
If on antihypertensives, regularly?	2	(40.0)	2
On other medications?	0	(0)	

Table 3: Lifestyle Habits of Subjects

Habit	Among All Subjects	No of people	Among the Hypertensives (%)
Current use of tobacco	0	0	-
Use of tobacco in the past (smoking)	12	(24.0)	1
Use of alcohol	6	(12.0)	-
Use of extra table salt	9	(18.0)	1
Engaging in regular exercise	20	(40.0)	3
How often respondent rests*			
Daily	4	(8.0)	1
Twice a week	2	(4.0)	-
Thrice a week	1	(2.0)	-
Weekly	6	(12.0)	1
Fortnightly	1	(2.0)	-
Irregularly	30	(60.0)	5
Never	6	(12.0)	-
Total	50	(100.0)	7

*Rest – Ability/opportunity to make out 1 – 2 hours at a stretch to relax, either in sitting or supine position.

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Table 4: Family History and Co-morbid Conditions

Parameter	Among All Subjects		Among the Hypertensives
	Number of People	(%)	
• Diabetic	4	(8.0)	-
On treatment for diabetes	3		
• Has stroke	1	(2.0)	1
• Family history of hypertension			
Yes	17	(34.0)	3
Don't know	16	(32.0)	3
• Who has hypertension			
Both parents	3	(18.0)	2
Father only	5	(29.0)	-
Mother only	9	(53.0)	1
• Family history of stroke			
Yes	10	(20.0)	
Don't know	7	(14.0)	
• Who has stroke			
Both parents	2		1
Father	2		
Mother	3		
Uncle	2		
Grandmother	1		

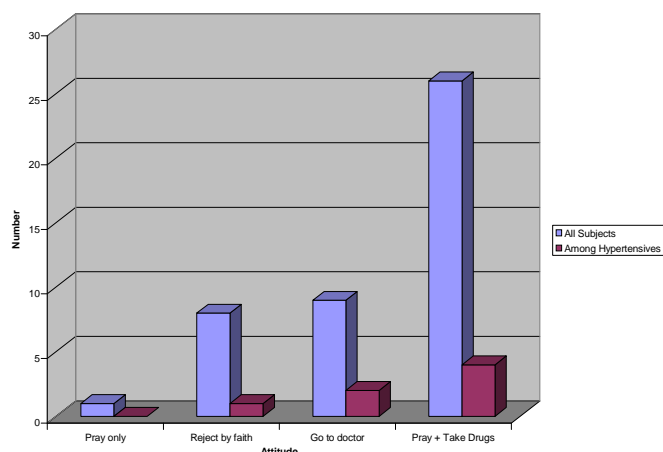


Fig. 1: Attitude to High Blood Pressure

Table 5: Biochemistry Investigations for All Subjects

Parameter	Mean (Standard Deviation)	
	Normotensives	Hypertensives
Fasting Blood Glucose	5.5(1.1)mmol/L	5.1(0.6)mmol/L
Sodium	139.2(1.3)mmol/L	139(0.9)mmol/L
Potassium	3.9(0.2)mmol/L	3.9(0.1)mmol/L
Bicarbonate	23.2(2.1)mmol/L	20.7(1.2)mmol/L
Chloride	103.2(2.9)mmol/L	101.6(1.3)mmol/L
Urea	4.3(0.9)mmol/L	4.2(0.3)mmol/L
Creatinine	89.5(6.4) μ mol/L	87.2(2.7) μ mol/L
Cholesterol	5.3(0.8)mmol/L	4.7(0.3)mmol/L

DISCUSSION

This study has shown a low level of unmodifiable risk factors, comparably low level of modifiable risk factors, poorly observed lifestyle habits and a very low level of associated

clinical conditions in this rural diocesan community of priests. Thus most of the subjects fall within the low risk stratification category in the assessment chart¹⁴.

Though the respondents were all of the male gender, an unmodifiable cardiovascular risk factor, their mean ages of 45.5 years (for all subjects) and 47.7 years (for the hypertensive subjects), respectively, put them at less than 55 years, at which the risk is increased³. The incidence of positive family history of hypertension in first degree relatives of the subjects, another unmodifiable risk factor³, is 34%, with only 3 of the hypertensives involved. Only 2 of the hypertensive respondents in the study were more than 55 years of age.

There is a low level of modifiable risk factors in the study population: with no respondent currently smoking/using tobacco in any form, only 12% using alcohol occasionally and 18% indulging in extra table salt usage. The mean cholesterol level was less than 6.1mmol/L and there was obesity in only 16% (8) of the subjects – 3 of these among the hypertensives. These findings agree with established literature findings^{15,16}, of low cardiovascular risk factors in the rural areas. This is as compared to the urban environments, which differences were attributable to “acculturation” factors¹⁷. The study, however, differs from that of Alberts et al, in South African rural black population, which documented a multiplicity of risk factors in the study group, with 32.1% of men and 18.9% of women over 30 having a 20% or higher likelihood of developing cardiovascular disease in the next 10 years¹⁸. Equally in contrast are the findings among Caucasians, with levels of modifiable risk factors found to be high, and patients having multiplicity of CVD risk factors¹⁹.

Cardiovascular healthy lifestyle habits were poorly observed by the study population. With a majority of the priests (60%) living a sedentary life style, 70% observing their rest schedules irregularly, 3 of the 7 hypertensives being obese, and 84% (42) checking their blood pressure status irregularly or never at all, these priests are more prone to development of CV risk factors than the average population²⁰. A cohort study in middle aged men followed for 16 years showed that physical activity is a graded and independent predictor of cardiovascular mortality²¹, while body weight and incidence of CVD are positively associated²².

Associated clinical (co-morbid) conditions were rare in the study population, with only 4 (8%) being diabetic; 1 patient, a hypertensive, who had suffered stroke and the mean creatinine level (89 μ mol/L) being less than the critical level of 133 μ mol/L^{3,14}. Diabetes mellitus, being one of the strongest modifiable risk factors for CVD, often coexists with obesity, dyslipidaemia, hypertension and hyper-uricaemia to give the metabolic syndrome (syndrome X)^{5,23}.

The prevalence of hypertension among the priests in this rural diocesan study is 14%. This is higher than the 11.2% prevalence rate for rural areas in the country, established by the Expert Committee on Non Communicable Diseases¹³, but lower than the overall prevalence rate of 25% estimated for the whole country²⁴. This greater prevalence of hypertension among the priests when compared to that for the rest of the rural areas in Nigeria, has been attributed to work overload²⁵, and the higher

than normal risk for stress²⁰ on the part of the priests. The relationship between stress and hypertension, though much referred to, is however, yet to be fully elucidated²⁶.

Conclusive evidence exists that reducing elevated blood pressure, especially systo-diastolic hypertension, is accompanied by a reduction in cardiovascular morbidity and mortality^{27,28}. Available studies, however, indicate that in the hypertensive fraction of the population adequate blood pressure control is limited²⁹. In this index study, 4 (57%) of the hypertensive subjects had both systolic and diastolic readings elevated, with family history of hypertension in 3, while 1 also had stroke. Yet of the 5 known hypertensives, none checked their blood pressure regularly, none had a rest schedule and only 2 (40%) were regularly on their medications. This well bears out the above literature assertions, and is in keeping with the trend in the larger Nigerian national study¹³, and other regional prevalence studies^{30,31}, with only 16% and 27% of patients in Canada and the USA, respectively, with hypertension well controlled³².

It would be noted that all the biochemical values of the fasting blood glucose, serum cholesterol and electrolytes, urea and creatinine were within normal range. Despite the isolated raised values of the blood glucose in 3 subjects and cholesterol in 6 subjects, none of these respondents was hypertensive. This further reduces the cardiovascular risk¹⁴ in these hypertensive subjects. Serum cholesterol was considered sufficient for this epidemiological survey, with support from empirical evidence of analysis of data from the three large prospective studies (almost 16000 subjects) concluding that measurement of serum triglycerides for estimation of CV risk had no advantage over using measurements of cholesterol alone³³.

It is instructive that despite the level of education of the study population, with 94% attaining up to tertiary level of education, as many as 8 (16%) affirmed that they would reject, disclaim or deny the fact of their status were they to be hypertensive. This finding is corroborated by other works in different regions of the country, where up to 85% of the respondents expressed a strong faith in alternative measures, for the treatment of hypertension, especially prayers and usage of garlic (24% of the respondents) and many are not aware of the outcome or duration of hypertensive treatment^{34,35}, as well as the trend in the developed nations³². This still calls for further efforts at extensive educational programs on hypertension awareness and control.

Many investigators believe that lifestyle modification is sufficient intervention, and antihypertensive drug treatment can be safely avoided in these patients so long as home blood pressures remain normal, without evidence of target-organ damage³⁶. This assertion was confirmed by the Afro-American Maywood Cardiovascular Study, where non-pharmacologic treatment alone may have accounted for up to 34% of hypertension control overall³⁰. This lends credence to the need to intensify education towards cardiovascular healthy lifestyle habits, especially borne out by the fact that despite the level of education of the subject population in this study, their lifestyle habits compliance indices were quite low.

CONCLUSION

This study has shown a low level of unmodifiable cardiovascular risk factors, comparably low level of modifiable risk factors and a definitely poor level of observance of lifestyle habits. The study also showed a higher prevalence of hypertension than obtains for rural communities in the country, among these priests.

A strong need for advocacy of community and corporate programs targeted towards detection and education about CV risk factors, and adoption of CV healthy lifestyle habits among this target population of priests is called for. Consistent effort towards support of those with "normal" risk factor levels to continue to practise prevention behaviours is emphasised from this study.

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