Knowledge and Risk Factors of Cardiovascular Diseases among Residents of Ifelodun Local Government Area, Osun-State Nigeria

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ABSTRACT

Cardiovascular diseases (CVD) are a leading cause of illness and death globally. Rapid lifestyle changes have led to an increase in the magnitude of CVD, which is emerging as a predominant health problem in developing countries, adding to the burden of non-communicable diseases that are gradually replacing infectious diseases and malnutrition as established causes of morbidity and mortality. This study aimed at assessing the community knowledge and risk factors of cardiovascular diseases (CVD) in Ifelodun Local Government Area, Osun-State. It is a cross-sectional descriptive study that was conducted using a multi-stage sampling technique to select 239 respondents. Data were collected using a pre-tested self-administered semi-structured questionnaire and analyzed using Statistical Package for Social Sciences version 23.0.   Seventy-nine (33.1%) had poor knowledge of CVD risk factors while 160 (66.9%) had good knowledge. Of the respondents, 86 (36%) were overweight and 64 (26.8%) obese respectively. Thirty (12.7%) were diabetic and 35 (14.6%) were hypertensive.   142 (59.4%) had high CVD risk while 97 (40.6%) had low CVD risk. Predictors of having a high CVD risk include being male and having hypertension. In conclusion, there was a high prevalence of modifiable and non-modifiable risk factors of cardiovascular disease among respondents. The alarming prevalence of risk factors in such a population demonstrates the need for organized efforts for the implementation of local and nationallevel programs to prevent cardiovascular diseases.

Key words: Body Mass Index. Cardiovascular risk factors, , Hypertension, Knowledge

INTRODUCTION

Cardiovascular diseases (CVDs) are known to be a constellation of disorders relating to the heart and its blood vessels. They are the leading causes of illness and death globally, and the effect can have devastating consequences at the individual, family, and community levels.[1] Each year, 17.9 million people die from CVDs.[2] In 2006, CVD accounted for 1 out of every 2.9 deaths in the United States.[3] The Burden of NCDs is also increasing in epidemic proportions in Africa. The hospital mortality on CVD was 21.9% in Tanzania and 9.2% in Cameroon.[4]

The burden of cardiovascular diseases (CVDs) is increasing rapidly in Africa, and it is now a public health problem within the region. Cardiovascular disease has a major socioeconomic impact on individuals, families, and societies in terms of healthcare costs, absenteeism from work, and national productivity. The most important CVDs in the African region are those related to atherosclerosis, cardiomyopathies, and rheumatic heart disease; and as the trend of complications commences at younger ages into adulthood, stroke, cardiac failure, and renal failure, further fuel the vicious cycle of ill-health and poverty.[5]

Cardiovascular diseases are increasingly becoming the leading causes of morbidity and mortality worldwide. They are now seen to affect the poor of the poorest countries in the world. The little health resources remained focused on reducing the already overwhelmed burden of communicable diseases and preventable causes of infant and maternal mortality. Thus, it may not be an exaggeration as some have describe the situation in developing countries as an impending disaster.[6-8]

Disparity exists in the burden of CVD between developed and developing countries, the rising concept of risk factors is gradually shifting the health trend from communicable to non-communicable diseases.[9] To provide evidence for early prevention of risk factors, this study was carried out to assess the knowledge and risk factors of CVD among community members of Ifelodun Local Government Area, Osun-State

MATERIALS AND METHODS

Study Area

Ifelodun Local Government Area is located in Osun state, South West Nigeria, with a projected population of 96,748 according to the 2006 National population census.[10] There exist several public primary health facilities, private primary health facilities and one public secondary hospital in the local government.

Study Design and Study Population

This was a descriptive cross sectional study. Study population **were i**ndividuals more than 25years old residing in the LGA, who are not acutely ill and who could give consent to participating in the study.

Sample size calculation

Sample size calculation was carried out using Leslie Fischer's formula for calculating sample size using Leslie fisher formular in a proportion at P= 11.1%.[11-12] A sample size of 180 was increased to 240 to account for non-response and to ensure representativeness.

Sampling method

A multistage sampling method was used to select respondents. In the first stage, five wards out of ten were selected by simple random sampling by balloting. In the second stage, 2 streets were selected from each of the five wards by simple random sampling by balloting. In the third stage, 24 houses were selected from each street by systematic sampling (with the sampling fraction determined based on the number of houses in each street). In the fourth stage, for houses that had more than one household, one household was selected by balloting. In the fifth stage, when there was more

than one individual who met the eligibility criteria, the respondent was selected by simple random sampling by balloting.

Research Instrument

Data was collected using pre-tested semi-structured questionnaire developed through review of previous literature. It has 4 sections: Section A (Socio-Demographic Characteristics); Section B (Knowledge of CVDs and its risk factors); Section C (Behavioral and lifestyle characteristics); Section D (Physical measurement: Weight & Height) and Section E (Biochemical tests Fasting Blood Sugar (FBS))

Measurements

To measure weight to the nearest 0.5 kg, subjects were asked to stand motionless on the calibrated weighing scale in such a way that the body weight was equally distributed on each leg and with minimal wears. Height was measured using a calibrated tape. BMI=weight/square of the height in metres. Individuals were classified into four groups: thin or malnourished (BMI <18.5 kg/m2), normal (BMI=18.5-24.9 kg/m2), overweight (BMI = 25.0-29.9 kg/m2) and obese (BMI >30.0 kg/m2); all according to WHO BMI classification. To measure blood pressure, after a five minute rest, the subject's blood pressure (BP) was measured to the nearest mmHg on two occasions at an interval of one to two minutes. Measurement was carried out in the sitting position with an appropriate-sized cuff encircling the arm. BP was classified as normal, hypertensive, or isolated systolic or diastolic hypertension. A subject was considered to have diabetes mellitus if (i) the fasting venous blood glucose >7.0 mmol/L (126 mg/dL), while normal fasting blood glucose was taken as 3.3-5.5 mmol/L

Data Management

Data obtained was entered and cleaned on Microsoft excel. Data was analyzed using IBM SPSS version 23.0 Armonk. NY: IBM Corp. Frequency distribution tables were generated. Bivariate analysis was done using Pearson's chi square for testing association between two categorical variables and t-test for comparing means. P-values were generated and the significance level set at 0.05. Questions related to knowledge of risk factors of CVD having options of Yes, No and not sure were scored accordingly with score 2 awarded to right answer, 1 for not sure and 0 awarded to wrong answer. Total score and mean score were computed. Those who had mean score and above were classified as having good knowledge while those below the mean score were classified as having poor knowledge.

Section D related to non-modifiable risk factors of CVD are having options of Yes to those having Risk while No for those not having Risk. Score 1 awarded to those with risk and score 0 awarded without risk. Total score and mean score were computed too. Section E: Physical and Biochemical measurements. Respondents with B/P of 140/90 mmHg and above were categorized as Hypertensive and those below as normotensive. BMI categorized accordingly using < 18kg/m2, 18-24.9kg/m2, 25-29.9kg/m2, > 30kg/m2 into malnourished, normal, overweight and obesity respectively. Those with FBS of > 126mg/dl were said to be diabetic

Ethical Clearance

Ethical Approval was obtained from ethical committee of Osun State Ministry of Health. Consent was also obtained from the respondents after the purpose of the study was explained to them. The respondents were assured of confidentiality and security of data. They were also assured that they can decline participation in the research without any prejudice.

RESULTS

Table 1 shows that more than half of the respondents could correctly identify or knew the individual risk factors for CVD mentioned in the table. Figure 1 shows means scores of CVD risk and knowledge. Using the

mean score, 79 (33.1%) had poor knowledge on CVD risk factors while 160 (66.9%) had good knowledge. 142(59.4%) respondents had high CVD risk and 97(40.6%) had low CVD risk factors.

Based on BMI, 6 (2.5%) were malnourished, 86 (36.0%) were overweight while 64 (26.8%) were obese. Thirty (12.6%) were diabetics, while 35 (14.6%) were hypertensive (Table 3). A statistically significant association was found between risk categories and hypertensive status (p 0.001) in Table 4.

Table 4 shows association between sex, marital status, educational statues and categorized blood pressure with risk of developing cardiovascular diseases (P value < 0.05)

Table 5 shows binary logistic regression showing association between high-risk category and some variables of interest. Male respondents were 1.7 times more likely to have a high CVD risk compared to females, and this observation was found to be statistically significant (OR 1.73; 95% CI 1.03-2.94; p 0.04). Hypertensive respondents were about five times more likely to have a high CVD risk compared to those with normal blood pressure and found to be statistically significant (OR 4.92; 95%CI 1.83-13.21; p 0.002). Thus, predictors of respondents having a high CVD risk include being a male and being hypertensive.

**Table 1: Sociodemographic characteristics of respondents**

Variable	Frequency (n =239)	Percentage
Age (years)		
25-39	4	1.7
40-54	96	40.1
Above 55	139	58.2
Sex		
Male	113	47.3
Female	126	52.7
Marital status		
Single	2	0.8
Married	210	87.9
Widow	18	7.5
Divorced	3	1.3
Separated	6	2.5
Religion		
Christianity	110	46.0
Islam	125	52.3
Traditional	4	1.7
Tribe		
Yoruba	207	86.6
Hausa/Fulani	17	7.1
Igbo	15	6.3
Highest Level of education		
No formal education	5	2.1
Primary	26	10.8
Secondary	59	24.6
Tertiary	128	53.6
Postgraduate	21	8.9
Monthly income in naira		
Less than 18,000	46	19.3
Greater than 18,000	193	80.7

Table 2. Knowledge on CVD & Risk factors

Variable (n = 239)	Yes	No	I don't know
a. If you have a family history of heart disease you are at risk for developing heart disease	125(52.3%)	107(44.8%)	7(2.9%)
b. The older a person is, the greater their risk of having heart disease	141(59%)	81(33%)	17(7.1%)
c. Smoking is a risk factor for heart disease	157(65.7%)	63(26.4%)	19(7.9%)
d. High blood pressure is a risk factor for heart disease	136(56.9%)	72(30.1%)	31(13.0%)
e. High cholesterol is a risk factor for developing heart disease	133(55.6%)	84(35.1%)	22(9.2%)
f. Eating fatty foods does not affect blood cholesterol levels	139(58.2%)	67(28.0%)	33(13.8%)
g. Being overweight increases a person's risk for heart disease	146(61.1%)	60(25.1%)	33(13.8%)
h. Regular physical activity will lower a person's chance of getting heart disease	140(58.6%)	85(35.6%)	14(5.9%)
i. Diabetes is a risk factor for developing heart disease	156(65.3%)	51(21.3%)	32(13.4%)
j. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control	173(72.4%)	33(13.8%)	33(13.8%)

Table 3: Categorization based on BMI, FBS and Blood Pressure measures

Variable		Frequency(n = 239)	Percent
BMI	Malnutrition	6	2.5
	Normal	83	34.7
	Overweight	86	36.0
	Obesity	64	26.8
Categorized blood sugar			
	Diabetics	30	12.6
	Non diabetics	209	87.4
Categorized blood pressure			
	Hypertensive	35	14.6
	Normal	204	85.4
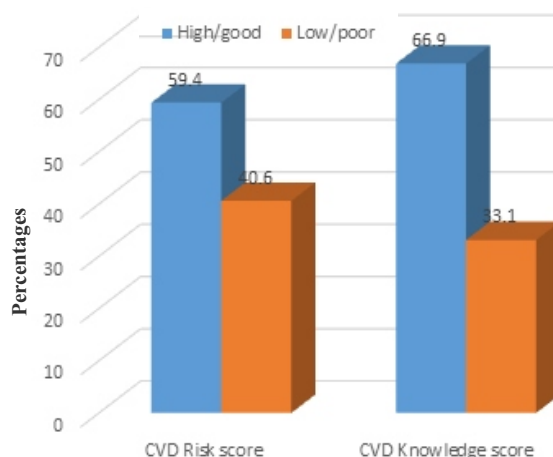
CVD knowledge and Risk Scores

Figure 1: Analysis of CVD knowledge scores and risk categories

Table 4: Association between CVD Risk and selected variables

Variable	Total risk categorized High risk	low risk	DF	X²	P
Age in Categories					
25-39 years	1(25%)	3(75%)	1	4.13	0.127
40-54 years	63(65.6%)	33(34.4%)			
Above 55 years	78(56.1%)	61(43.1%)			
Sex					
Male	75(66.4%)	38(33.6%)	1	4.31	0.038
Female	67(53.2%)	59(46.8%)			
Marital status					
Single	2(100%)	0(0%)	4	12.7	0.029
Married	127(60.5%)	83(39.5%)			
Widow	12(66.7%)	6(33.3%)			
Divorce	0(0%)	3(100%)			
Seperated	1(16.7%)	5(83.3%)			
Religion					
Christiaan	67(60.9%)	43(39.1%)	2	5.98	0.05
Islam	75(60%)	50(40%)			
Traditional	0(0%)	4(100%)			
Tribe					
Yoruba	124(59.9%)	83(40.1%)	2	3.25	0.19
Hausa/fulani	12(70.6%)	5(29.4%)			
Igbo	6(40%)	9(60%)			
Educational Status					
Primary	10(38.5%)	16(61.5%)	4	9.71	0.046
Secondary	39(66.1%)	20(33.9%)			
Tertiary	77(60.2%)	51(39.8%)			
Post graduate	11(52.4%)	10(47.6%)			
No formal education	5(100%)	0(0%)			
Monthly income					
less than 18,000	30(65.2%)	16(34,8%)	1	0.79	0.37
Greater than 18,000	112(58%)	81(42%)			
Categorized blood Pressure					
Hypertensive	30(85.7%)	5(14.3%)	1	11.76.	0.001
Normal	112(54.9%)	92(45.1%)			

Table 5: Logistic regression showing association between variable of interest and CVD high risk

Variable	C.I	OR	P value
Sex			
Male	1.03- 2.94	1.74	0.04
Female Ref			
Marital Status			
Currently married	0.321- 1.526	0.70	0.37
Never married Ref			
Categorized blood Pressure			
Hypertensive	1.83- 13.21	4.93	0.002
Normal- Ref			

DISCUSSION

The study presented data on knowledge and risks for cardiovascular diseases in a community in Southwestern Nigeria. In our study, about two thirds had good knowledge of CVD risk factors. This is higher and better when compared with another study in which only about one fifth of study population had good knowledge of CVD risk factors. [13] In contrast, a higher knowledge was reported by some studies.[14-15] Failure to know about hypertension or symptoms of heart attack may increase the delay in regular blood pressure checks and seeking early medical care that could help prevent a progression that may lead to a worse therapeutic outcome. It is therefore important for stakeholders to sensitize the communities to improve public awareness about the growing threat of cardiovascular diseases and their common complications.

Similar patterns of prevalence of various CVD risk factors in our study have been reported by other local studies.[16-17] Likewise, a significant proportion of hypertension and DM was reported. The prevalence of hypertension and diabetes of 14.6% and 12.6% respectively was much higher than that found in a study done in Saudi Arabia.[18] The higher figures may not be unconnected with a significant high risk for hypertension found among as many as one fifth of respondents. Many other factors that could be responsible include genetic, environmental, and dietary pattern.

This pattern may further suggest a continued westernization of lifestyles, and a probable increase in exposures to risk factors in this community will contribute to cardiovascular diseases . It is estimated that by 2020, CVD will become the leading cause of the global health burden, accounting for 73% of total global mortality and 56% of total morbidity, and this makes this study an important one. [19-20]

The association found between CVD risk factors and some socio-demographic factors including hypertension similarly supports findings from another study [21] The atherosclerotic changes in hypertension for example, leading to CVD is expected to be high at an older age when plaques would have significantly formed within the blood vessels. As high blood pressure overloads the heart, speed up the artery-clogging process, and preventable complications such as heart attack and stroke could result. It is thus important to create awareness of the risks factors and CVD process in order to encourage screening and prompt diagnosis to promote early treatment and management of cases.

However, this is a cross sectional descriptive study design with the limitation of establishing a causal relationship. There is need to do prospective study in linking risk factors with occurrences of CVD. Also, more than one third of respondents had poor knowledge on CVDs. At the community level, there is need for continuous awareness creation on risk and dangers of sedentary lifestyles such as smoking, alcohol that predisposed to CVDs and organization of behavioral change communication programs at local levels to prevent cardiovascular diseases.

In conclusion, the study found a high prevalence of modifiable and non-modifiable risk factors of cardiovascular disease among respondents. The alarming prevalence of risk factors in such a population demonstrates the need for organized efforts for the implementation of local and nationallevel programs to prevent cardiovascular diseases.

Limitation
The study's cross-sectional nature can be a limitation since it means that our findings cannot be extended to explain causal mechanisms that would need to be investigated using prospective or experimental designs.

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Conflict of interest
There is no conflict of interest

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