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Cardiovascular Disease Risk Assessment of Senior Staff Members of a Nigerian University

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Abstract

Purpose: Cardiovascular disease (CVD) risk assessment is not a routine screening practice in many establishments despite the reported increasing prevalence of CVD globally. This study assessed the level of CVD risk among senior staff members of a Nigerian university.

Methods: This cross-sectional study involved 221 academic and non-academic staff members of the Obafemi Awolowo University, Ile–Ife, Nigeria. Purposive sampling technique was used to recruit the participants. CVD risk was assessed using the Framingham Heart study questionnaire. Risk factors recorded were age, sex, personality type, sedentary lifestyle, smoking, weight and blood pressure. Risk scores were classified as low (0-19), moderate (20-29) and high (40^{+}). Data were analyzed using descriptive and inferential statistics. Alpha level was set at $p<0.05$.

Results: There were 112 (50.7%) males and 111 (50.2%) non-academic staff members. A majority, 146 (66.1%) were in the low risk while 9 (4.1%) were in the high risk category. There was no significant association between CVD risk and occupation type ($p>0.05$). Participants in high risk category were almost twice more likely to develop CVD compared to those at low risk (OR=1.933, CI=0.457-8.184). Similarly, males and females in high risk category were almost twice at risk of developing CVD compared to those at moderate risk (OR=1.882, CI=0.434-8.167). Furthermore, they were twice more likely to develop CVD compared to those in low risk category (OR=2.056, CI=0.495-8.533).

Conclusion: Cardiovascular disease risk of participants in this study appears to be low and CVD risk was not associated with occupation type. Strategic plan to prevent or delay CVD is recommended.

Keywords: Cardiovascular disease; Risk assessment; High blood pressure; Diet; Physical activity; University staff

Introduction

Sub-Sahara African is currently witnessing a sudden increase in the prevalence of non-communicable disease. Hypertension has been reported to be a major risk factor for cardiovascular disease (CVD) [1]. The sudden increase in risk of developing cardiovascular disorders in developing countries has been attributed to economic transition, urbanization, industrialization and globalization which bring about changes in lifestyle [2].

Our previous studies have shown that the risk of developing high blood pressure and obesity is high among the Nigeria adults [3-5]. A recent metal analysis among south west Nigerians showed that hypertension prevalence ranged between 21.4% to 34.8% and a combined average of 22% [6]. We have assessed the cardiovascular risk of the Obafemi Awolowo University Community about a decade ago because we observed that there was change in the lifestyle of the people in the community due to proliferation of "Tokunbo" cars (fairly used imported cars and "Okada" (commercial motor bike) [7]. This has reduced the physical activity participation of both students and staff members.

Physical inactivity has been identified as the fourth leading risk factor for global mortality causing an estimated 3.2 million deaths globally [8]. Regular physical activity can serve as protection against weight gain and adiposity [9]. It can also prevent the risk of adverse health outcomes including diabetes, hypertension, hyperlipidemia, depression, asthma, adverse orthopedic conditions and fatty-liver disease [10-12].

Regular CVD risk assessment could help to identify those who are predisposed to developing cardiovascular disorders. Thus, preventive measure could be put in place. The aim of this study was to re-assess cardiovascular risk of the senior staff of Obafemi Awolowo University, Ile-Ife, Nigeria.

Methodology

Participants

This study was carried out among the senior staff members of Obafemi Awolowo University, Ile-Ife. Two hundred and twenty-one senior staff members (110 academic staff; 111 non-academic staff) were purposively recruited for the study. All academics were senior staff while non-academic staffs on the salary grade level of 7 and above are senior staff in line with Federal government salary structure. Participants were full-time workers of this institution. The study was a replication of our previous study published in 2006 [7], therefore the participants recruited for this study have similar characteristics in terms of conditions of service, task performance and work environment with the previous study.

Questionnaire

The questionnaire used for this study was adapted from the one used for the Framingham heart study and has been earlier used for the same population by Adedoyin et al., [7]. The questionnaire was used to obtain relevant information on age, gender, smoking habit, stress, exercise, family medical history, diet, personal medical history and cholesterol count and to assess blood pressure, weight and height.

The section on diet was used to substitute for cholesterol count because majority did not know their cholesterol count. Scores were assigned to each answer based on the scoring design of the original questionnaire. Male sex is scored one, while, female sex is scored zero; for age, 56 years old and above is scored one, while, 55-year old and below is scored zero. Respondents who had relatives with history of heart attack or stroke before age of 60 is scored 12. If a respondent had history of heart attack heart surgery is received score of 20. For individual respondent, the summed-up score represents the risk score. The score obtained was classified as high risk (40 and above), moderate risk (20-39) or low risk (19 and below).

Procedure

The study protocol was approved by the Health Research Ethics Committee of Institute of Public Health Obafemi Awolowo University, Ile-Ife, Nigeria. The participants were fully informed about the purpose of the study and their consent was obtained. Data collection took place between (9.00 and 11.00 h). The blood pressure of participants was measured using electronic blood pressure kit (Omron Intelli Sense, model: M2) in sitting position. The weight and height were measured using standard procedure. Questionnaire was self-administered. Proper instructions were given as to how the questions were to be answered. Only those who consented to participate were administered the questionnaire.

Data analysis

Descriptive analysis (percentage, mean) was used to summarize the data. Chi-square test of association was used to determine the association between the variables: age, sex, occupation type and CVD risk level among participants. Statistical Package of Social Science (SPSS version 19.0) software was used to analyze the data.

Results

Table 1 shows socio-demographic characteristics and CVD risk level distribution of participants. There were 112 (50.7%) males and 111 (50.2%) non-academic staff members The CVD risk level of the participants showed that 9 (4.1%) were at high risk of CVD while 146 (66.1%) were at low risk. There was no statistical significant association between CVD risk level and each of occupational type (p=0.226) and gender (p=0.592). However, there was statistical significant association between age and CVD risk level (p=0.026) (Table 2). Table 3 shows test of association between CVD risk level by occupation type and gender. There was no significant association between CVD risk level, occupation type and gender of the participants (p>0.05).

Variables	Frequency	%
Gender		
Male	112	50.7
Female	109	49.3
Age group		
≥ 55 (year)	58	26.2
<55	163	73.8
Occupational type		
Academic	110	49.8
Non-Academic	111	50.2
Risk Level		
High (40+)	9	4.1
Moderate (20-39)	66	29.9
Low (0-19)	146	66.1

Table 1: Frequency distribution of socio-demographic characteristics and risk level distribution of participants

Variable	Low (%)	Moderate (%)	High (%)	χ^2	p-value
Occupation type					
Academic	61.82	35.45	3.36	2.973	0.226
Non-Academic	70.27	35.14	4.50		
Gender					
Male	64.29	30.36	5.36	1.047	0.592
Female	67.89	29.36	2.75		
Age					
≥ 55 years	51.72	43.10	5.17	7.297	0.026*
<55 years	71.17	24.40	3.68		

*Significant association at p<0.05

Table 2: Test of association between cardiovascular disease risk level and socio-demographic characteristics

Participants in high risk category were almost twice more likely to develop CVD event compared to those at low risk (OR=1.933, CI=0.457-8.184). Similarly, males and females in high risk category were almost twice at risk of developing CVD event compared to those at moderate risk (OR=1.882, CI=0.434 - 8.167). Furthermore, both genders in high risk category were twice more likely to develop CVD event compared to those in low risk category (OR=2.056, CI=0.495-8.533) (Table 4).

	Non-Academic Staff		Academic Staff			
Risk Level	**Female**	**Male**	**Female**	**Male**	**χ^2**	**p-value**
0-19	38	40	37	31	5.627	0.466
20-39	15	12	17	22		
40+	2	3	1	3		

Table 3: Test of association between cardiovascular disease risk level by occupation type and gender.

		OR (95% CI for % difference)	
Variable	**n (%)**	**High-Moderate**	**High-Low**
Occupation Group			
Academic	49.8	0.554 (0.136 –2.254)	0.918 (0.237-3.555)
Non-Academic	50.2		
Age			
≥ 55 (year)	26.2	0.820 (0.188 – 3.575)	1.933 (0.457–8.184)
<55	73.8		
Gender			
Male	50.7	1.882 (0.434 – 8.167)	2.056 (0.495–8.533)
Female	49.3		

Table 4: Relative risk of high cardiovascular disease risk level among participants

Discussion

This study was conducted to assess the level of CVD risk among senior staff of the Obafemi Awolowo University. Result indicated that 4.1% of the participants fell into the high risk category while 66.1 were within the low risk. The outcome of the result showed that the level of the risk has increased significantly when compared with previous study within the same population about a decade ago [7]. None of the participants was within high risk zone in our previous study while a majority, 80.0% were within the low risk contrary to the present study.

Apart from inactivity, other risk factors linked with CVD include smoking, poor diet and high salt intake. Evidence from the past two decades has consistently identified physical inactivity as a major modifiable risk factor in the reduction of mortality and morbidity from chronic disease [13,14]. Such physical inactivity ranks second behind tobacco in contributing to mortality and morbidity in Australia [14,15]. This elucidates physical activity as a public health priority for health promotion and prevention of CVD.

The increase in the percentage of those at risk of CVD confirms our speculation that changed from active to sedentary lifestyles due to increased dependence on automobiles might increase the level of CVD risk. In this study, no statistical significant association was found between CVD risk level and the occupational groups (academic and non-academic staff members) of the participants. We hypothesized that the academic staff would be more at risk than non-academic staff due to the nature of their job. Presentation of lectures in the class rooms, public lecture and paper writing for publication are stressful activities that have been linked with hyperactivities and long-term hypertension.

Previous studies have shown that mental stress is common among university professors and could result into chronic psychological disturbance such as excessive anger, anxiety, irritability and frustration. Therefore, a higher incidence of risk factor for CVD was expected among professionals whom high intellectual activity is predominant [16,17]. A feeling of this nature is associated with increased sympathetic tone and hypertension [18]. In this study, the academic staff members who involved in this study were younger than the non-academic staff members. Age is reported to be one the non-modifiable risk factors for hypertension and cardiovascular disease. The result of this study showed a statistical significant association between age and the level of cardiovascular disease risk.

Although surveys are usually not a perfect evaluation tool, they may be useful to assess individuals or community who may not be aware that that they have underline cardiovascular disease especially hypertension. We recommend routine health screening among the staff to detect those who might be at risk for proper and early intervention. Furthermore, awareness and involvement in physical activity participation is critical. Experts have recommended worksite wellness program that includes a physical activity component to maintain a healthier workforce. A healthier workforce can benefit from reduced direct costs associated with health care expenses [19,20]. The worksite wellness program also has potential to increase employees' productivity, reduce absenteeism, and increase morale. The programs are seen as a central component of an attractive employee compensation and benefits package that can be used as a recruitment and retention tool to attract and keep high quality employees [21,22].

Conclusion

Cardiovascular disease risk of participants in this study appears to be low and CVD risk was not associated with gender and occupation type. Public health enlightenment programmes to reduce prevalence of CVD is recommended.

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