

SHORT COMMUNICATION

Cardiac risk indices of staff of Federal University of Technology Owerri, Imo State, Nigeria

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Abstract: Non-communicable diseases are the major health burden in the industrialized countries and are increasing rapidly in the developing countries owing to demographic transitions and changing lifestyles among the people. Cardiovascular diseases (CVD) are increasingly becoming a great cause of morbidity and mortality. A total of 100 senior and 141 junior staff in Federal University of Technology, Owerri (FUTO), Imo State, Nigeria was randomly selected for a study on cardiac risk factors. A questionnaire was used to record cardiac risk indices like age, heredity, body mass index (BMI), tobacco smoking, exercise, serum cholesterol estimation, systolic blood pressure and sex. There was no significant difference between the senior and junior staff in sex distribution ($P=0.71$), family history of CVD ($P=0.34$), smoking habit ($P=0.85$) and serum cholesterol ($P=0.89$). Senior staff had significantly higher values in age distribution ($P<0.001$), presence of systolic hypertension ($P<0.001$) and overweight ($P<0.001$). Senior staff workers, were however, significantly less involved in moderate exercise than junior staff ($P<0.001$). The senior staff had a significantly higher total score in CVD risk scoring than junior staff ($\chi^2=7.25$; $P=0.01$). In conclusion, the risk of CVD among staff of FUTO is high especially among the senior staff. Health education campaign targeted at improving life style is strongly recommended.

Keywords: cardiovascular disease, risk indices, lifestyle, Nigeria

Non-communicable diseases (NCD) are the major health burden in the industrialized countries (Aulikki *et al.*, 2001). They are also increasing rapidly in developing countries owing to demographic transitions and changing lifestyles among the people (Aulikki, Ximena *et al.*, 2001). Cardiovascular diseases (CVD) are now a great cause of morbidity and mortality worldwide. It is estimated that by 2020, the low and middle income countries will have ischaemic heart disease as the most frequent cause of death and greatest disease burden (Lenfant, 2001). Some of the reasons for this are increased consumption of saturated fat leading to elevated serum cholesterol levels and physical inactivity (Reddy & Yusuf, 1998).

This cross sectional descriptive study was carried out in October 2003 in Federal University of Technology Owerri (FUTO) Imo State, Nigeria to determine cardiac risk indices among staff members. A sample frame of 853 senior staff (i.e. those on salary grade level 07-16 and are mostly graduates or non-graduates who have over the years risen to senior staff cadre) and 1,368 junior staff (i.e. those on grade level 01-06 and

are non-graduates) was obtained from personnel department of FUTO. A table of random numbers was then used to select 100 senior staff and 141 junior staff. Ethical approval was obtained from the ethics committee of FUTO and from all participants.

A cardiac risk indices record sheet (Corbin *et al.*, 2000) was used to record cardiac risk indices like age, sex, family history of hypertension, body mass index (BMI), tobacco smoking, exercise, serum cholesterol level and systolic blood pressure. Height was measured using 2m-measuring ruler while weight was measured using a bathroom weighing scale (model: BR-9011). Mercury sphygmomanometer was used to obtain the blood pressure. Same measuring apparatus was used for all persons. The venue of all above measurements was FUTO Medical Centre and results, except height and weight, were obtained by the researcher. A nurse measured the height and weight while a laboratory scientist attached to the Medical Centre obtained the serum cholesterol estimation. Analysis was done using Epi-Info version 2000 and the confidence limits used was 95%.

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Table 1: Cardiac risk indices of staff of Federal University of Technology, Owerri

Variable	Junior (N=141)	Senior (N=100)	χ^2	P-value
Age (>40 yrs)	41 (29.1%)	66(66.0%)	$\chi^2 = 32.31$	*0.00
Positive family history	7(5.0%)	8 (8.0%)	$\chi^2 = 0.92$	0.34
Sex (males)	72 (51.8%)	49 (49.0%)	$\chi^2 = 0.14$	0.71
BMI (>25kg/m ²)	35 (24.8%)	49 (49.0%)	$\chi^2 = 15.06$	*0.00
Smokes tobacco	5 (3.5%)	4 (4.0%)	$\chi^2 = 0.03$	0.85
No moderate occupational/ recreational exertion	15 (10.6%)	53 (53.0%)	$\chi^2 = 51.84$	*0.00
Serum cholesterol >180mg	129 (91.5%)	91 (91.0%)	$\chi^2 = 0.02$	0.89
Systolic hypertension (>140mmHg)	36(25.5%)	34 (34.0%)	$\chi^2=2.04$	0.15
Average to extremely dangerous cardiac risk	33 (23.4)	42 (42.0%)	$\chi^2=9.44$	*0.00

*Significant result

There were 51 (51%) females and 49 (49%) males among senior staff while in junior staff cadre there were 68 (48.2%) females and 72 males (51.8%). There was no significant difference in sex distribution between the two groups ($\chi^2 = 0.18$; $P = 0.67$). There were also no significant differences in family history of CVD ($\chi^2 = 0.92$; $P = 0.34$), smoking habit ($\chi^2 = 0.03$; $P = 0.85$), serum cholesterol ($\chi^2 = 0.02$; $P = 0.89$) and presence of systolic hypertension i.e. >140mmHg ($\chi^2 = 2.04$; $P = 0.15$) (Table 1).

Findings in senior staff were significantly higher than those of the junior staff in age

$P = 0.03$. Those older than 40 years: $\chi^2 4.37$; $P = 0.04$) (Table 2).

Cardiovascular disease risk index (CRI) of <18 is considered to be low to very low risk of developing cardiovascular disease while CRI of ≥ 18 is average to extremely dangerous risk of developing cardiovascular disease (Corbin *et al.*, 2000). The present study shows that both workers (23.4% of junior workers and 42.0% of senior workers) have average to extremely dangerous risk of developing CVD. However, senior staffs have a significantly higher risk of developing

Table 2: Cardiac risk index (CRI) score of junior and senior workers by age group

Score	≤ 40 years		> 40 years	
	Junior staff	Senior staff	Junior staff	Senior staff
<18	64 (97.0)	35 (85.4)	44 (58.7)	23 (39.0)
≥ 18	2 (3.0)	6 (14.6)	31 (41.3)	36 (61.0)
	66 (100.0)	41. (100.0)	75 (100.0)	59. (100.0)

distribution ($\chi^2 = 32.31$; $P < 0.001$) and overweight i.e. BMI >25kg/m² ($\chi^2 = 15.06$; $P < 0.001$). Senior staff workers were also significantly less involved in moderate occupational and recreational exertion than junior staff ($\chi^2 = 51.84$; $P < 0.001$). About 25.5% of junior staff and 42.0% of senior staff had average to extremely dangerous cardiac risk for developing CVD. The senior staff had a significantly higher total score in CVD risk index scoring than junior even when matched for age (for those less than or equal to 40 years. $\chi^2 = 4.92$;

cardiac problems because their CVD risk index score is significantly higher than in junior staff even when matched for age. From present study a greater percentage of senior staff were older than 40 years unlike the junior staff who were generally younger. This may be because of longer time spent in school by senior staff before being employed. Also the less educated junior staff spends long periods of years as junior staff before being promoted to senior staff. The senior staffs are of higher socioeconomic group; better educated and earn higher salary, than the junior staffs.

Results from several epidemiological studies suggest that coronary heart disease and its risk factors were originally more common in the upper socioeconomic class (similar to present study), but throughout the middle of the 20th century this gradually changed, so that, currently, coronary heart disease is more common in lower socioeconomic groups (Kaplan & Keith, 1993; Bucher & Ragland, 1995).

The difference in present findings and those in western countries may be because apart from socioeconomic factors, other factors such as age, serum cholesterol level, smoking and physical activity also contribute to cardiac risks. There is a relationship between physical activity; physical fitness and cardiovascular health (Pate *et al.*, 1995); the more active or fit individuals tend to develop less coronary heart disease (CHD) than their sedentary counterparts. If CHD develops in active or fit individuals, it occurs at a later age and tends to be less severe (Myers, 2003). Even midlife increases in physical activity, through change in occupation or recreational activities are associated with a decrease in mortality (Paffenbarger *et al.* 1993).

Exercise has the following benefits on CVD risk factors; reduction in body weight, reduction in blood pressure, reduction in low-density lipoprotein and total cholesterol and increase in insulin sensitivity. Indeed exercise has been observed to play major role in reducing mortality and morbidity from CVD (Myers, 2003). The greatest gains in terms of mortality are achieved when an individual goes from being sedentary to becoming moderately active. Studies show that less is gained when an individual goes from being moderately active to very active (Myers *et al.*, 2002).

Present study shows that junior staffs are significantly more involved in moderate occupational and recreational exertion than the senior staff. By moderate activity is implied any activity that is similar in intensity to brisk walking at a rate of about 3 to 4 miles per hour e.g. cycling, gardening and swimming. It has also been shown that repeated intermittent or shorter bouts of activity (such as 10 minutes) that include occupational and recreational activity e.g. walking to work and carrying out errands or the tasks of daily living like fetching water, sweeping, climbing long stairs, etc have similar cardiovascular and other health benefits

if performed at the moderate intensity level with an accumulated duration of at least 30 minutes per day (Corbin *et al.*, 2000).

It is known that the risk of becoming hypertensive for an individual with a family history of hypertension is up to four times higher than average population (Corvol, 1992). Fortunately family history of hypertension does not appear to contribute much to cardiac risk in the present study since only a few had positive family history of hypertension. Smoking tobacco is also uncommon in the study population. However, majority of the workers had serum cholesterol >180mg. This is surprising because in developing countries vegetable fat such as palm oil, which is low in cholesterol, is more frequently consumed than animal fat. Socioeconomic level does not appear to affect the cholesterol level in the study population since there was no significant difference between serum cholesterol in senior and junior staff. Despite the apparent difference in serum cholesterol, the senior staffs were significantly more overweight. Our findings suggest that exercise and BMI may be the main factors responsible for the senior staff having higher CVD risk index score than junior workers. The risk of cardiovascular disease among staff of Federal University Technology Owerri is high especially among the senior staff. This may be because of high cholesterol, overweight and sedentary lifestyle among these workers. Health education campaign targeted at improving healthy dietary habit and exercise is strongly advised.

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