

Knowledge of heart disease risk factors among workers in a Nigerian University: A call for concern

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ABSTRACT

Background: Cardiovascular disease is the commonest cause of mortality worldwide. Many risk factors predate the development of cardiovascular diseases. Adequate knowledge of risk factors for cardiovascular diseases is the first step towards effective preventive strategies to combat the cardiovascular diseases burden in any population. This study aims to determine the knowledge of workers in a Nigerian University on risk factors for cardiovascular diseases. **Materials and Methods:** A cross-sectional survey of 206 academic and non-academic staff of Ladoke Akintola University of Technology, Ogbomosho, Nigeria using the Heart Disease Fact Questionnaire (HDFQ). Demographic data were taken. The lipid profile and random blood sugar were taken. Statistical analysis was done using SPSS 17.0. **Results:** The mean age of the study participants was 45.3 ± 7.9 years. There were 96 males (46.6%). The mean HDFQ score was 48.6%. Only 41 (19.9%) of participants were assessed to have good knowledge of heart disease risk factors. Majority, 101 (49.0%) had poor knowledge while 64 (31.2%) had fair knowledge of heart disease risk factors. There was no significant difference between prevalence of CV risk factors between those with good or fair or low level of knowledge. Most participants did not have a good level of knowledge about risk factors, prevention, treatment and association with diabetes as it relates to heart diseases. **Conclusion:** Knowledge of heart disease risk factors is low among University workers in Nigeria. Effective education on heart disease risk factors and appropriate preventive strategies are indeed important to reduce cardiovascular disease burden in Nigerian University communities.

Key words: Heart disease, knowledge, Nigerian University, risk factors

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INTRODUCTION

Heart disease is the number one cause of death worldwide accounting for about 30% of all causes of death globally in 2008. More people died from cardiovascular diseases than from any other cause in the recent years.^{1,2} Low and middle-income countries are disproportionately affected as more than 80% of cardiovascular disease deaths take place in these countries occurring almost equally in both men and women. The World Health Organization (WHO) estimated that 9.4 million deaths each year or 16.5% of all deaths can be attributed to high blood pressure.^{3,4} This include strokes and coronary heart disease.⁵ it has also been estimated that the number of people who will die

from cardiovascular diseases mainly from heart disease and strokes will increase to reach 23.3 million by 2030 and cardiovascular diseases is projected to remain the leading cause of death globally.⁶

However, most cardiovascular diseases are preceded by CV risk factors and a major preventive strategy is to address CV risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity, high blood pressure diabetes and dyslipidaemia.^{5,7} Effectively tackling these risk factors indicates that these risk factors are picked and modified early in the course of the disease progression.⁸ The individual or population awareness about these risk factors are therefore essential in adequate prevention.⁹ The INTERHEART study showed a consistency in the relationship between cardiovascular diseases and risk factors among Blacks and Whites in Africa.¹⁰ These risk factors are being reported in increasing prevalence across almost all parts of Africa.¹¹⁻¹³ Yet there are very few data on the awareness of heart disease risk factors among the population.¹⁴

The knowledge of heart disease risk factors is essential to make informed decision that will result in reduction

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in overall cardiovascular risk of an individual. In the Health Belief Model (HBM), a person must feel susceptible to a disease in order to motivate a change in behaviour.¹⁵ Adequate knowledge and perception of risk are therefore important in stimulating behavioural change towards a better health. This study aimed to determine the level of awareness and level of knowledge of heart disease risk factors among adult University workers in Nigeria.

MATERIALS AND METHODS

This was part of another study on the prevalence of cardiovascular risk factors among University workers in Ladoko Akintola University of Technology, Ogbomosho, Nigeria. It was a cross-sectional descriptive study, The Heart Disease Fact Questionnaire (HDFQ) was used.

Two-hundred and six adult staff including academic and non-academic staff of the Ladoko Akintola University of Technology, Ogbomosho, Nigeria were randomly selected from all faculties and units of the University. Apart from the other part of the study which has been described elsewhere, the HDFQ Questionnaire was administered to each participant. The HDFQ Questionnaire is a 25-item measure of heart disease knowledge,^{16,17} which evaluates for knowledge of risk factors for heart disease, the link between diabetes and heart disease and how to reduce the risk for heart disease. Respondents were asked to mark one of the options including 'True', 'false' or 'I don't know'. Scores are calculated in percentages by summing the total number of correct answers with a higher score indication a higher knowledge. Participants with score of <50% were classified as low level of knowledge while those whose score were between 50 and 69% were classified as moderate level of knowledge and those with HDFQ score >70% as good level of knowledge. Questions that <70% of the respondents answered correctly was deemed unsatisfactory. The HDFQ Questionnaire has been used in other population with reliable test-retest reliability, internal consistency and satisfactory discriminant validity.¹⁸

The demographic parameters were taken using a pretested data sheet. Information obtained includes age, gender, highest level of education, systolic and diastolic blood pressure, weight, height, waist circumference and marital status. Laboratory parameters taken include random blood sugar, lipid profile (including triglycerides, total cholesterol, high density lipoprotein cholesterol and low density lipoprotein- cholesterol) were taken.

Statistical analysis was performed with the aid of the Statistical Package for Social Sciences SPSS 17.0 (Chicago Ill). Data were summarised using means and standard deviation for quantitative variables and frequencies and percentages for qualitative variables. Relationship between

continuous variables was tested using the Analysis of Variance while the Pearson Chi-Square test was used to test for relationship between qualitative/nominal variables. $P < 0.05$ was taken as statistically significant. Ethical approval was obtained from the Institutional Ethical Research Board.

RESULTS

The mean age of the study participants was 45.3 ± 7.9 years. There were 96 males (46.6%) and 110 female participants (53.6%). The mean body mass index was 28.4 ± 6.0 kg/m². The mean systolic and diastolic blood pressures were 135.8 ± 23.0 mmHg and 83.6 ± 13.4 mmHg respectively. The mean waist circumference was 92.8 ± 11.8 cm. Seventy-nine (38.3%) of the participants had body mass index >30 kg/m². This is as in Table 1.

The HDFQ scores were used to determine the level of knowledge of heart disease. Those with HDFQ score >70% were assessed to have good knowledge, those with score between 50 and 69% were said to have moderate knowledge and those with score <50% as low level of knowledge. About half of all the participants had low level of knowledge 49.0% compared to 31.1% with moderate level of knowledge and 19.9% with good level of knowledge. Table 2 shows that there was no statistically significant difference between those with low, moderate or high level of knowledge as it regards highest level of education. There was also no significant difference between those

Table 1: Demographic characteristics of study participants

Variables	Values (%)
Age (years)	45.3±7.9
Systolic blood pressure (mmHg)	135.8±23.0
Diastolic blood pressure (mmHg)	83.6±13.4
BMI (kg/m ²)	28.4±6.0
Mean waist circumference (cm)	92.8±11.8
Pulse pressure(mmHg)	52.2±15.3
Heart rate (/min)	76.9±13.3
Gender (Males)	96 (46.6)

BMI – Body mass index

Table 2: Demographic characteristics of those with a high HDFQ score compared to low HDFQ score

Variables	High Knowledge (%)	Moderate Level of knowledge (%)	Low level of knowledge (%)	P-value (%)
Number	41 (19.9)	64 (31.1)	101 (49.0)	
Age	46.2±6.9	45.1±8.3	45.2±7.8	0.327
Education (OND/ HND/Tertiary)	7/3/31	8/4/32	8/15/31	0.617
BP>140/90 mmHg	19 (46.3)	23 (35.9)	42 (41.6)	0.245
Family history of Hypertension	9 (22.0)	11 (17.2)	17 (16.8)	0.946
BMI >30 kg/m ²	16 (39.0)	29 (45.3)	34 (33.7)	0.053

with different level of knowledge as it is associated with prevalence of hypertension, family history of hypertension and obesity. There was no significantly difference between age and level of knowledge among study participants.

Table 3 shows the response of the participants to the questions in the Heart disease fact Questionnaire in this study. Among the questions which showed the greatest consistency with the highest rate of agreement include knowing that smoking is a risk factor for heart disease and that treating elevated blood pressure can lead to reduction the risk of developing heart disease. These were the only two questions where participants scored >70% and the participants showed a good level of knowledge as it relates to risk factor for heart disease.

As in Table 3, the participants showed a moderate level of knowledge as it regards three facts: Firstly, that a person who stops smoking will lower their risk of developing heart disease. Secondly, that high blood pressure is a risk factor for heart disease and thirdly that high blood cholesterol is a risk factor for heart disease. Other questions which showed moderate consistency in the level of knowledge

include being overweight increases the chance of someone developing heart disease, diabetes is a risk factor for heart disease and the fact that subject with diabetes can reduce their risk of heart disease if they control their blood pressure, cholesterol, weight and blood sugar. Among those facts with consistent low level of knowledge in the participants include the fact that diabetes have low HDL, the people with heart disease always knows about it and the fact that eating fatty foods affect blood cholesterol level. This is shown in Table 3.

DISCUSSION

The major outcome of this study revealed that majority of the participants in this study had poor knowledge of heart disease risk factors even though they work in the University community. Only about a fifth had a very good level of knowledge of heart disease risk factors among the study participants. There was no relationship among age, gender or education level and the level of knowledge of heart disease risk factor as estimated with the HDFQ score. We also found no significant difference between

Table 3: Frequency of answers given to different questions in the heart disease frequency questionnaire by the participants

Question number	True (%)	False (%)	I don't know (%)	No response (%)
A person always knows when they have heart disease	37 (18.0)	55 (26.7)	109 (52.9)	5 (2.4)
If you have a family history of heart disease you are at risk for developing heart disease	81 (39.3)	31 (15.0)	89 (43.2)	5 (2.4)
The older a person is, the greater their risk of having heart disease	64 (31.1)	29 (14.1)	108 (52.4)	5 (2.4)
Smoking is a risk factor for heart disease	164 (79.6)	5 (2.4)	32 (15.5)	5 (2.4)
A person who stops smoking will lower their risk of developing heart disease	134 (65.0)	14 (6.8)	53 (25.7)	5 (2.4)
High blood pressure is a risk factor for heart disease	133 (64.6)	13 (6.3)	55 (26.7)	5 (2.4)
Keeping blood pressure under control will reduce a person's risk for developing heart disease	152 (73.8)	7 (3.4)	42 (20.4)	5 (2.4)
High cholesterol is a risk factor for developing heart disease	137 (66.5)	5 (2.4)	59 (28.6)	5 (2.4)
Eating fatty foods does not affect blood cholesterol levels	35 (17.0)	99 (48.1)	67 (32.5)	5 (2.4)
If your 'good' cholesterol (HDL) is high you are at risk for heart disease	69 (33.5)	24 (11.7)	108 (52.4)	5 (2.4)
If your 'bad' cholesterol (LDL) is high you are at risk for heart disease	69 (33.5)	16 (7.8)	116 (56.3)	5 (2.4)
Being overweight increases a person's risk for heart disease	120 (58.3)	19 (9.2)	62 (30.1)	5 (2.4)
Regular physical activity will lower a person's chance of getting heart disease	141 (68.4)	12 (5.8)	48 (23.3)	5 (2.4)
Only exercising at a gym in an exercise class will help lower a person's chance of developing heart disease	65 (31.6)	50 (24.3)	85 (41.3)	6 (2.9)
Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease	100 (48.5)	23 (11.2)	76 (36.9)	7 (3.4)
Diabetes is a risk factor for developing heart disease	95 (46.1)	19 (9.2)	85 (41.3)	7 (3.4)
High blood sugar put a strain on the heart	105 (51.0)	13 (6.3)	81 (39.3)	7 (3.4)
If your blood sugar is high over several months it can cause your cholesterol level to go up and increase your risk of heart disease	100 (48.5)	6 (2.9)	93 (45.1)	7 (3.4)
A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control	127 (61.7)	7 (3.4)	65 (31.6)	7 (3.4)
People with diabetes rarely have high cholesterol	59 (28.6)	36 (17.5)	104 (50.5)	7 (3.4)
If a person has diabetes, keeping their cholesterol under control will help to lower their chance of developing heart disease	104 (50.5)	7 (3.4)	88 (42.7)	7 (3.4)
People with diabetes tend to have low HDL (good) cholesterol	38 (18.4)	24 (11.7)	137 (66.5)	7 (3.4)
A person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure under control	123 (59.7)	6 (2.9)	70 (34.0)	7 (3.4)
A person who has diabetes can reduce their risk of developing heart disease if they keep their weight under control	118 (57.3)	10 (4.9)	71 (34.5)	7 (3.4)
Men with diabetes have a higher risk of heart disease than women with diabetes	53 (25.7)	15 (7.3)	131 (63.6)	7 (3.4)

those with high level of knowledge in the mean value of total cholesterol, systolic and diastolic blood pressure, triglycerides, low density lipoprotein and body mass index. Other researchers have shown that age and gender were associated with level of knowledge.¹⁹

Although, this is one of the first set of evidence for low knowledge of heart disease risk factors using the HDFQ Questionnaire, other studies have shown an inappropriately low level of knowledge of coronary heart disease using other instruments among University staff.¹⁴

Similarly, Wagner *et al.* showed that knowledge of heart disease risk factors was low even among Spanish speakers with diabetes in a survey of diabetic subjects from Puerto Rico.¹⁸ The mean level of knowledge is even lower among other similar population.

This study also showed that HDFQ scores were not in any way related to some demographic factors such as age, gender or presence of cardiovascular diseases. The pattern of cardiovascular disease was also not significantly related to the pattern of cardiovascular risk factors among the participants in this study. Much curiously is the fact that the level of education did not significantly associated with the level of knowledge of cardiovascular risk factors as many people with higher degrees including academic staff had limited knowledge about risk factors for heart diseases in this study. This is contrary to the study by Wagner who showed that those with a high-school certificate were much likely to have a higher HDFQ score than those without a high-school certificate.¹⁹ In that study also, those with a bank account were also much likely to have a higher HDFQ score than those without a bank account and this is likely to be related to their level of education and socio-economic status. We did not assess the highest income in this study but it can be assumed that all participants were not likely to be less than in the middle class considering the many opportunities for distinctive salary scale, emolument and allowances and other opportunities available to University workers.

This study revealed some major findings: Questions 1-8 in the HDFQ are related to the knowledge about cardiovascular risk factors such as smoking, hypertension, family history of heart disease, overweight, etc. Surprisingly, only in the relationship between smoking and heart disease was the level of knowledge adjudged to be good. The participant knowledge about the relationship between hypertension and heart disease was at best moderate although most people know that treating high blood pressure could result in reduction in chance to develop heart disease. The participants' level of knowledge as it concerns its association with cholesterol fractions was abysmally low. This is despite the fact that the first risk factor to be associated with heart disease was cholesterol in the Framingham study.²⁰ Similarly, the average level

of knowledge as it relate to preventive strategies in questions 13-15 were also at best moderate. Only 48.5% of the participants agreed that walking and gardening are considered exercise that will help lower a person's chance of developing heart disease although 68.4% agreed that regular physical activity will lower a person's chance of getting heart disease. The last aspect of the HDFQ identified the level of knowledge on diabetes as it relates to heart disease. The level of knowledge is also averagely low as only about half agreed that diabetes is a risk factor for heart disease. A worse outcome was obtained when testing for knowledge of association between diabetes and cholesterol profile as it relates to heart disease. The outcome of this study shows a much lower level of knowledge as it concern level of knowledge of heart disease when compared to a similar report among African-Americans although they were a bit younger in that study.²¹

There appear to be a general poor level of knowledge on the main risk factors, prevention, relationship of cholesterol, diabetes and heart disease among Nigerian University workers in LAUTECH, Ogbomosho, Nigeria. Despite the surging trend in cardiovascular disease worldwide and in developing nations like Nigeria and having reported that in this environment, the commonest reason for medical admission to Teaching Hospital are cardiovascular disease,²²⁻²⁴ there is still poor level of knowledge of heart disease among University workers. An outreach programme including training on the risk factors for heart diseases, preventive strategies, treatment and association with cholesterol and diabetes is, therefore, very essential.

Africans including African-Americans have been shown to have higher rates of cardiovascular disease. They should therefore be targeted for interventions to prevent or reduce the burden of cardiovascular diseases. Therefore, increasing the level of knowledge of heart disease risk factors, prevention and treatment remain a major way to reduce the burden of cardiovascular diseases among Africans.

CONCLUSION

This outcome of this study is a call for action among University administrators in Nigeria. In order to achieve a healthy workforce and reduce incapacitation, University workers must be exposed adequately to increased cardiovascular awareness as they may be at increased risk due to low level of knowledge and awareness of heart disease risk factors among them. This poor level of knowledge is inexorably a harbinger of poor preventive modalities for cardiovascular disease among them.

Appropriate health education to increase awareness about heart disease risk factors remains the fulcrum of preventing increased cardiovascular risk among Nigerian University workers. University administrators should,

therefore, design and implement massive, cost-effective long term health education for University workers to prevent cardiovascular morbidity and mortality among them in the nearest future.

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