Prevalence of obesity and elevated blood pressure among bankers in Lagos, Nigeria

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Abstract

Background: Non - communicable diseases (NCDs) are the leading causes of morbidity and mortality in many developed and developing societies. Overwhelming evidences from epidemiological, prospective cohort and intervention studies, have linked most NCDs to unhealthy lifestyle. The aim of this study was to determine the prevalence of obesity and hypertension among bankers in Lagos State, Nigeria.
Methods: Blood pressure, body mass index (BMI) and waist circumference were measured in 260 professional bankers from 56 bank branchesin Lagos.
Results: The mean age of the respondents was 33.5 years ± 5.7, majority (64.6%) were married and 51.9% were males. About half (52.7%) of the respondents had a first degree The study showed that 40.4% of the respondents had BMIabove 24.9more of the females (71.5%) had truncal obesity compared to 35.1% of the males. Increasing age was associated with being overweight.Almost one third (29.6%) of the respondents had elevated blood pressure, males, obese and bankers above the age of 40years were more likely to have elevated blood pressure.
Conclusion: The study showed that a significant proportion of individuals in the banking profession are overweight and hypertensive.The management of every bank should invest in periodic health promotion, screening and wellness programs for their employees.

Keywords: Cardiovascular Disease, Hypertension, Non-communicable Disease, Obesity

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Introduction

Inability of the health systems in African countries to respond to the double burden of communicable and non-communicable diseases is projected to result in over a quarter of the global morbidity by 2020.[1] Increased level of obesity, diabetes and cardiovascular diseases in Sub Saharan Africa has been attributed to urbanization[2]According to the World Health Organization estimates in 2005, 2.8% of Nigerians had diabetes mellitus, 14.5% were hypertensive while 21.6% and 10.4% of Nigerian females and males respectively had total cholesterol greater than 210mg/dl.[3]

The cumulative economic losses to low- and middle-income countries (LMICs) from the four commonest NCDs (cardiovascular diseases, diabetes, cancers and chronic respiratory diseases) are estimated to surpass US$ 7 trillion over the period 2011-2025 (an average of nearly US$ 500 billion per year).[4] It is estimated that China, United Kingdom, and Nigeria will lose around 558 billion, 32.8 billion, and 7.6 billion US dollars respectively from the burden of NCDs between 2005 and 2015.[5]

According to the World Health Organization, available data on economically active populations indicates that globally, approximately 65% of the world's population aged 15 years and above are in the working force[6] andoverall, NCDs has been identified as the largest cause of mortality in these group of people, thus affecting many nation's economic development through loss of income and investments. NCDs also add economic strain on a country's workforce due to the high-cost of treatment and rehabilitation.[5]

In 2008 it was estimated globally, that one and a half billion adults above the age of 20 were overweight.[7] In Nigeria for the same year an estimated 26.8% of the adult population falls into this category. Overweight and obesity, major risk factors for a number of chronic diseases including cardiovascular diseases (CVDs), were on the increase especially in urban areas. It is also estimated that one billion people had hypertension in 2000 and this is expected to rise to 1.56 billion by 2025.[8]In Nigeria, NCDs were

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responsible for 27%with 12% of all NCD related deaths caused by CVDs. About 42.8% and 6.5% of the adult population had elevated blood pressure and obesity respectively while 8.5% had elevated blood glucose according to the 2008 World Health Organization data.[9]

The financial sector constitutes an important part of the Nigerian economy,[10] the financial institutions in particular are both strategic and crucial to the growth of the economy. Workers in banks tend to work long hours and lead sedentary lifestyles and are at risk of NCDs. This cross sectional descriptive study was carried out to determine the prevalence of elevated blood pressure and obesity among bankers in Lagos Island, Nigeria.

Method

According to the World Health Organization, BMI is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2), BMI between 18.5 – 24.9 is normal, 25.0 – 29.9 overweight while greater than or equal to 30 is obesity.[7] Raised blood pressure among adults aged 18+ years was also defined as systolic blood pressure ≥140 and/or diastolic blood pressure ≥90.[11]

Individuals with waist circumference >94cm for males and >80cm in females (truncal obesity) are at increased risk of metabolic complications while waist hip circumference >0.9 in males and >0.85 in females confers substantially increased risk of CVD.[12]

The study site was Lagos Island, the central business district of Lagos State; it is characterized by high-rise buildings, main government buildings, shops and offices. Due to the high intensity of commercial activities that takes place in Lagos Island on daily basis, it presently houses 20 commercial banks with 1575 professional staff membersand 172 branchesas at May, 2012.[13] A cross sectional descriptive study design was used;the study population was professional staff who had been an employee for more than six months in commercial banks with branches in Lagos Island LGA.A minimum sample size of 235 was calculated using formula for descriptive studies, $n \geq z^2pq/d^2$,this was increased by 10% to 259.

A multistage sampling method was used for the study. In the first stage, the sample size was shared equally among the 20 banks making it 13 respondents per bank. In the second stage, for banks that had more than 3 branches, simple random sampling was used to select 3 branches. While for banks that had less than or equal to 3 branches, all their branches were used for the study. Using this method, 56 branches were eventually picked. For the banks in which 3 branches were selected, the questionnaires were distributed to 4 respondents in the first bank, 4 respondents in the second bank, and 5 respondents in the third branch. While for the banks which had less than or equal to 3 branches, all the 13 respondents were selected from the only branch they had.In the third stage, the earlier selected 13 respondents were stratified based on sex andthe respondents from each bank selected through balloting.

Information was collected using a pretested self-administered questionnaire. The height, waist and hip circumference were measured with standometerand tape rule while the weight was measured with a weighing scale. The blood pressure was measured on three consecutive occasionsafter each 10 minutes of rest. The information obtained was analysed using Epi-info statistical software version 3.5.3, chi square at p value<0.05 was used to test for association among variables.

Ethical approval was obtained from the Health, Research and EthicsCommittee of the Lagos University Teaching Hospital. Verbal informed consent was obtained from each bank branch manager.Participation was voluntary and written informed consent was obtained from each of the respondents before questionnaire administration.

Results

Most of the respondents were between 30 and 39 years (55.8%) with mean age of 34.459±5.701 for males and 32.520±5.642for females (Table 1). More of the respondents were males (51.9%) and Christians (69.6%). More than half of the respondents (64.6%) were married and had first degree (52.7%) while almost a quarter (24.2%) had a postgraduate degree. The respondents were spread across the various departments with about a quarter (25.4%) in the marketing department. Only 5.4% of the respondents had been diagnosed with hypertension(6.9% of the males and 4.1% of the females) and 2.3% with obesity (1.7% of the males and 3.7% of the females), Table 1. Sixty five percent knew that in order to maintain good health people should go for routine medical assessment at least once a year, 38.1% had never had routine medical examination while 28.1% had routine medical examination within the past one year.

There was statistically significant difference between the males and females in terms of height ($p \geq 0.000$) and weight ($p \geq 0.002$), the mean height for the males was 1.734 meters and mean weight was 74.22kg while for the females it was 1.665 meters and 68.60kg.More than half (57.3%) of the respondents had body mass index within the normal range (59.3% of the males and 55.2% of the female respondents) while 29.2% were overweight (28.1% of the males and 30.4% of the females), and 11.2% were obese (10.4% of the males and 12.0% of the females). There was no significant difference between the BMI of male and female bankers ($p \geq 0.406$) Table 1.

Table 1: Distribution of respondents according to body mass index and blood pressure among bankers

Characteristic	Total	Males (n=135)	Females (n=125)	P value
Age years, (mean±SD)	260	34.459±5.701	32.520±5.642	0.006
Prior history of Hypertension, N (%)	14	9 (6.9%)	5 (4.1%)	0.32
Prior history of obesity, N (%)	6	2 (1.7%)	4 (3.7%)	0.42
Height, M, (mean±SD)	260	1.734±0.606	1.665±0.084	<0.0001
Weight, Kg, (mean±SD)	260	74.22±15.884	68.60±11.882	0.002
BMI, Kg/m2 (mean±SD)	260	24.356±4.873	24.835±4.388	0.40
BMI class, N (%)	260			
1.Underweight				
2. Normal		3 (2.2%)	3 (2.4%)	0.92
3. Overweight		80 (59.3%)	69 (55.2%)	
4. Obese		38 (28.1%)	38 (30.4%)	
		14 (10.4%)	15 (12.0%)	
SBP	243	125.8±21.0	121.7±16.7	0.09
DBP	243	79.7±9.7	75.2±10.9	0.001
Class of Hypertension	243	129	114	0.002
Normal		80(62%)	91(80%)	
Raised		49 (38%)	23 (20%)	
WHR	250	0.87±0.06	0.85±0.10	0.17
WC	250	92.79±12.54	91.405±18.43	0.48
Central obesity, N (%)		47 (35.1%)	83 (71.5%)	0.001

Age was a significant predictor of obesity and overweight, most of the obese and overweight respondents were above 30years of age while normal weight was commoner among respondents less than 30years (p≥0.001). The highest proportions of obese male and female bankers were in the older age group (Fig. 1).

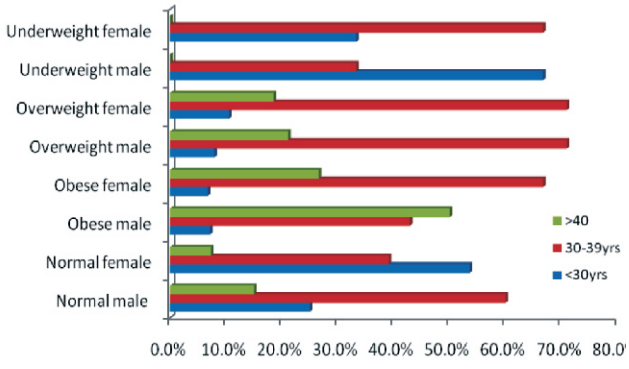

Figure 1: Relationship between age and body mass index among bankers

There was no statistically significant difference between the male and female bankers in terms of their waist circumference, the mean waist circumference for the males was 92.798 and for the females 91.405. Almost three quarters of the female respondents (71.5%) had waist circumference >80cm while 35.1% of the male respondents had waist circumference >94.The mean waist hip ratio for males was 0.872 while for the females it was 0.859,all the respondents had waist-hip ratio less than 1 with 70% having 0.9, and 26% having 0.8(Table 1).

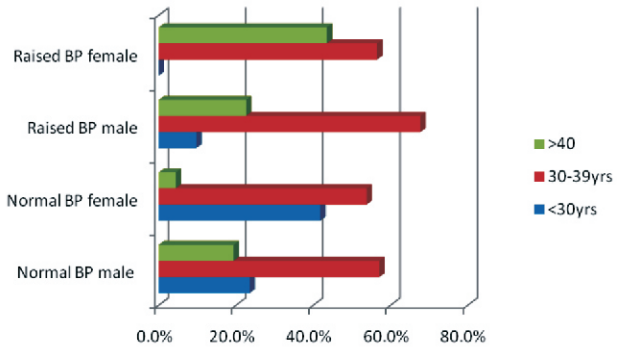

Figure 2: Relationship between Age and Blood Pressure among bankers

Table 3: Relationship between BMI and Blood Pressure among bankers

BMI	Normal Blood Pressure (≤139/89) N (%)	Raised Blood Pressure (> 140/90) N (%)	Total
Underweight	6 (100.0)	0 (0.0)	6
Normal	117 (84.8)	21 (15.2)	138
Overweight	36 (50.0)	36 (50.0)	72
Obese	12 (44.4)	15 (55.6)	27
Total	171	72	243

X^2=39.307, p<0.0001

Majority (70.4%) of the respondents had normal blood pressure ≥ 139/89mmHg, while 29.6% had raised blood pressure, gender was a predictor of raised blood pressure (p≥0.002) with 38% of the male bankers having raised blood pressure compared to 20% of the females. The mean systolic blood pressure was 125.814 and 121.719 for the males and females respectively while the mean diastolic blood pressure was 79.736 and 75.298 (Table 1). As the age of respondents increased so did the proportion with elevated blood pressure with a higher proportion of the older age group recording raised blood pressure (Figure 2). As the BMI of the respondents increased so also did the blood pressure with 55.6% of obese bankers having raised blood pressure compared to 15.2% of bankers with normal BMI (p≥0.000 fishers) Table 2.

Discussion

According to the WHO classification of body mass index (BMI),40.4% of the respondents had BMI that was above the normal limit, 29.2% were overweight while 11.2% were obese. This finding is similar to the 10.9% obtained in a study carried out among Nigerian adult population which also observed female preponderance of obesity[14]but higher than the 26.18% of adults that were either obese or overweight in a study carried out in Ibadan where 42% of the females were observed to be obese compared to 15% of the males.[15]

This study also revealed truncal obesity (waist circumference > 80 in female and > 94 in male) of 35.1% and 71.5% among the male and female respondents respectively. This finding is higher than what was obtained in a 2010 study carried out in Kastina, northern Nigeria which revealed that 12.4%of the males and 67.3% of the females in an apparently healthy adult Nigerian population had truncal obesity.[16]However this is lower than the 14.5% among males and 36.2% among females observed among adults in rural south eastern Nigeria.[17]

Almost a third of the respondents had raised blood pressure even though only 5.4% were known hypertensive patients, this finding is lower than the country estimate of 42.8%,[9] but similar to the result of a 2008 survey carried out on paid workers in Ilorin Nigeria which showed the prevalence of hypertension to be 27.1%[18] and the 34.8% obtained among traders in Lagos state[19] but lower than the 44.5% obtained among adults in a rural community in Anambra state Nigeria.[17]Compared to the result of a 2011 national survey in Ghana where 18% of the respondents had been diagnosed with one or more NCDs prior to the study, lower proportion of bankers in this study had prior diagnosis of an NCD.[20]

About a quarter (28.1%) of the respondents had been to the hospital for routine medical assessment within one year prior to this study, while more than one third (38.1%) had never been to hospital for routine medical assessment. This finding is similar to the result of a 2005 study in Pakistan where 35% of the respondents had never been to hospital for routine medical assessment.[21]This finding is lower than the result of a 2011 study among the staff of University of Ibadan where 57% had never gone to the hospital for routine medical assessment.[22]

This study showed that the proportion of bankers with raised blood pressure increases with age, with 73.1% of the respondents who were 40 years and above had elevated blood pressure which is similar to a 2011 study in Enugu Nigeria which noticed the prevalence of hypertension in the study population to be increasing with age from 5.4% in the age group below 20 years to 80% in the age group that is ≥ 70 years of age.[23] This is not surprising as other studies have also demonstrated a relationship between increasing age and raised blood pressure.[24]

More male respondents (38.0%) had elevated blood pressure compared to the female (20.2%). This finding is similar to what was seen in the study carried out by Oghagbon et at in Ilorin[18] and Ahameku et al in Anambra state[17]mentioned earlier and a 2005 study carried out among middle aged Portuguese which recorded prevalence of 26.2% among the malesand 12.4% among the female respondents.[25] A 2006 study of the prevalence of hypertension among the South Korean population showed that more males (26.9%) compared to the females (20.5%) were hypertensive.[26]The BMI of the respondents was a predictor of raised blood pressure which is similar to what was obtainedin a study carried out to assess the relationship between body size and blood pressure levels among Ibos in Nigeria.[27]A direct association between hypertension and BMI has also been observed in cross-sectional and longitudinal population studies from early childhood to old age.[28]

In this study,the prevalence of hypertension was lower while that of obesity was higher than what obtains within the community. Truncal obesity a risk factor for coronary heart disease was quite common in this study population. Regular screening should be carried outfor this group of workers so that risk factors can be detected and treated on time to prevent development of complications, ill health and loss of productivity. The limitation of this cross sectional study was that waist conference was used to measure central obesity even though it is not the gold standard.

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