Original

Correlates of Abnormal Body Mass Index among Commercial Bank Workers in Port Harcourt City, Rivers State Nigeria

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Abstract

Background: Globally, body mass index (BMI) is a widely accepted tool in medical practice to check obesity, overweight, normal weight, underweight and its attendant health-related problems. Bank workers due to the sedentary lifestyle they live may be predisposed to the associated health related problems of an abnormal BMI. The aim of the study is to analyse the health implications of abnormal BMI amongst commercial bank workers in Port Harcourt City, Rivers state, Nigeria.
Method: This cross-sectional study utilized a multistage sampling technique to recruit 123 commercial bank workers. Measurement of Body Mass Index (BMI), blood pressure and blood sugar tests were done, and questionnaires were administered on commercial bank workers by the health of a trained research assistant in their respective banks. Descriptive statistics was used to present data on prevalence while inferential statistics was used to test association (significant p=0.05).
Result: Findings on the categorization of Body Mass Index (BMI) among bankers revealed that 3.2% are underweight; 35.0% of sampled respondents have normal body weight; 31.7% of sampled respondents are overweight, and 30.1% of sampled respondents are obese. Prevalence of health risks of hypertension and diabetes among bankers accounted for 11.4% and 5.7% respectively. Body Mass Index (BMI) significantly correlates with hypertension ($r=0.277$; $p<0.05$) and diabetes ($r=0.362$; $p<0.05$).
Conclusion: The result revealed that BMI was directly correlated with the prevalence of hypertension and diabetes in the study area. Most of the sampled commercial bank workers are overweight and obese; therefore, they stand the risk of a diabetic or hypertensive condition. I recommend a weight loss related lifestyle modification which includes reduction in energy intake and exercise.

Keywords: Body Mass Index, Health Implication, Bank workers.

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Introduction

A person's size may be estimated using their Body Mass Index (BMI). It is a combination of the person's weight and height. When used as a screening tool, a person's Body Mass Index (BMI) may indicate whether they are underweight, at a healthy weight, overweight, or obese. When a person's Body Mass Index (BMI) is above or below the normal range, it might pose serious health problems. The abnormal or excessive fat build-up that may compromise health is what we mean when we talk about being overweight or obese.[1] Obesity is a medical disorder characterised by excessive fat accumulation to the point that it may negatively impact an individual's health, resulting in a shortened lifespan and/or an increase in health complications.[2] A person's size may be estimated using their Body Mass Index (BMI). It is a combination of the person's weight and height. When used as a screening tool, a person's Body Mass Index (BMI) may indicate whether they are underweight, at a healthy weight, overweight, or obese. When a person's Body Mass Index (BMI) is above or below the normal range (between 18.5–24.9), it might pose serious health problems. Health conditions including type 2 diabetes, high blood pressure, and heart disease are linked to being overweight or obese.[3]

One of the twenty-first century`s most serious public health challenges is the alarming rise in adult and childhood obesity rates.[4] Malnutrition, osteoporosis, and anaemia are among the conditions that may be exacerbated by being underweight. Cardiovascular disease, cancer, diabetes, obstructive sleep apnoea, osteoarthritis, and impaired reproductive ability are all linked to obesity and other forms of excess body fat.[5] Overweight rates among adults aged 18 and above in 2016 were 39.0% for more than 1.9 billion people, and 13.0% for more than 650 million people throughout the globe.[6] By the year 2030, it is predicted that 1.12 billion (20%) adults worldwide will be obese and that 2.16 billion (38%) will be overweight.[7]

According to a study, chronic, non-communicable illness prevalence is rising alarmingly on a global scale. Diabetes and hypertension are two important risk factors for cardiovascular disease, which claims around 18 million lives annually.[8] Type 2 diabetes is becoming more common because more people are obese. It is believed that about 90% of cases of type 2 diabetes are caused by excess weight. Additionally, there are currently 197 million people around the world with impaired glucose tolerance, which is often caused by obesity. This number is expected to rise to 420 million by 2025.[9] Weight loss-related lifestyle modifications lower the prevalence of diabetes and hypertension. Since overweight and obesity are products of energy imbalance that highly relate to dietary energy intake and expenditure, it is not unexpected that healthy weight management almost continuously involves the successful regulation of energy intake.[10]

Occupation is a risk factor for obesity because of its association with socioeconomic and lifestyle variables including physical inactivity and sedentary lifestyle[11]. Furthermore, the economic shift has prompted the development of low-activity jobs that need more sitting than they used to.[12] Despite this, the workplace has been identified by the World Health Organization (WHO) as a prime location for the promotion of healthy lifestyles and the treatment of diet-related disorders. Proportionally more healthcare professionals, educators, and bankers than the general population are exposed to the risk factors for being overweight or obese.[13] The nature of their jobs requires them to be sedentary for lengthy periods, and their socioeconomic situation may cause them to choose less active lifestyles.

The banking sector plays a major role in the sustainability of Nigeria's economy. Banks in Nigeria have become more efficient and enhanced their varied services as a result of the recent financial reform. The sedentary lives, generally superior socioeconomic conditions, and high-stress nature of the banking profession have been linked to an increased risk of ailments such as coronary heart disease, hypertension, piles, obesity, and diabetes among bankers.[14]

Not many studies explored the implication of high BMI among commercial bank employees in Port Harcourt, Rivers State. Thus, this research assessed the health implications specifically as related to the prevalence of hypertension and diabetes of abnormal Body Mass Index of commercial bank workers in Port Harcourt city, Rivers State, which is established in the introduction, and highlights the significance of addressing health hazards related to abnormal BMI in the banking industry. It outlined the gaps in the literature about the health effects that are unique to Port Harcourt City's commercial bank employees.

Method

Study Area

The study area is Port Harcourt; the capital of Rivers States, which is located in Southern Nigeria. It lies along the Bonny River (an eastern distributary of the Niger), 41 miles (66km) upstream from the Gulf of Guinea. Port Harcourt Metropolis is occupied by two local government areas (LGAs), which are Obio/Akpor and PHALGA.[15,16] The present-day urban centre has witnessed developments in socio-economic activities, which thus, promoted transportation (land, water, and air), exploration and oil production, crafts and tourism. Port Harcourt is now well known for commerce, industry, farming etc.

Study Design

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A descriptive cross-sectional study design was employed to investigate the health implication abnormal Body Mass Index of commercial Banks workers in Port Harcourt.

Study Population

The study population comprised of adult bankers in different commercial banks in Port Harcourt, Rivers state, who have worked for at least a year, have a minimum of an undergraduate certificate, and are professional staff of the banks. The workers are engrossed with long sitting, reading, operating computer sets and machines, attending meetings which leaves them with just a little break time for lunch and sometimes breakfast and at the close of work, drive home sometimes under heavy traffic jam (common with Banking profession). These prolonged sitting periods promote a sedentary lifestyle.

Inclusion Criteria

Bank workers of commercial banks in the city of Port Harcourt, Rivers State that has worked for at least a year, have a minimum of an undergraduate certificate and are full staff of the banks.

Exclusion Criteria

- Interns, National Youth Service Corps members, contract staff
- Bank workers who are leave (i.e annual, maternity, sick or study leave).

Sample Size Determination

The sample size was calculated from the study done by Ismail among bank employees of Sullia in 2013, which showed 41% prevalence for hypertension.[17] Using the formula $n = 4PQ/L^2$ and 95% confidence level, a sample size of 150 bank employees was calculated for the study.[18]

Sampling Technique

This study utilized the multistage sampling method techniques to recruit respondents from different commercial banks in the city of Port Harcourt, Rivers state. In the first stage five banks of the twenty-two commercial banks in the city of Port Harcourt, Rivers state were randomly selected. In the second stage, a random selection of three branches each from the five selected banks in the Port Harcourt city metropolis. In the third stage, a random selection of 10 eligible respondents from each three branches, and the participation at this stage was voluntary.

Study Instruments and Tools

A structured close-ended questionnaire which is self-administered was used for the collection of data to assess the health implications of abnormal Body Mass Index of commercial bank workers from selected four banks within the City of Port Harcourt and their feeding habits. The questionnaire probed the socio-demographic background and past medical history of respondents. To determine the Body Mass Index of the respondents and classify them accordingly, a Taylor precision products 7506 digital scale and a 2-Meters Retractable Hilit and Height Measuring tape were used to measure the weight and height. Also, to determine the blood pressure of the respondents, a digital blood pressure monitor (Arm model - U80AH – Weony) was used while and Acucheck glucometer (portable blood glucose meter) was used for blood sugar of the respondent. Gloves and alcohol swaps were also used during the process. The measurement was recorded using a pen and notebook.

Data Collection

This exercise was carried out within two months. Two laboratory scientists assisted in data collection after pre-training on the objectives, selection of participants and use of survey instruments. Data collection occurred in the morning period to get an accurate weight and fasting blood sugar measurement from Monday to Friday and the instruments retrieved on the spot. Weight was measured with shoes and blazer off to the nearest 0.5kg using a digital scale. Height was measured to the nearest 0.5cm using a measuring tape. Blood pressure was measured using a digital blood pressure monitor (Arm model - U80AH – Weony) with all tight clothing and other similar materials removed from the arm and in the sitting position for 3 minutes. A glucometer was used for blood sugar analysis; capillary whole blood was obtained from the participants early in the morning after an overnight fast. The scores from the blood glucose were used to calculate if a worker was diabetic or not. Body Mass Index (BMI) was calculated by dividing the body weight by height in meters squared (kg/m2) and the results were ranked into four groups: ≤18.4 kg/m^2 as underweight, 18.5–24.9 kg/m^2 as normal weight, 25.0–29.9 kg/m^2 as overweight, and ≥30 kg/m^2 as obese.[3]

$$BMI = \frac{\text{Weight (kg)}}{\text{Height } (m^2)}$$

Data Entry/Analysis

The data collected was collated, sorted and cleaned using Microsoft Excel sheet version 2016. The cleaned data were exported and analysed using SPSS version 24.0. Pearson Product Moment Correlation (PPMC) was used to test the relationship between BMI and prevalence of hypertension and diabetes, between BMI and prevalence of hypertension, and between BMI and prevalence of diabetes among sampled commercial bank workers at p=0.05 and 95% confidence level.

Reliability & Validity Plan

The questionnaire and the instruments were pre-tested in a pilot study among 5 bankers in a microfinance

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bank in Port Harcourt city which was not included in the study, the necessary adjustments were made.

Ethical Consideration

Ethical approval was obtained from the research ethics committee of the University of Port-Harcourt with reference number UPH/CEREMAD/REC/MM84/033. Informed consent was obtained from each bank worker during the study by agreeing to participate in the study. The selected bank worker was assured of confidentiality and anonymity, which was maintained during the study, also participation of the subjects was voluntary.

Results

Response Rate

Out of the proposed size of 150 participants for the BMI measurements, related tests and response to questions for the study, a total of 123 participants were available for the study which still gives the study a percentage return rate of 82%.

Table 1: Socio-Demographic Characteristics

Variable	Freq (n)	Percent (%)
Sex		
Male	52	42.3
Female	71	57.7
Age		
18 – 25 years	13	10.6
26 – 35 years	89	72.4
36 – **45** years	19	15.4
>45 years	2	1.6
Marital Status		
Married	49	39.8
Single	72	58.5
Divorced/Separated	1	0.85
Widowed	1	0.85
Level at work		
Junior Level	90	73.2
Mid management level	32	26.0
Top management level	1	0.8
Length of Banking work Experience		
1 – 7 years	89	72.4
8 – 13 years	29	23.6
14 – 19 years	4	3.3
>20	1	0.8

Sex Ratio among Respondents

The gender ratio among sampled bank workers in Table 1 revealed that more female commercial bank workers (57.7%) were sampled for the study when compared with their male counterparts (42.3%). The banking sector in recent times employed more females than males probably because of the roles they are required to play as regards scouting for customers to improve the capital base capacities of the banks.

Age Characteristics of Respondents

The Age distribution in table 1 revealed that 10.6% of bank workers fall in the age category between 18 and 25 years; 72.4% of bank workers are within the age group of between 26-35 years; 15.4% of sampled bank workers are within the age class of between 36-45 years, while the remaining 1.6% of bank workers are over 45 years of age. Thus, more bank workers are within the age group of between 26-35 years were sampled for the study.

Marital Status

The marital status of bankers is presented in Table 1. The distribution revealed that 40.7% of sampled bank workers are married while the remaining 59.3% of sampled bank workers are yet to marry. Thus, majority of bank workers were sampled for the study are single.

Length of Banking work Experience

Table 1 showed the age distribution and revealed that 72.4% of bank workers have between 1-7 years of experience; the level of experience between 8-13 years were for 23.6% of bank workers; 3.3% of bank workers have between 14-19 years of experience, while the remaining 0.8% of bank workers have at least 20 years of experience or above. The distribution, therefore, revealed that more bank workers who have bank work experience of between 1 to 7 years were sampled for the study.

Level at Bank Work

The information for sampled bank workers' level at work is displayed in Table 1. It was revealed that 73.2% of bank workers are junior-level workers; 26.0% of bank workers are mid-management level workers, while the remaining 0.8% belong to the top management level worker.

Table 2: Categorization of BMI of Bankers

BMI Categorization	Frequency (n)	Percent (%)
Underweight	4	3.25
Normal	43	34.95
Overweight	39	31.71
Obese	37	30.09
Total	**123**	**100**

The information for the categorization of BMI of commercial bank workers is displayed in Table 2. BMI is computed using respondents' body weight in (Kg) divided by respondents' height in meters (m) and the square of m. The Body Mass Index (BMI) of between and 18.5 indicates underweight; 18.5 – 24.9 indicates a normal body weight; 25.0 – 29.9 indicates an overweight person, while a BMI of 30.0 and above indicates an Obese person. These classifications were used to categorize respondents based on their Body

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Mass Index for the study. The distribution revealed that 35.0% of sampled bank workers have normal body weight; 3.25% of sampled bank workers are underweight; 31.71% of sampled bank workers are overweight, while 30.09% of sampled bank workers are Obese. The results carried out on commercial bank workers BMI indicated that only 34.95% of sampled bank workers have normal Body Mass Index; while 61.8% of sampled bank workers are either Overweight or Obese which is very high when compared to the former. Thus, the ratio between those belonging to the normal and abnormal Body Mass Index is very wide which is almost double. The also study indicated a very low percentage (3.4%) of bank workers that fall within the underweight category.

Table 3: Prevalence of Hypertension among Bankers

Hypertension	Frequency (n)	Percent (%)
Yes	14	11.38
No	109	88.62
Total	**123**	**100**

The study investigated the prevalence of hypertension among bankers in the study area. The blood pressure (Hg) levels of bankers were investigated, and the result is displayed on Table 3. The distribution revealed that the blood pressure (Hg) results varied among bankers in the study area. However, out of the 123 sampled bankers for the study, a total of 14 bankers are indicated to have hypertension due to their blood pressure levels. This accounted for 11 out of every 100 workers of the total bankers sampled for the study.

Table 4: Prevalence of Diabetes among Bankers

Diabetes	Frequency (n)	Percent (%)
Yes	7	5.69
No	116	94.31
Total	**123**	**100**

The study investigated the prevalence of diabetes among bankers in the study area. The study collected blood sugar samples from individual bankers across banks in the study area. The result is displayed on Table 4. The distribution revealed that the blood sugar/glucose levels varied among bankers in the study area. However, out of the 123 sampled bankers for the study, a total of 7 bankers are indicated to have diabetes due to their blood glucose levels. This accounts for 5.69 out of every 100 of the total bankers sampled for the study.

Table 5: Relationship between Body Mass Index (BMI), Hypertension and Diabetes

Health condition	BMI				
	Correlation coefficient (r)	r^2	Coefficient of determination (%)	p-value	Remark
Hypertension	0.277	0.0768	7.68	0.002 **	Significant
Diabetes	0.362	0.1311	13.11	0.000 **	Significant

**significant @ p≤0.05

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The result of the relationship between BMI and Hypertension and Diabetes is displayed on Table 5. It revealed that there is a positive relationship between BMI and hypertension and diabetes at level of significance of 0.05 (95%). Thus, BMI directly linked with the prevalence of hypertension and diabetes among bankers. Furthermore, for the relationship between BMI and hypertension, the value for the coefficient of determination showed that for every 7.68% change in BMI, there is a corresponding 1% change in the prevalence of hypertension among banker in the study area; and for every 13.11% change in BMI there will be a corresponding 1% change in the prevalence of diabetes among bank workers. The p-value of 0.002 and 0.000 were both lower than the level of significance of 0.05. Therefore, there is a statistically significant relationship between BMI and the prevalence of diabetes and hypertension among bankers in the study area. Key data about the BMI classification of the studied bank workers are presented in the results section. It highlights how common overweight, and obesity are in this group, along with the dangers of diabetes and hypertension that go along with them. Clear and pertinent statistics are used to support the data display.

Discussion

Categorization of BMI of Bankers

The findings of the study have revealed that banker's BMI varied across sampled banks in the study area. It was discovered that most bankers (61.58%) are overweight and obese while only 35.0% of bankers have normal Body Mass Index. Thus, the observed BMI of bankers might be due to the meals they consume daily as well as level of physical activity they get involved with daily. These factors are therefore determinants promoting more overweight and obese among bankers in the study area. This finding agrees with the findings of from reviews that reported that the driving forces of overweight and obesity are behaviour, physical inactivity, type of food consumption, and ageing amongst others.[19,20] Similarly, a study in Northern Nigeria discovered that even though bankers in Abuja are knowledgeable about sedentary lifestyles as they constitute overweight and obesity, only a few of them still create time to get involved with physically active programs.[21] The study, therefore, advocated for programmes aimed at improving physical activity among bank employees in the study area.

Prevalence of Hypertension among Bankers

The study discovered that only about 11.4% of bankers' blood pressure tests indicated hypertension. However, this may be low but when one considers the level of overweight and obese respondents for the study, it means that the majority are still at risk of hypertension. This affirms the findings of a Nigeria study that examined the prevalence of hypertension among bankers in Owerri, Imo state, Nigeria. The study also discovered a low number of respondents with hypertension (12.4%) among bankers in the study area.[22] In Nigeria, hypertension is a very common non-communicable disease and is of major public health importance. The study also agrees with the findings in another Nigerian study that reported that the prevalence of hypertension to have a range from 8-64% depending on the study population, type of measurement and cut-off value used for defining hypertension.[23]

Prevalence of Diabetes among Bankers

The prevalence of diabetes among banker's accounts for 5.69 out of every 100 of the total bankers sampled for the study. The findings from this research agrees with a Study from Port Harcourt Nigeria, Northwest Nigeria were various researchers reported prevalence ranging from 2% to 12% across the country in recent years.[24-26]

Relationship between BMI, Hypertension and Diabetes

The study discovered a positive correlation between Body Mass Index and the prevalence of diabetes and hypertension among bankers in the study area. The study findings agree with the finding from a Nigerian study that discovered a positive correlation between BMI and diabetes.[27] An Italian cross-sectional survey also agrees with the findings from study that also discovered a strong relationship between BMI and hypertension and reported that an increasing blood pressure levels and blood sugar levels were significantly correlated with increasing BMI.[28]

Study Limitation

The challenges that were encountered include, having to convince some of the respondent to check their weight especially the females, but this was overcame by explaining to them the importance of determining their BMI and by assuring them that their information will be treated with the strictest confidentiality. Also getting the respondent in the morning period posed a challenge as they were busy with meetings and customers, but this was overcome by continuous visit to the branch till all the respondent data had been collected.

Implications of the study

Higher risk of chronic diseases: Bank workers with abnormal BMIs may be at a higher risk of developing chronic disease like diabetes and cardiovascular disease, leading to absenteeism and reduced productivity. Reduced work ability: Obesity may impair work ability,

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leading to reduced productivity and increased risk of health-related job loss. Based on the findings revealed by the study on the health implication of abnormal Body Mass Index of commercial bankers; it is recommended that: Bank workers through their management are encouraged to develop and drive policies that encourage the maintenance of healthy lifestyle like encouraging regular basic check-up and giving branded incentives like exercise watches to those within the normal range. Bank management can organise health education programs for their staff using health workers as there is need for adequate information on the health implications of abnormal Body Mass Index to be circulated among commercial bank workers because this will educate them further on how to manage their activities on and off bank work.

Conclusion

Findings revealed that Body Mass Index directly correlated with the prevalence of hypertension and diabetes in the study area. Findings from this study also revealed that most of the sampled commercial bank workers are overweight and obese and therefore are at risk of a diabetic or hypertensive conditions.

Declarations

Ethical Consideration: Ethical approval was obtained from the research ethics committee of the University of Port-Harcourt with reference number UPH/CEREMAD/REC/MM84/033.

Authors' Contribution: Mbarie CM was involved in all aspects of the work, Douglas K was the supervisor, Ikoedem MG was involved in Literature review and manuscript preparation while Chinedu-Enechi AV was involved in the design and methodology for the study. All authors read through and approved the final manuscript

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