VOL. 10 NO. 3,
NOVEMBER, 2025
E-ISSN 3026-8702
P-ISSN 3026-8745

African Scholar Publications & Research International
www.africanscholarpub.com

Journal of Clinical and Metabolism Studies (JCMS)

# Incidence of Overweight, Obesity and the Risk of Cardiovascular Diseases amongst Non-Teaching Staff in Selected Tertiary Institutions in Bida Metropolis

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**DOI:** https://doi.org/10.70382/ajcms.v10i3.031

## *Abstract*

The study was undertaken to assess the incidence of overweight/obesity and the risk of cardiovascular disease (CVD) of 313 non-academic staff in Federal Polytechnic Bida, Niger State and Niger State Polytechnic Bida, Campus. Face to face interview with the sampled participant was conducted using a modified WHO-STEP-WISE survey questionnaire which was used to collect socio-economic and demographic characteristic, dietary intake, physical activity level and anthropometric indices and clinical status of the respondents. Anthropometric measurement was carried out using weight and height for BMI, waist circumference and Hip circumference for wait to hip ratio, body fat percentage as well as systolic and diastolic reading for blood pressure measurement. Data were analyzed for descriptive frequency, percentage, mean and standard deviation and inferential statistic, chi-square where $p>0.05$ are statistically significant using SPSS 25.0. The study had more (79.2%) male than female (20.8%) respondents with 41.5% aged 30-39years. This distribution of risk factors of cardiovascular disease showed (33.1%) and 23.8% as overweight and obese respectively for male respondents and 41.5% and 29.2% as overweight and obese respectively for the female respondents. Abdominal fat accumulation indicated (34.7%) men at high risk compared to 50.8% female at high risk. The study also showed that 29.1% of the male respondents had hypertension compared to the female respondents (24.6%) while 8.5% of the male respondent had diabetes compared to the female respondents which is (18.5%). Majority (86%) do not engage in regular exercise while 3.2% and 8.9% respectively indulge in smoking and alcohol. Weekly consumption of fruits 927%) and vegetables (36.4%) was poor. However, significant relationship between body mass index, waist and hip ratio and risk factors of Cardio vascular diseases was observed at $P<0.01$. The burden of overweight and obesity along with physical

inactivity and unhealthy dietary habit increases the risk of cardiovascular diseases in non-academic staff. Sensitization of the non-academic staff of the institutions and awareness creation through nutrition education on the need for early detection of risk factors of cardiovascular diseases with emphasis on lifestyle and dietary intake.

**Keywords:** Incidence, overweight, obesity, cardiovascular diseases, non-teaching staff.

# *Introduction*

Sub-Saharan African is one of the poorest regions in the world, with a double public health burden of communicable diseases (malaria, HIV/AIDS, and tuberculosis) and a rising incidence of non-communicable diseases (NCD), especially cardiovascular disease (CVD) (Choukem *et al.,* 2020). Overweight/obesity is an emerging problem, stemming from increasing urbanisation and westernized lifestyles which in turn has led to the emergence of a nutrition transition characterized by a shift to a higher calorie diet. In this resource-poor setting, the trend in overweight/obesity may likely increase as excess weight is often considered to reflect health, prestige, and prosperity whilst the lean are perceived to be unhealthy or financially poor (Choukem *et al*., 2020).

Obesity and overweight were defined as abnormal or excessive fat accumulation that may harm health with a complex multifactorial (Khan et al., 2019). It also describes a condition of excess weight of an individual (Center for Disease Control and Prevention, 2020). Obesity has become a life-threatening and prevalent public health problem, gained an epidemic percentage in both developing and developed countries and ranked as the fifth leading cause of death worldwide, and it is expected that obesity and overweight by 2030, will affect almost 573 million and 1.35 billion adults respectively.

An overweight individual is one who weighs more than what is considered normal for his/her height, age, and sex. For adults, it is indicated by a Body Mass Index (BMI) within the range of 25.00kg/m2 - 29.99kg/m2, and thus, is considered a precursor to obesity. Obesity is a chronic disorder marked by excessive generalized deposition and storage of fat in human body. It is indicated by a BMI of 30kg/m2 and above. Obesity, or adiposity as it is called in Latin, is the abnormal growth of the adipose tissue in humans because of an increase in the sizes of fat cells (hypertrophic obesity) or an increase in the number of fat cells (hyperplastic obesity) or a combination of both (Abuobaida *et al.,* 2021).

The consumption of high-energy food, physical inactivity, the sedentary nature of many forms of work and means of transportation contribute to the rise of overweight and obesity (Allman-Farinelli *et al.,* 2019). Occupation relates with socio-economic and lifestyle factors such as physical inactivity and sedentary lifestyle; hence it is considered as a predicting factor for overweight and obesity. In addition, several other factors can combine to cause

overweight and obesity. Other secondary determinants include; growth hormone deficiency, oral contraceptive use, among others as well as diets change whenever incomes rise in the developing world with a marked shift from cereals and tubers to meat, fat and sugar as well as vegetables (Stanish, 2019). Unhealthy dietary habits in terms of skipping meals, irregular meal times, increase consumption of fast food, soft drink, and occasionally snack in between meals are commonly reported among adults are potential contributors to the prevalence and rapid increase in the incidence of obesity. Which is a risk factor to many health problems and diseases. The first set of adverse effects of obesity results in cardiovascular diseases; hypertension, hyperlipidemia and glucose intolerance, while type-2 diabetes, endometrial, colon, breast and prostate cancers and coronary heart diseases emerged several years later.

Other health issues that are co-morbid with obesity include: High serum cholesterol, low density lipoproteins, very low density triglycerides, increased rate of death, decreased life expectancy, stroke, breathing disorders, sleep apnea, gynecological problems (including infertility and irregular periods), erectile dysfunction (as well as sexual issues), depression, shame and guilt, social isolation and lower work achievement (Paniagua, 2019). Despite this, the WHO recognizes the workplace as an excellent setting for prevention and management of diet-related diseases as it can promote healthy lifestyle changes (Zubery *et al*., 2021).

Overweight and obesity are significant risk factors for various non-communicable diseases, including cardiovascular (WHO, 2019). Cardiovascular disease was previously not a major disease worldwide but have now risen to be a major cause of morbidity and mortality. According to the World Health Organization (2019) more than 1.9 billion (39%) adults aged 18 years and above were overweight, while more than 650 million (13%) were obese worldwide. Projection shows that 2.16 billion (38%) of the world's adult population will be overweight and 1.12 billion (20%) will be obese by 2030. The prevalence of overweight and obesity among adults in Africa is 27% and 8% respectively (Zubery *et al.,* 2021). In Nigeria, the prevalence of obesity has risen from 0.6% in 1980 to 3.6% in 1986 and the trend is doubling subsequently in every decade since 1990s (Ajayi *et al*., 2020). Increasing prevalence rates of CVD have also been observed in many developing countries (Odugbemi *et al.,* 2021). It has been projected worldwide, that CVD would rise from the second most common cause of death in 1990, to the first and account for 36% of all deaths in 2020. At the beginning of the 20th century, CVD accounted for less than 10% of all deaths worldwide. By the beginning of the 21st century, it accounted for nearly half of all deaths in the developed world and 25% in the developing world; by 2030, it will claim 25 million deaths each year, and will surpass infectious diseases as the world's leading cause of death and disability (Odugbemi et al., 2021). There is limited information on the burden of overweight and obesity among working adults (Zubery, 2021). Therefore, this study sought to establish the status of overweight and obesity among non-teaching staff of selected institutions in Bida Metropolis. Findings from this study would be helpful in raising awareness among the workforce in every sector, about the impacts that overweight and obesity have on health, social and welfare. The study findings would enhance the non-teaching staff' plan on effective use of leisure time at schools and homes by

putting great emphasis on physical activities. In due regards, they would be able to expend extra energy that could otherwise be stored in their bodies and cause overweight as well as obesity.

**Research Methodology**

**Study Location:** This study was carried out among non-teaching staff of selected institutions in Bida Metropolis, Niger state.

**Study Design:** The study design that was adopted for this research work was descriptive and cross-sectional study conducted among non-teaching staff of selected tertiary institutions in Bida Metropolis, Niger state which involves collection and analysis of large data and information through questionnaire.

**Target Population:** The target population was non-teaching staff of selected tertiary institutions in Bida Metropolis, Niger state.

**Sampling Techniques:** Non-teaching staff of selected tertiary institutions in Bida Metropolis, Niger state was selected using multistage sampling techniques in the institution and respondents' selection.

**Sample Size:** Sample sized by proportionate allocation was used to determine the total number of male and female respondents to be recruited from each selected tertiary institution. The sample size was determined using Yamane (1967), which was adopted by Glenn (2003)

10% was added to the calculated sample size to cater for attrition. Total questionnaire administered to be administered was 313 therefore Sample size by proportionate allocation was used.

**Inclusion and Exclusion Criteria:** Apparently, healthy consenting male and female adults was included while pregnant women and ill looking men or women was excluded from the exercise.

**Informed Consent:** The consent of the non-teaching staff of the selected institutions in Bida was obtained before initiation of the study. The main objectives of the study were explained to the individual and confidentiality of retrieved information was maintained.

**Data Collection:** A modified WHO STEP-wise survey questionnaire including the Global Physical Activity Questionnaire was administered to obtain information on respondent's lifestyle factor which included:

i. Socio economic and demographic characteristics respondents which was adopted from Mayige and Kagaruki, (2013)
ii. Physical activity measures were modeled after the Bonchard Three-Day physical activity record (Wickel *et al.,* 2006)
iii. Dietary intake was obtained using food habit and food frequency which was adopted from Ajayi *et al.,* (2016)
iv. Anthropometric indices and clinical status (blood pressure measurement) of the non-teaching staff.

**Anthropometric Measurement:** Anthropometric indices and clinical status (blood pressure measurement) of the non-teaching staff was done using calibrated equipment by trained personnel adhering to the WHO guideline (WHO, 1995)

- Height was taken to the nearest 0.1cm (WHO, 1995)
- Body weight was measured to the nearest 0.1kg using (OMRON digital scale) (WHO, 1995)
- The BMI was determined as the ration of body weight to the square of body height (kg/m2) (WHO, 1995; Hons and Leans, 2001)
- Waist and hip circumference were measured using measuring tape according to WHO (1995) and Hons and Leans, (2001)
- The body fat composition was measured using OMRON digital body composition scale, model HBF-522 and the percentage body fat was based on Gallager *et al.,* 2000 and McCarthy and Ashewell, 2006) body fat classification.

**Measurement of Blood Pressure:** Blood pressure was obtained using a Mercury Sphygmomanometer used to measure blood pressure as adopted by Odugbemi *et al.,* (2013) was used to assess the clinical status (blood pressure measurement) of the non-teaching staff.

**Data Analysis:** Data was analyzed using frequency percentage and mean and standard deviation. Chi-square test equivalent was used for qualitative variables. All statistical analysis was carried out using IBM SPSS statistics version 25.0

**Discussion**

The present study sought to examine the incidence of overweight, obesity and the risk of cardiovascular diseases amongst non-teaching staff in selected tertiary institutions in Bida Metropolis by determining the socio-economic and demographic characteristics, nutritional status, using anthropometric indices, food habits and food frequency, physical activity level and the relationship between socio-economic and demographic characteristics and anthropometric indices of the respondents. The entire respondents (100%) were non- teaching staff. The respondents of this study comprised of more males 79.2% than female 20.8%. The higher male to female ratio in this study is similar to the study on the risk of cardiovascular diseases among staff of federal polytechnic Ilaro, Ogun state (Adebayo *et.al.,* 2020). The predominant tribe of this finding were Nupe (48.6%), which is due to the fact that the study was conducted in Bida locality being a predominant Nupe speaking area, 19.8%, 8.9%and 18.8% were Yoruba, Igbo and Hausa respectively, while a very low percentage (3.8%) of the respondents were from other tribes. This is contrary with the study (Deleojo *et.al.,* 2020) where majority (65.8%) of respondents were yoruba by tribe. This is because the study was carried out among the staff of Ekiti State university. 41.5% of the respondents were within the age range of 30-39years which is close to the study in Abuja on the anthropometric indices associated with disparity in mean blood pressure between two ethnic groups in Gwagwalada, Nigeria in which majority of the participants were within the age group of 25-34 years (Biyaya and Abdul, 2022). A large number (62.6%) of the respondents were muslim which is in

agreement with the findings of (Biyaya and Abdul 2022). Majority of the respondents of the study were married and 2.6% were single. This high proportion of married of people could have a significant impact on non-communicable diseases occurrence especially high blood pressure since marital issues related to social, financial and nutritional obligation has been found to have an associated effect on blood pressure among married couple (Lopez, 2004).

The educational status of the respondents showed that most (71.2%) are well educated with qualifications of B.SC/HND and M.SC/MBA as cardiovascular diseases (CVD) can affect people of any age, sex and class (Atun *et.al.,* 2009). The high level of education seen could also be because the study where such is expected among the non-academic staff. However, the reverse was the case among public sector workers in Angola where there was low level (34.6%) education among the respondents of study despite working in an institution of higher education (Capingana *et.al.,* 2013). It should be noted that education increases people's communication skills, reduces in equality in the knowledge of diseases contraction. The improvement in education crucial for the prevention, early diagnosis and adequate management of chronic risk factors (Campingana *et.al.,* 2013).

This study showed that a good number of the respondents (25.6%) ate more than three square meals daily. This is over eating and could lead to food addiction. Consumption of large portion sizes and sugar laden foods and consequently overweight and obesity is very imminent. This report is in tanderm with a similar study that showed that excessive consumption of unhealthy fatty foods and sugar filled soft drinks and beverages provided unnecessary source of calories with the little or no nutritional value to their participants (Dobbs *et.al.,* 2017). Majority (72.8%) of the respondents skipped meal especially lunch due to work and lack of appetite unlike the study conducted in Iran where a high percentage (95.1%) of the respondents skipped dinner. The study also showed that (35.1%) of the respondents often neglected their breakfast and this could consequently lead to overweight and obesity as they tend to resort to snacks and soft drinks or fast foods. This finding is in agreement with a study that established that skipping breakfast, increases one's risk of obesity or makes it difficult to lose weight, as it may trigger bad eating habit throughout the day and as cravings ensue, quick fix fast foods are often sought (Jackson-Micheal,2017). Consumption of snacks high in saturated fat could lead to deposition of dietary fat in the fat stores of the adipose tissue and thus increases the chances of an individual getting overweight or obese. The relationship between Body mass index (BMI) and snack consumption corrontes reports of other authors (Piernas and popkin,2010) which found that frequent consumption of snacks is strongly associated with rising rate of obesity. In this study, the food consumption pattern showed that a significant proportion (62%) of the study respondents engaged in snacking which is related to the findings of (Badamosi *et.al.,*2017). A low percentage (8.9%) of the respondents consumed alcohol while majority (91.1%) do not consume alcohol. This research work is contrary to the findings of (Abuo *et.al.,* 2018) which revealed that a good number of the respondents consumed alcohol occasionally (34%) and some very often (16.2%) cigarette smoking and the use of tobacco product is one of the major modifiable cardiovascular risk factors prevalent especially in high income countries (Havranet

*et.al.,* 2015). It is a global public health challenge and is a major contributor to the pattern of cardiovascular diseases, that is ischemic heart disease (IHQ) myocardial infarction (MI) (Wetton, *et.al.,* 2017). In this study, the percentage of respondents that smoke was found to be low at about 3.2%. This finding is in agreement with the report of David *et. al.,* (2019) in which the percentage of respondents that smoke was as low as 2.1%.

More than a quarter (28.1%) of the participants reported chronic illness while majority (71.9%) perceived themselves to be in good health, which is higher than the national average 46.4% (Biyaya et.al., 2022). This discovery is slightly higher than the report of (Maria *et. al.*, 2022) in which 25% of the respondents reported chronic illness.

Physical activity was one of the most important risk factors for overweight, obesity and cardiovascular diseases. In this present study, larger population (72.4%) of the respondents did not engaged in any physical activity at home. This may be due to the large number (246) of male respondents involved in this study. Majority of the respondents have personal car which they drove to their respective homes. The nature of work of the respondents required sitting for longer hours (precisely eight hours) in the office. All these predispose them to sedentary lifestyle and as these individuals spend most part of their adult working lives less engaged in physical activities if they don't consciously involve themselves in physical or sporting activities outside working hours. Consequently, increasing their susceptibility to overweight and obesity which could predispose them to chronic diseases associated with physical inactivity. The same trend of non- involvement in regular physical exercises was observed among the respondents of the study carried out by (Addo, *et.al.,*2015). In another similar study it was found that most jobs in the civil service are sedentary and basically civil servants involves spending hours in the office sitting (Adegun and Konwea, 2009).

Anthropometry measurement refers to the measurement of body size, weight and proportions and body compositions refers to the distribution of body compartments (Muscle mass and body fat) as part of the total body weight. The evaluation of both anthropometric and body composition data allows the clinicians to fully access this compartment (Lee *et.al.,* 2010). The body mass index (BMI) was used as a parameter for assessment. It was discovered in this study that more than a quarter (33.1%) and (41.5%) of male and female respondents respectively were overweight while 23.8% and 29.2% were obese using WHO (1995) standard for Body Mass Index (BMI). This showed that the female non-academic staff has the high percentage of overweight and obesity than the male non- academic staff. This finding is in agreement with the report of (Chinnakali *et.al.,* 2012) where 17% men and 25% women were overweight /obesity in term on Body Mass Index (BMI). Body fat percentage is a more accurate parameter in predicting cardiovascular disease risk as Body mass index does not differentiate between body fat and lean mass (De Lorenzo *et.al.,* 2013). This study revealed that the female respondents were found to have higher percentage of body fat (36.9%) compared to males (17.3%). This current research is in consonant with the findings of (Myat *et.al.*, 2018) where 35.2% of the female respondents were having higher body fat percentage than the male respondents (26.7%). American Heart Association defines elevated blood

pressure as systolic of 120 and above and diastolic of 80 and above (Wetton *et.al.,* 2017). This result of the study revealed that there is high percentage (43.1%) of elevated blood pressure among the female than the male respondents (31.9%) which is contrary to the findings of (Elizabeth *et.al.,* 2018) in which it was reported that females are less likely to have high blood pressure compared to their male counterpart. This is due to the abundance oestrogen hormone present in women prior to menopause protect women from aldosterone induced hypertension. However, this current study reported higher percentage (29.1%) of hypertension in Male respondents than in female respondents (24.6%). These findings is in consonant with the report of Ngideka *et. al.,* (2019) on the prevalence of hypertension and blood pressure profile amongst urban dwelling adults in Nigeria. This high percentage of hypertension maybe found among male respondents that are between the age range of 40-50years.

Waist- hip ratio is suggested to be the best predictors of Cardiovascular disease (CVD) risk of diabetes, hypertension among all ethnic group (Lear *et.al.,* 2010). In men, high waist-hip ratio (WHR) increased the risk of CVD incidence, morbidity and mortality compared to BMI and BMI was associated with increased risk of CVDs in women (WHO,2011). This present study showed high proportion of waist-hip ratio in women (50.8%) than in men 34.7%. This indicated that central obesity is more in the female than the male respondents as waist-hip ratio is the predictive value of central obesity index. This finding is similar with report of (Jafar *et.al.,* 2018) on the study conducted in Iran where the rate of central obesity was 81.4% in women and (68.6%) in men.

Diabetes increases coronary heart disease risk of three fold to seven fold in women and of two fold to three fold in men (Spelstery, 2005). In a meta analysis women with diabetes had a 50% higher risk of fetal coronary Heart Disease compared with men with diabetes (Huxley *et.al.,* 2006).in this study, diabetes is high among the female respondents (18.5%) than the male respondents (8.5%).

Nutrition science demonstrates that a healthy diet embraces high consumption on non-starchy vegetables, fruits, whole grains and legumes in addition to limited to moderate consumption of nuts, seafoods, lean meats, low fat diary products and vegetable oil. Trans-fat, saturated fats, sodium, red meat, refined carbohydrates and sugar-sweetened beverages should be minimized or avoided altogether (DGA, 2015-2020). This study indicated high intake of cereals (mostly rice and pap), legumes (especially beans and groundnut), roots and tubers (particularly sweet potatoe, garri and sugarcane), meat (mostly goat meat and beef), fish (particularly dry fish and cat fish), milk and milk products (milk and soycheese), nut and seed (especially tigernut and coconut) and snacks (kuli-kuli, puff-puff and meat pie) on weekly consumption basis. However, regular consumption of fruits and vegetable was low among respondents. These findings is in agreement with the report of Post *et. al.,* 2022 on the pre-value of physical activity and dietary pattern as risk factor for cardiovascular disease among semi-urban dwellers in Ibadan. The low intake of fruits and vegetables among the respondents could be because of low level of awareness on the health benefits of fruits and vegetables to cardiovascular diseases, risk factors and diabetes management.

The mean height of the female respondents was 1.72 (±0.10), mean weight was 65.02 (±16.52) kg and the mean BMI was 22.19 (±6.44) kg/m$^2$. These findings is slightly different from the report of Prince *et. al.*, (2015) in which the mean height of respondents was 1.68 (±0.13)m, mean weight was 80.10 (±15.20)kg and mean BMI was 26.90 (±3.70)kg/m2 on the prevalence of obesity and overweight and associated factors among financial institution workers in metropolis, Ghana: A cross sectional study, this may be due to the statistical package which is used by the study (strata 11 for window whereas this study used strata 22 for windows. The mean value of waist-hip ratio si less than 1.0 (0.87) which places them at higher risk of metabolic disease. These findings is similar with that of Biyaya *et. al.,* 2022 in which the mean of male respondents is less than 0.1 in the study of anthropometric indices associated with disparities in mean blood pressure between two ethnic groups in Gwagwalada, Nigeria. The mean systolic in male (120.54) is higher than the mean systolic in female (119.32) while the mean diastolic in male (78.7) is slightly higher than the mean diastolic in female (78.30). These findings is in consonant with the report of Fikru *et. al.,* (2009). This might be due to the high rate of hypertension in male than in female.

The study analyzed the correlation between the age of respondents (both male and female) and BMI, waist-hip ratio and body fat percentage. A linear and positive correlation was obtained between increasing age and high BMI across both genders in this study. likewise, large population studies indicated that BMI gradually increases during adult life reaching peak at 50-59years in males as well as in females, showing a declining BMI after the age of 60years (Al-Rubean *et. al.,* 2015). This study also showed age of male respondents and waist-hip ratio had a statistical significant ($p<0.01$). This mean that waist-hip ratio increases from the age of 18years in male until the age of 50years.

Age was positively correlated with blood pressure (both systolic and diastolic) in male while in female it was negatively correlated with diastolic reading. Systolic and diastolic blood pressure increased with age steadily from the youngest to the oldest age group showing the dependence of blood pressure on age. These findings is similar to the report of Suman *et. al.,* 2014 in study of body mass index relates to blood pressure among adults.

BMI demonstrated a weak negative correlation with body fat percentage in male respondents ($r=-0.064$) while it showed a moderate positive correlation with body fat percentage in female ($r=0.422$) with a statistical significance of ($p=<0.010$. These findings is contrary to the report of Chathuranga *et. al.,* (2013) where a significant positive correlation was observed between BMI and body fat percentage in male ($r=0.75$, $p=<0.01$) but similar to his report on female respondents in which BMI demonstrated a significant positive correlation ($r=0.82$, $p=<0.01$) on the study relationship between body mass index (BMI) and body fat percentage, estimated by bio-electrical impedance in a group of Sri Lankan adults: A cross sectional study". This is because this study showed high percentage of overweight and obesity in female (41.5%) and (29.2%) respectively than in male (33.1%) and 23.8%) respectively.

This study indicated a positive relationship between BMI and systolic and diastolic reading in both male and female. This suggested that BMI could be regarded as a significant predictor of

blood pressure. These findings is in agreement with the report of Taiwo and Olatunde (2020) on the association of hypertension with generalized obesity in rural South Western, Nigeria. The correlation between BMI and fasting blood sugar revealed a positive relationship in female and a negative relationship in male. This may be due to high percentage of diabetes in female than in male. However, the association between BMI and fasting blood sugar indicates that excess weight was related to increase risk of diabetes. This finding is similar to the report of Nwafor *et. al.,* (2015) on the relationship between blood pressure, blood glucose and body mass index and co-existing prehypertension and pre-diabetes among rural adults in Niger Delta Region, Nigeria.

**Conclusion**

Conclusively, the burden of overweight and obesity along with physical inactivity and unhealthy dietary habit increases the risk of cardiovascular diseases in non-academic staff. Body Mass Index, waist and hip ratio, body fat percentage, blood pressure measurement, and fasting blood sugar test all play a significant role in determining the risk of cardiovascular diseases related to overweight and obesity.

**Recommendations:**

Base on the findings in this research, the following recommendations were made:

i. Interventions such as sport, keep fit clubs, gym membership aimed at promoting physical activity must be implemented among sedentary workers. These activities could be spearheaded by the management of the institutions.
ii. Local and international health organizations must intensity the advocacy for physical activity especially in the work place among the general populace.
iii. Sensitization of the non-academic staff of the institution and awareness creation through nutrition education on the need for early detection of risk factors of cardiovascular diseases with emphasis on lifestyle and dietary intake.
iv. Annual clinical dialysis should be organized by the institution for staff to help keep non-communicable diseases in check.
v. Standard effective nutritional counselling department should be created in the institution medical Centre to aid nutrition counseling and guidance

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**Table1: Socio – Economic and demographic background of the respondents**

| Variable | Frequency (n=313) | Percentage (%) |
|---|---|---|
| **Sex** | | |
| Male | 248 | 79.2 |
| Female | 65 | 20.8 |
| **Age** | | |
| 18-29 | 39 | 12.5 |
| 30-39 | 130 | 41.5 |
| 40-49 | 94 | 30.0 |
| 50-60 | 50 | 16.0 |
| **Ethnic group** | | |
| Nupe | 152 | 48.6 |
| Yoruba | 62 | 1918 |
| Igbo | 28 | 8.9 |
| Hausa | 59 | 18.8 |
| Others | 12 | 3.8 |
| **Religion** | | |
| Christianity | 117 | 37.4 |
| Islam | 196 | 62.6% |
| Traditional | - | - |
| Others | - | - |
| **Marital status** | | |

| Variable | Frequency (n=313) | Percentage (%) |
|---|---|---|
| Single | 8 | 2.6 |
| Married | 29.3 | 93.6 |
| Divorced | 9 | 2.6 |
| Widowed | 3 | 1.0 |
| **Level of education** | | |
| Primary | - | - |
| Secondary | 9 | 2.9 |
| Tertiary | 223 | 71.2 |
| Others | 81 | 25.9 |
| **Type of family** | | |
| Nuclear | 108 | 34.5 |
| Extended | 154 | 49.2 |
| Polygamous | 51 | 16.3 |
| **Estimated income per month** | | |
| Below 30,000 | 73 | 23.3 |
| 40,000-50,000 | 78 | 24.9 |
| 60,000-70,000 | 98 | 31.3 |
| 70,000-80,000 | 50 | 16.0 |
| Above 100,000 | 50 | 16.0 |
| **How much do you spend on feeding per day?** | | |
| Less than 500 | | |
| 1000-2000 | 97 | 31.0 |
| 2,100-3,500 | 109 | 34. |
| Above 4000 | 107 | 31.0 |

**Table2: Lifestyle and food habit of respondents**

| Variable | Frequency (n=313) | Percentage (%) |
|---|---|---|
| **How many times do you eat in a day?** | | |
| Twice | 108 | 34.5 |
| Thrice | 184 | 58.8 |
| Four times | 11 | 3.5 |
| More | 10 | 3.2 |
| Do you skip meal | | |
| Yes | 228 | 72.8 |
| No | 85 | 27.2 |
| Which of the meal do you mostly skip? | | |
| Breakfast | 110 | 35.1 |
| Lunch | 172 | 55.0 |
| Dinner | 10 | 3.2 |
| Why do you skip meal | | |

| Variable | Frequency (n=313) | Percentage (%) |
|---|---|---|
| Work | 196 | 62.6 |
| No appetite | 54 | 17.3 |
| Busy | 42 | 13.4 |
| Do you consume snacks | | |
| Yes | 194 | 62.0 |
| No | 119 | 38.0 |
| Do you take snacks in between meals | | |
| Everyday | 44 | 14.1 |
| Sometimes | 194 | 62.0 |
| None | 54 | 17.3 |
| If yes, how often do you consume snacks | | |
| Everyday | 109 | 34.8 |
| Once/week | 43 | 13.7 |
| Twice/month | 75 | 24.0 |
| Thrice | 11 | 3.5 |
| Do you prefer snacking to eating regular foods | | |
| Yes | 98 | 31.3 |
| No | 215 | 68.7 |
| Do you prefer canned foods to freshly prepared foods | | |
| Yes | 22 | 7.0 |
| No | 291 | 93.0 |
| Do you take alcoholic beverages | | |
| Yes | 28 | 8.9 |
| No | 285 | 91.1 |
| If yes, how often | | |
| Once/week | 18 | 5.8 |
| Twice/month | 10 | 3.2 |
| Do you smoke | | |
| Yes | 10 | 3.2 |
| No | 303 | 96.8 |
| If yes, how often do you smoke | | |
| Everyday | 10 | 3.2 |
| What type of fat or oil is most often used for meal | | |
| Palm oil | 139 | 44.4 |
| Vegetable oil | 86 | 27.5 |
| Groundnut oil | 88 | 28.1 |
| On average, how many times do you eat per week | | |
| Once | 116 | 37.1 |
| Twice | 81 | 25.9 |
| Thrice | 33 | 10.5 |

| Variable | Frequency (n=313) | Percentage (%) |
|---|---|---|
| More than three times | 83 | 26.5 |

**Table3: History of Chronic Diseases**

| Variable | Frequency (n=313) | Percentage (%) |
|---|---|---|
| **Have you ever had your blood pressure measured by a doctor?** | | |
| Yes | 204 | 65.2 |
| No | 109 | 34.8 |
| **Have you been told by a doctor that you have raised blood pressure?** | | |
| Yes | 55 | 176 |
| No | 258 | 82.4 |
| **Have you taken drug for raised blood pressure?** | | |
| Yes | 33 | 105 |
| No | 280 | 89.5 |
| **Have you ever had your blood sugar measured by a doctor?** | | |
| Yes | 33 | 10.5 |
| No | 280 | 89.5 |
| **Have you ever been told by a doctor or other health worker that you have raised blood sugar level** | | |
| Yes | 18 | 5.8 |
| No | 295 | 94.2 |
| **In the past two weeks, have you taken any drugs for diabetes** | | |
| Yes | 11 | 3.5 |
| No | 7 | 2.2 |
| **Have you ever had your cholesterol measured by a doctor** | | |
| Yes | 11 | 3.5 |
| No | 302 | 96.5 |
| **Have you been told by a doctor that you have raised cholesterol** | | |
| Yes | 11 | 3.5 |
| No | 302 | 96.5 |
| **In the past two weeks, have you taken any oral treatment for raised cholesterol prescribed by a doctor or other health worker** | | |
| Yes | 11 | 3.5 |
| No | 302 | 96.5 |