

# Dietary Habits of Adult Residents of Calabar Metropolis, Cross River State, Nigeria

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## ABSTRACT

**Background:** The food consumption habit of an individual or a group is an important factor in determining the nutritional status and overall health of the individual or group.

**Objective:** The study was conducted to determine the dietary habits of adults residing in Calabar Metropolis.

**Methodology:** The WHO standard questionnaire on dietary assessment and related surveys was used to collect data on the dietary habits of adults within the age bracket of 20 – 70 years. The study sampled 500 respondents utilizing a multistage sampling technique. Statistical Product and Service Solutions (SPSS) version 22.0 was used for data analysis.

**Results:** There were more females (54.0%) than males (46.0 %) in the study. Majority (89.2%) of the population were young and middle-aged adults (20-59 years). It was found that 39.4% of the respondents went to work or market with meals prepared at home; proportion (44.2%) of those who went to work or market with meals prepared at home did that occasionally. Remarkable proportions (31.4%) and (22.3%) of the respondents respectively consumed snacks and sweetened beverages 3-7 times weekly, whereas 94% skipped one or more meals per day. About ninety-seven percent (96.8%) of the respondents consumed foods very rich in oil/fat, spices/beverages had 100% consumption; even though vegetable consumption was high (94.8%), fruit consumption was relatively low (27.8%).

**Conclusion:** The dietary habits of the population tilt towards an unhealthy end, calling for actions by the nutrition stakeholders to create more awareness in the study area, encouraging the individuals to make healthy food choices.

**Keywords:** Eating habits, adults, residents, Calabar

## INTRODUCTION

The nutritional and overall health status of an individual or community is largely dependent on the food choices and dietary habits of the individuals or community. It has been documented that the exponential rise in obesity

and associated diet-related chronic diseases throughout the globe is significant as a result of not consuming the right kind of foods, thereby posing a great danger to human health and the

world's population (1). Growing evidence suggests that various dietary factors function significantly in promoting and improving health, such as reversing the progression of chronic diseases (2). Some dietary components like polyphenols and many other compounds inherent in various foods including fruits, berries, vegetables, nuts, whole grains, and foods of marine origin, have crucial effects in controlling and preventing metabolic diseases that could trigger in the body as a result of some metabolic derangement (2). Studies had reported the continuous rise in the consumption of highly processed food products as unhealthy dietary practices of an individual or a community which poses significant dangers to the health and general well being of such individuals or population (3-5). Overconsumption of a high-calorie diet as an unhealthy eating pattern has been well reported as a leading factor towards overweight and obesity. It is established that the extra calories would always be stored in the body as excess fat, which can adversely affect health (6).

According to (7), food habits favouring a drift from consumption of locally available foods to westernized foods have been witnessed in Nigeria in the recent time. This is very indicative of the nutrition transition which is wrecking havoc in most countries of the world (3-5). Studies have shown that this shift in food consumption pattern is different across the states in Nigeria, ascribing it to various factors relating to food systems (8, 9). There is paucity of data on food consumption habits of adult residents of Calabar, Cross River State, Nigeria. Therefore, it is on the above premise that this research work was undertaken to determine the dietary habits of the study population.

## **METHODOLOGY**

### **Study Area**

The study was conducted within Calabar Metropolis, Cross River State, Nigeria. The city comprises Calabar Municipal Council and Calabar South Local Government Area. According to (10), "the urban population and settlements are concentrated in zones inhabited by the three ethnic groups:- the Efuts to the south, the Efiks to the west and the Quas to the east." The primary and widely spoken tribal languages are Efik and Ejagam. However, the city is a multilingual ethnicity, with English being the

widely used official language in the city's administration as a microcosm of the enlarged Nigerian society (11). Calabar Metropolis is located in the Southern Senatorial District of the state. The city lies between latitude 50° 32' and 40° 22' North and longitude 70° 50' and 90° 28' East and occupies an area of about 21, 481 km<sup>2</sup> in land mass (12).

### **STUDY DESIGN AND STUDY POPULATION**

The study was a cross-sectional survey conducted on adult residents (20 – 70 years of age) of Calabar Metropolis comprising Calabar Municipality and Calabar South Local Government Areas. Adults who were disabled and immobilized, pregnant and breastfeeding were excluded from the survey.

### **SAMPLING PROCEDURE**

Using multistage sampling technique, the city was first divided into clusters based on the total number of the wards that make up the metropolis. Out of a total of 22 wards in Calabar Metropolis, nine wards (four wards from Calabar Municipality and five wards from Calabar South) were randomly selected; using a table of random numbers, a total of 360 households (40 households from each ward) were selected from the nine wards. From each of the households selected, eligible individuals were sampled, in large households three members were sampled and in small households two members were sampled. The list of wards and pooling units obtained from the Independent National Electoral Commission was utilized in the randomized sampling procedure. Marian Market, Watt Market, and the two primary campuses in the Metropolis (University of Calabar and Cross River State University of Technology) were purposively selected. In contrast, the respondents were selected using a simple random sampling technique. Adult students and staff members were randomly sampled according to colleges, faculties, or centres.

### **Recruitment and Training of Research Assistants**

Four research assistants were recruited and trained on the standard protocols of nutritional/dietary assessment and data collection on food consumption patterns and related surveys using the adapted World Health Organization STEPwise instrument (13).

### Data Collection

Data collection was carried out using the WHO STEPwise approach for data collection on NCDs and their combined risk factors, emphasizing food consumption. The instrument was used to generate data on the study population's socio-demographic characteristics and food consumption habits. The adapted questionnaire was applied in the field using the interviewer-administered method.

### Data and Statistical Analysis

Coding, entering and summarizing the generated data were done using the Statistical Product and Service Solutions (SPSS) version 22.0. The data analysis was carried out with descriptive statistics, including frequency and percentage. The food consumption habits of the respondents based on food groups were interpreted using 12 food groups.

### Ethical Considerations and Consent Notes

Approval to conduct the study was given by the Research Ethical Committee of the University of Calabar Teaching Hospital, Calabar, Nigeria. The ethical approval is attached as an appendix in this work, with the **ethical approval number** given as: - **UCTH/HREC/33/568**. The ethical protocols and standards were not breached in this study. It was ensured that the respondents read through the informed consent forms and endorsed them before data collection from the respondents. Detailed information on the objectives and significance of the study was provided on the consent forms.

## RESULTS

### Socio-Demographic Characteristics of the Respondents

There were 46.0% males and 54.0% females in the study, as shown in Table 1. The majority (89.2%) of the population were young and middle-aged adults (20-59 years). Borehole (50.6%) was the most common source of drinking water among the participants, followed by packaged water (dispenser, bottled, and sachet water) (31.2%). In comparison, piped-borne water (water board supply) (18.2%) was the minor source of drinking water. Most of the respondents had water system as their toilet facility at home (92.4%). Respondents who had pit latrines and buckets as toilet facilities at home were 5.2% and 2.4%, respectively. The female members of the

population carried out the use of buckets as a toilet facility.

### Feeding practices of the respondents

Table 2 presents some feeding practices of the respondents. The Table shows that 39.4% of the respondents went to work, market, or shop with meals prepared at home. The proportion (44.2%) of those who went to work, market, or shops with meals prepared at home did that occasionally. Consumption of sweetened soft drinks 3-4 times weekly (28.9%) was the highest recorded. Ninety-four percent (94%) of the respondents skipped one or more meals in a day. Breakfast (59.2%) was the meal skipped most often by the respondents. Snack consumption (3-4 times per week) was 31.4%. Fast food centre patronage was recorded at 78.2%. A higher proportion of the respondents (44.2%) took 3-5 glasses or 2-3 sachets of water in a day.

1 glass of water is equivalent to 375ml of water; 1 sachet of water is equivalent to 583ml of water.

### Snack consumption of the respondents

Figure 1 presents the various types of snacks consumed by the respondents. It shows that groundnut (89.0%) and biscuits (83.2%) were the most consumed snacks, while "okpa" (9.4%) and locally baked melon (6.2%) were the least consumed snacks by the respondents. Consumption of cake and other pastries was 48% and 60.2%, respectively, while consumption of corn, garden eggs, and cucumber was 34.6%, 58.8%, and 62.8%.

### Dietary habits of the respondents based on food groups

Figure 2 shows the dietary patterns of the respondents. It indicates that the most consumed foods were spices and beverages (100%), oils and fats (96.8%), and vegetables (94.8%); while milk and milk products (29.2%), fruits (27.8%), sugars (22.2%), and eggs (19.0%) were the least foods consumed by the respondents.

## DISCUSSION

The majority of the respondents being young and middle-aged adults could be due to the indisposition of the elderly individuals towards the study. More females than males participating in the study can be attributed to women's natural inclination and responsibilities towards the

**Table 1: Demographic and socioeconomic characteristics of the respondents**

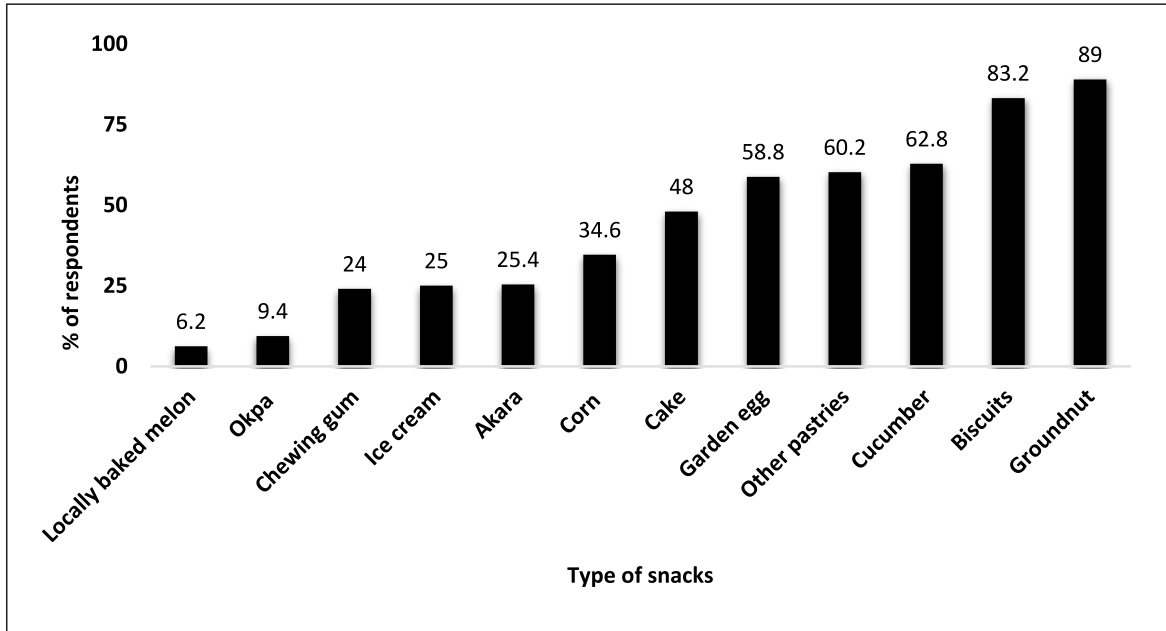
| Characteristics                 | Gender            |                   | Total             |
|---------------------------------|-------------------|-------------------|-------------------|
|                                 | Male<br>F (%)     | Female<br>F (%)   | F (%)             |
| <b>Gender</b>                   | 230 (46.0)        | 270(54.0)         | 500(100.0)        |
| <b>Age Groups (Years)</b>       |                   |                   |                   |
| 20 – 39                         | 152(66.1)         | 181(67.0)         | 333(66.6)         |
| 40 – 59                         | 61(26.5)          | 57(21.1)          | 118(23.6)         |
| 60 and above                    | 17(7.4)           | 32(11.9)          | 49(9.8)           |
| <b>Marital Status</b>           |                   |                   |                   |
| Single                          | 113(49.1)         | 142(52.6)         | 255(51.0)         |
| Married                         | 109(47.4)         | 115(42.6)         | 224(44.8)         |
| Separated                       | 0(0)              | 6(2.2)            | 6(1.2)            |
| Divorced                        | 0(0)              | 2(0.7)            | 2(0.4)            |
| Widowed                         | 8(3.5)            | 5(1.9)            | 13(2.6)           |
| <b>Toilet Facility</b>          |                   |                   |                   |
| Water system                    | 212(92.2)         | 250(92.6)         | 462(92.4)         |
| Pit latrine                     | 18(7.8)           | 8(3.0)            | 26(5.2)           |
| Bucket                          | 0(0)              | 12(4.4)           | 12(2.4)           |
| <b>Source of drinking water</b> |                   |                   |                   |
| Borehole                        | 129(56.1)         | 124(45.9)         | 253(50.6)         |
| Water board supply              | 44(19.1)          | 47(17.4)          | 91(18.2)          |
| Packaged water                  | 57(28.4)          | 99(36.7)          | 156(31.2)         |
| <b>Total</b>                    | <b>230(100.0)</b> | <b>270(100.0)</b> | <b>500(100.0)</b> |

nutritional affairs of the households and members of most populations. The large dependence on individual borehole as source of drinking water rather than public water board supply as well as the recordable percentage of the population using pit latrines and buckets as toilet facilities shows that the government is not doing enough to meet one of the Sustainable Development Goals (SDGs) – clean water and sanitation, that is; water, sanitation and hygiene (WASH). Thus, the socio-demographic indices evaluated in the study showed that the population is struggling with poor infrastructure and basic amenities as some of the major challenges witnessed in most developing and underdeveloped economies of the world, with Nigeria and many African countries having the center stage (14). It is documented that the fundamental causes of

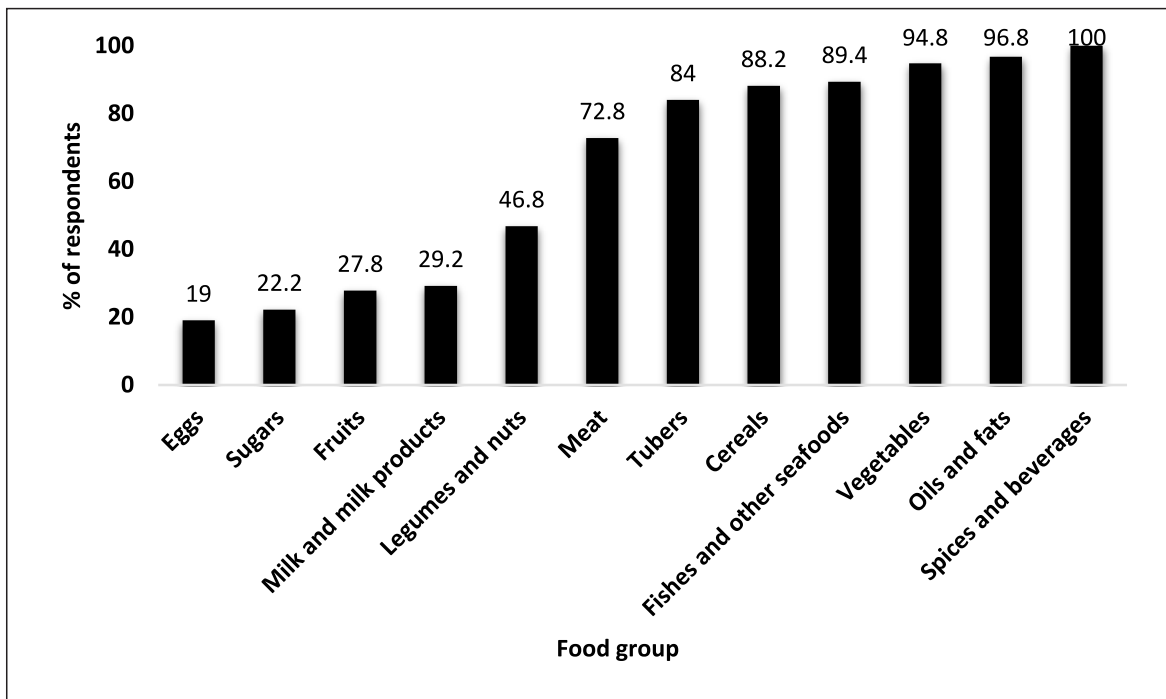
the worldwide obesity epidemic are high-fat energy-dense diets and other lifestyle issues (15), predisposing the global population to diet-related non-communicable diseases. In the present study, the food consumption habits of the population favoured fast food centre/restaurant patronage as a high proportion of them did not go to work or market with their homemade meals. Consequently, almost a half of the study population replaced their breakfast and lunch with snacks and sweetened soft drinks at work, school or market, at least every other day. The high prevalence of fast food centres and restaurants patronage observed in this study is in line with the reports of various studies within Nigeria and other sub-Saharan African countries that the adoption of the western lifestyles including proliferation of fast food centres is

**Table 2: Feeding practices of the respondents**

| <b>Feeding Practice</b>  | <b>Frequency</b> | <b>Percentage</b> |
|--|------------------|-------------------|
| <b>Going to work or market with meals prepared at home</b>         |                  |                   |
| Yes  | 197              | 39.4              |
| No   | 303              | 60.6              |
| <b>Number of times in a week meals are taken to work or market</b> |                  |                   |
| 5-7 times  | 44               | 22.3              |
| 3-4 times  | 57               | 28.9              |
| <3 times   | 9                | 4.6               |
| Occasionally   | 87               | 44.2              |
| <b>Consumption of sweetened beverages in a week</b>                |                  |                   |
| 5-7 times  | 30               | 6.0               |
| 3-4 times  | 89               | 17.8              |
| <3 times   | 185              | 37.0              |
| Occasionally   | 188              | 37.6              |
| Never  | 8                | 1.6               |
| <b>Skipping of meals</b>   |                  |                   |
| Yes  | 470              | 94.0              |
| No   | 30               | 6.0               |
| <b>Meals skipped most often</b>                                    |                  |                   |
| Breakfast  | 278              | 59.2              |
| Lunch  | 176              | 37.4              |
| Supper   | 16               | 3.4               |
| <b>Snack frequency in a week</b>                                   |                  |                   |
| 5-7 times  | 74               | 14.8              |
| 3-4 times  | 157              | 31.4              |
| <3 times   | 128              | 25.6              |
| Occasionally   | 141              | 28.2              |
| <b>Patronage of fast food centres/restaurants</b>                  |                  |                   |
| Yes  | 391              | 78.2              |
| No   | 109              | 21.8              |
| <b>Frequency of patronage of fast food centres in a week</b>       |                  |                   |
| 5-7 times  | 21               | 5.4               |
| 3-4 times  | 41               | 10.5              |
| <3 times   | 101              | 25.8              |
| Occasionally   | 228              | 58.3              |
| <b>Quantity of water intake in a day</b>                           |                  |                   |
| < 3 glasses or < 2 sachets   | 67               | 13.4              |
| 3-5 glasses or 2-3 sachets   | 221              | 44.2              |
| 6-8 glasses or 4-5 sachets   | 154              | 30.8              |
| More than 8 glasses or 5 sachets                                   | 58               | 11.6              |
| <b>Total</b>   | <b>500</b>       | <b>100.0</b>      |



**Figure 1: Types of snacks consumed by the respondents**



**Figure 2: Food consumption habits of the respondents according to the food groups**

contributory to the high prevalence of obesity and related NCDs within the region (16-19). The high patronage of fast food centres and restaurants in the study area could also be due to the urbanized system and high social life in the area. Previously, (19) had reported that urbanization promotes fast food centre patronage.

Although the detailed food intake was not studied to better estimate the amount of fats and oils used in cooking, personal observation is that an average soup or stew served in most restaurants and fast food centres in Calabar is so oily, as one can scoop quite a good quantity of oil from such soups and stews. The high consumption of spices and beverages could be as a result of increased awareness about the health benefits of spices in the form of ginger, garlic, turmeric, "uziza" (*Piper guineense*), and spicy vegetables like curry leaves, scent leaves, and *Piper guineense* leaves (hot leaves). In contrast, beverages especially sweetened soft drinks and various types of tea were consumed indiscriminately as part of fluid sources, in-between meals, and primary meal replacement, as evident in the study area.

Compared to the high consumption of vegetables, the low fruit consumption could be because Calabar is known for assorted vegetable dishes. The low fruits consumption could result from seasonality/availability and cost of the fruits as the study population is an urban area where farming activities are minimal. Low intake of fruits was also reported among adult populations in Abia State, south-east, and Lagos State, south-west, Nigeria (20, 21). Previous study identified educational status, income, female gender and marriage to be associated with adequate intake of fruits and vegetables suggesting that knowledge and prevalence of adequate intake of fruits and vegetables were low especially among young unmarried men who were of low socioeconomic status in Lagos (21). Regardless of the increasing focus on the health benefits of fruits and vegetables, their consumption was below the recommended intake among adults as reported in South Africa and the United States of America (22). Fruits and vegetables are recommended in the diet because of their high concentrations of dietary fibre, vitamins, minerals, especially electrolytes, and phytochemicals, especially antioxidants (23). Various reviews have associated low intake of

fruits and vegetables with chronic diseases such as cardiovascular diseases, high blood pressure, hypercholesterolemia, osteoporosis, many cancers, chronic obstructive pulmonary diseases, respiratory problems, and mental health (24-28). It was also documented that inadequate consumption of fruits and vegetables is a major global risk factor for morbidity (associated with micronutrient deficiencies) and premature mortality (21).

Compared to lower consumption of legumes, the high fish and seafood consumption can be attributed to Calabar being a riverine environment. The finding reveals that fish and seafood were the significant sources of protein in the respondents' diet. This is similar to the findings of a previous study (20). They reported that the majority (70.0%) of the adult study population in Abia State, Nigeria, used fish as their main and daily source of protein. The availability and affordability of fish and seafood are easy in the study area; hence, the population's needs for protein, essential fatty acid/polyunsaturated fatty acid, and several minerals and vitamins of the population might not be challenging to attain. High consumption of cereals, roots, and tubers showed that both food groups were the primary food staples in the study area as widely obtainable in Nigeria (29, 30). The macronutrient needs of the study population are primarily met with cereals and roots and tubers, including plantain, due to their high availability and affordability in the area. Similarly, cassava, grains, and yams were the most consumed foods among the adult population of Abia State in Nigeria (20). Generally, in the southern zones of Nigeria, yam and cassava and their products were consumed almost daily by over 70% of the population; they consumed more than once a day in some cases (30). Poor water intake observed in the study compared with the recommended daily water intake of adults could be attributed to high beverages consumption by the population as an alternative source of fluid. In a similar study, four major unhealthy dietary patterns were found that included little or no water consumption among U.S. adults (31). Water consumers drank fewer soft/fruit drinks and consumed 194 fewer calories per day (31). The previous study had observed that water consumers consumed more fruits, vegetables, and low- and medium-fat dairy products (31). High water consumption is linked



with healthier eating patterns and is more likely to be followed by more educated and older adults than younger and less educated adults (31). Therefore, individuals who drink less water at meal times or throughout the entire period of a day are often tempted to consume more food and other fluid sources such as energy-laden beverages as alternative to water, thereby predisposing them to overweight and obesity.

The high snacks and sweetened beverages consumption observed in this study is consistent with nutrition transition characterized by a shift from traditional diets to more energy-dense, processed and packaged foods made of more added sugar, salt, fat, and animal products - containing high levels of cholesterol (3, 32, 33). Most snacking patterns were associated with higher energy intakes in a previous study (34). Groundnut and biscuits were the most consumed snacks among the study population, whereas the moderately consumed snacks were cucumber, other pastries, garden eggs, and cakes. Although there was high snacks consumption, it could be stated that there was a wide range of snacks preferences with different caloric classifications. It was reported that added sugars intakes were higher in the cakes/cookies/pastries, sweets, milk desserts, and soft drinks patterns of snacks and beverages consumption; whereas miscellaneous snacks, vegetables/legumes, other grains, and whole fruit were associated with better diet quality scores (34).

## CONCLUSION

The replacement of breakfast and lunch with snacks and sweetened beverages as well as high patronage of fast food centres/restaurants, low fruit consumption and inadequate water intake recorded in the population are indicative of unhealthy dietary habits. This calls for professional actions by the nutrition stakeholders to raise more nutritional awareness and encourage the adult residents of the metropolis to make healthy food choices such as consumption of moderate fats and oils, increasing the intake of fruits, maintaining high consumption of vegetables, limiting the intake of sugars and sweetened beverages, ensuring adequate daily water intake, which will help the individuals to prevent diet-related chronic diseases that could arise as a result of some of their present dietary practices.

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## Declaration of interest statement

No conflicts of interest were declared.

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## Authors' Contributions

Conceptualization and design of the study: Ide, T. J. P., and Ene-Obong, H. N. Data collection: Ide, T. J. P., Essien, N. A., and the research assistants. Analysis of data: John, E. P., and Essien, N. A. Interpretation of statistical data: Ene-Obong, H. N. and Ndiokwelu, C. I. Drafting of the manuscript: Ide, T. J. P. Critical review of the manuscript: Essien, N. A., John, E. P., Odo-Felix, U. S., Ndiokwelu, C. I., and Ene-Obong, H. N.

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