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# Dietary Habits and Nutrition Knowledge of Secondary School Students in Umuahia North Local Government Area, Abia State

***Igbokwe, C.C.[1] and Ndubuka, C.I.[1]**
[1]Department of Vocational Education,
Faculty of Education, Abia State University, Uturu

*Corresponding author: igbokwe.cc@abiastateuniversity.edu.ng

**Abstract**

This study investigated the dietary habits and nutrition knowledge of secondary school students in Umuahia North Local Government Area, Abia State. A cross-sectional survey design was adopted for the study. The research was conducted in eight secondary schools, with a sample of 240 students (males and females), selected using a multi-stage sampling technique. Dietary habits were evaluated using a structured questionnaire covering feeding patterns, food preferences, and consumption of fruits and vegetables. Nutrition knowledge was assessed using 10 general nutrition knowledge questions. Results indicated that 61.1% of the respondents were aged 16-18 years, while 33.2% were above 18 years. Regarding dietary habits, 71.6% of the students ate three times daily, and 16.8% ate four times daily. The majority (87.0%) based their food choices on availability. Few students (16.8%) skipped meals, with lunch being the most frequently skipped meal (65.7%), compared to breakfast (34.3%). All students (100%) consumed snacks, with biscuits being the most consumed snack (87.5%). The nutrition knowledge results revealed that 45.7% of the students had average nutrition knowledge, while only 27.4% demonstrated good knowledge. Statistical analysis was performed with Microsoft Excel using descriptive statistics such as frequencies, percentages, and mean scores, and inferential statistics were applied to assess the relationships between dietary habits and nutrition knowledge. In conclusion, the study highlights the need for well-structured nutrition education programs to be integrated into the secondary school curriculum. These programs would enhance students' nutrition knowledge and promote healthier dietary practices, contributing to improved overall well-being.

**Keywords:** Dietary habits, Nutrition Education, Nutrition Knowledge, Healthy Living.

## Introduction

Schools play an important role in helping students establish healthy eating behaviour by providing nutritious and appealing foods and beverages, consistent and accurate messages about good nutrition and ways to learn about and practice healthy eating (CDC, 2019). Nutrition as the science of food and its relationship to health has been recognized in recent years as the cornerstone of socioeconomic development (Ikeh, 2020). It is the set of integrated processes by which cells, tissues, organs and the whole

body acquire the energy and nutrients for normal structure and function, which is achieved at the body level through dietary supply, and the capacity of the body to transform the substrates and co-factors necessary for metabolism (Gibney et al., 2009;Ikeh, 2020), Adequate nutrition is important for a variety of reasons, including optimal cardiovascular function, muscle strength, respiratory ventilation, protection from infection, healing of wounds and psychological well-being (Ikeh, 2020). The role of healthy eating in the prevention of chronic and infectious diseases has been well documented. For instance, Katsourini et al. (2010) noted that a balanced diet and consumption of food prepared following good practices are factors that contribute to maintaining a healthy lifestyle. This implies that a good knowledge and understanding of dietary choices and modification of lifestyle will create a positive impact in addressing high blood pressure and reduction of cholesterol in the blood.

Dietary intake refers to the daily eating patterns of an individual, including specific food and calories consumed and relative quantities (Food and Drug Administration (FDA), 2015). Nutritional intake as well as the dietary status also refers to the availability of nutrients and calories in the individual's diet compared to nutrition recommendations for the individual's age group and overall health status (Food and Drug Administration (FDA). Nutrition needs vary among individuals, depending on their age, height, weight, presence of acute or chronic diseases, digestion, and utilization of food (metabolism), mobility level, energy required for daily activities, and lifestyle (i.e. whether an individual lives alone, with spouse or family caretaker, or in a care facility such as assisting living or long-term care) (Gibney et al., 2009). Bailey et al.(2009) observed that dietary patterns represent a broader picture of food consumption and may thus be more predictive of disease risks than individual foods/nutrients. A dietary pattern is a framework that people tend to follow when making choices about what to eat. Dietary habits in childhood and adolescence impact growth, development, and the prevalence of disease throughout the life cycle. Healthy eating habits should thus be established during childhood and adolescence (Essien et al., 2014). Proper dietary choices require the consumption of vitamins, minerals, carbohydrates, proteins, and fats. Dietary habits and choices play a significant role in human health (Preedy &Watson, 2010).

According to the World Health Organization (2020), dietary recommendations for individuals involve balancing energy intake with energy expenditure to avoid unhealthy weight gain. This diet includes limiting intake of free sugars, reducing salt intake and a shift in fat consumption away from saturated fats and trans fat to unsaturated fat and also gearing towards the goal of eliminating industrially produced trans-fat. It is the position of the academy of nutrition and dietetics that children and adolescents should have access to safe and healthy foods that promote physical, cognitive, and social growth and development (Roy et al., 2018). Adolescence is the phase of life between childhood and adulthood, from ages 10 to

19. It is a unique stage of human development and an important time for laying the foundations of good health (World Health Organisation [WHO], n.d). At this age most of these adolescents are in secondary schools (Csikszentmihalyi, 2021). Secondary school students are children in the second stage in their formal education which usually begins about the age of 11 to 13 and end usually between the ages of 15 to 18 (Britannica, 2018). In Nigeria, 57% of males and 43% of females attend secondary schools (NDHS, 2018). Since poor nutritional practices, choices and dietary habits have been shown to increase during adolescence, the need for nutrition education activities becomes clear.

In Nigeria, meal skipping, consumption of fast foods along with soft drinks and low consumption of fruits and vegetables were the main eating habits displayed by adolescent urban schoolgirls particularly in the study area. Research evidence has recorded findings where 60% of the participants consumed fast foods and 76% of them consumed fast foods along with soft drinks among adolescent students in secondary schools (Onyiriuka et al., 2013). Poor nutritional choices, practices, and dietary habits have been shown to increase during adolescence. An unbalanced diet with a reliance on energy-dense but nutrient poor foods is one of many contributing but important factors to the obesity epidemic (Hormenu, 2022). Although there are various modes of nutrition education activities, the effectiveness on dietary habits remains unclear hence this research work which investigated the dietary habits and nutrition knowledge of secondary school students in Umuahia North Local Government Area of Abia State.

**Objectives of the study**

The general objective of the study was to determine the dietary habits and nutrition knowledge of secondary school students in Umuahia North Local Government Area of Abia State. Specifically, the study sought to:

1. determine the dietary habits of the students.
2. assess the nutrition knowledge of the students.
3. identify the factors that influence the type of food that is eaten by the students.

**Methodology**

**Research design:** The study adopted the cross-sectional survey design. This design was selected because it involves collecting data at a single point in time to provide a snapshot of the population's characteristics and behaviour. It also allows for the examination of multiple variables simultaneously and is suitable for exploring associations between variables.

**Population of study:** The population of the study consisted of all SS II and SS III students in the 12 public secondary schools in Umuahia North local government area of Abia State.

**Sample Selection**: A two-stage sampling technique was used to select the study sample.

In stage 1, eight (67%) of the twelve secondary schools were selected using balloting with replacement. In the second stage, 30 students were randomly selected

from each of the eight public secondary schools using a table of random numbers, resulting in a sample size of 240.

**Instrument of data collection:** A structured questionnaire titled "Dietary Habit and Nutrition Knowledge Questionnaire" was adapted from Nwankwo (2022) and modified to collect quantitative data on demographic characteristics, dietary habits, and nutrition knowledge. The questionnaire consisted of closed-ended questions and was divided into four sections. Section 1 focused on the demographic characteristics of the participants, while Section 2 addressed their dietary habits. Section 3 contained questions assessing the nutritional knowledge of the students, and Section 4 explored the factors influencing the type of food eaten by the students. The response options were in "Yes" and "No" categories or by ticking of appropriate responses.

**Validity/Reliability of the Instrument:** The questionnaire was validated by three academics: two from the Home Economics unit of the Department of Vocational Education and one from the Measurement and Evaluation unit of the Psychological Foundations Department at Abia State University, Uturu. These academics ensured that the questions aligned with the research objectives. Additionally, the questions underwent testing for clarity to prevent ambiguity in language. The test-retest method was employed, using a sample of 20 students who were not part of the main study sample. This process yielded a reliability index of 0.8.

**Method of data collection:** Preliminary visits were made to the schools to request the cooperation of the principals of the various schools. Data was collected over four weeks. Two schools were visited per week. Two trained research assistants were used in each of the schools for the duration of data collection. The purpose and relevance of the study were explained to them. Participation in the study was entirely voluntary, and participants were given the right to withdraw from the study at any time without repercussions. Before data collection, participants were informed about the study's purpose, and procedures. They were allowed to provide voluntary consent to participate by signing a consent form before proceeding to fill out the questionnaire.

**Data and Statistical Analyses:** Descriptive statistics such as frequencies and percentages were employed to analyze demographic characteristics, dietary habits, and nutrition knowledge. Microsoft Excel was used in data collation and calculation of descriptive statistics.

## Results and Discussion

### Demographic characteristics of the participants

The demographic characteristics of the secondary school students in the study reveal a predominantly male representation, accounting for 55.4% of the sample, while females constitute 44.6%. In terms of age distribution, most participants, at 61.2%, fall within the 16 to 18 years age range, with the remaining 38.8% being under 18 years old. Christianity emerges as the dominant religion among the students, with 90.9% identifying as Christians, while smaller proportions identify as Muslims (3.8%) or adherents of traditional religions (5.3%). Ethnically, most participants identify as

Igbo, representing 83.8% of the sample, followed by Yoruba at 10.8% and Hausa at 5.4%.

**Objective 1: Dietary Habits of the Students**

The dietary habits of secondary school students, as depicted in Table 1 reveal several noteworthy patterns. Regarding daily food consumption, most students (71.6%) reported consuming meals three times a day, with smaller proportions opting for two (5.8%) and four times (16.8%) daily. Notably, a significant portion (16.7%) acknowledged skipping meals, predominantly breakfast (35%) or lunch (65%). The primary reasons cited for skipping meals include disliking the food (35%) or lacking time (35%). Despite meal skipping, snack consumption remains prevalent, with all participants (100%) reporting snack consumption, notably biscuits (87.5%), buns (64.4%), and egg rolls (36.1%). Weekly fruit and vegetable consumption also varied, with a considerable portion (61.0%) consuming fruits twice a week and a majority (55.3%) consuming vegetables thrice weekly. Food consumption patterns also indicate flexibility, with the majority (83.1%) eating when food is available rather than at specific times, and rice emerging as the favourite food choice among students (92.3%), followed by noodles (60.1%) and bread (58.7%). These findings offer insights into the dietary behaviour and preferences of secondary school students, highlighting areas for potential intervention and education regarding healthier eating habits.

**Table 1 Dietary habits of the respondents**

| *Variables* | *f* | % |
|---|---|---|
| *Daily food Consumption* | | |
| Once | - | - |
| 2 times | 14 | 5.8 |
| 3 times | 172 | 71.6 |
| 4 times | 40 | 16.8 |
| More than 4 times | 14 | 5.8 |
| *Meal Skipping* | | |
| Yes | 40 | 16.7 |
| No | 200 | 83.3 |
| *Meals Skipped (n=40)* | | |
| Breakfast | 14 | 35 |
| Lunch | 26 | 65 |
| Dinner | - | - |
| Breakfast and lunch | - | - |
| Lunch and dinner | - | - |
| Breakfast and dinner | - | - |
| *Reason for Skipping Meal (n=40)* | | |
| Don't like the available food | 14 | 35 |
| No time | 14 | 35 |

| | | |
|---|---|---|
| Don't normally feel hungry | 12 | 30 |
| Do not want to grow fat | - | - |
| *Snack Consumption* | | |
| Yes | 240 | 100 |
| No | - | - |
| *Snacks Consumed* | | |
| Biscuits | 210 | 87.5 |
| Buns | 155 | 64.4 |
| Meat Pie | 74 | 30.7 |
| Soft drink | 80 | 33.2 |
| Egg Roll | 87 | 36.1 |
| Fish Roll | 95 | 39.4 |
| *Weekly Fruits Consumption* | | |
| None | - | - |
| Once | 27 | 11.1 |
| 2 times | 146 | 61.0 |
| 3 times | 53 | 22.1 |
| 4 times | 14 | 5.8 |
| More than 4 times | - | - |
| Weekly Vegetable Consumption | | |
| None | - | - |
| Once | 27 | 11.1 |
| 2 times | 40 | 16.8 |
| 3 times | 133 | 55.3 |
| 4 times | 40 | 16.8 |
| More than 4 times | - | - |
| When Food is Eaten | | |
| Anytime | 14 | 5.8 |
| When food is available | 197 | 83.1 |
| When hungry | 27 | 11.1 |
| When less busy | - | - |
| Favorite Food | | |
| Rice | 222 | 92.3 |
| Beans | 100 | 41.8 |
| Noodles | 144 | 60.1 |
| Yam | 52 | 21.6 |
| Bread | 141 | 58.7 |
| Spaghetti | 77 | 32.2 |
| Cassava (Akpu) | 38 | 15.9 |

**Objective 2: Nutritional Knowledge of the Secondary School Students.**

Table 2 provides insights into the nutritional knowledge level of secondary school students, encompassing various aspects of dietary understanding. A significant portion (39.0%) of students identified an adequate diet as any food that appears healthy, while 22.6% recognized it as a diet containing all

essential nutrients. 21.6% correctly defined an adequate diet as one containing all essential nutrients in their right proportions. Furthermore, the majority (92.8%) demonstrated awareness of the six classes of food, with carbohydrates recognized by 83.2% as the primary source of energy. Proficiency in identifying the food classes to which soybean and fibre belong was evident, with 79.2% recognizing soybean as a protein source. Moreover, a substantial number of students correctly identified foods rich in essential nutrients, such as carrots (50%) as a source of vitamin A and red meat (22.5%) as a source of iron. Additionally, the majority (72.1%) exhibited knowledge of the best method for preserving raw foods, acknowledging the need to separate them from cooked foods and store them in the refrigerator.

**Table 2: Nutritional Knowledge of the secondary school students**

| VARIABLE | RESPONSES | | | |
|---|---|---|---|---|
| | YES | | NO | |
| | F | % | F | % |
| Knowledge of adequate diet *a diet containing all essential nutrients in their right proportions | 52 | 21.6 | 188 | 78.4 |
| Knowledge of the number of classes of food there are *6 | 223 | 92.8 | 17 | 7.2 |
| Knowledge of the class of food providing the best source of energy *Carbohydrates | 199 | 83.0 | 41 | 17.0 |
| Knowledge of the class of food to which soybeans belong *Protein | 190 | 79.2 | 50 | 20.8 |
| Knowledge of the class of food most present in green leafy vegetables and fruits *Vitamins and Minerals | 142 | 59.2 | 98 | 40.8 |
| Knowledge of food containing fibre *Beans | 69 | 28.8 | 171 | 71.2 |
| Knowledge of food that is a good source of Vitamin A. *Carrots | 120 | 50.0 | 120 | 50.0 |
| Knowledge of food that is a good source of iron *Red meat | 54 | 22.5 | 186 | 77.5 |
| Knowledge of the best way of preserving raw food such as meat or fish *Separated from cooked meat/fish and stored in the refrigerator | 173 | 72.1 | 67 | 29.9 |

**Objective 3: Factors that influence the type of food eaten by the students**

Table 3 illustrates the factors influencing the food choices of secondary school students, shedding light on significant determinants. The majority (87.0%) identified the availability of food as the primary factor guiding their dietary decisions, highlighting the importance of food accessibility in shaping eating habits. A smaller proportion attributed their food choices to friends (6.3%), emphasizing the influence of social factors on dietary behaviour. Additionally, a minority of students considered body size (1.4%) and personal food preferences (5.3%) as determinants of their food consumption patterns.

**Table 3: Factors that determine foods eaten**

| Variables | Frequency | Percentage (%) |
|---|---|---|
| Friends | 15 | 6.3 |
| Availability of food | 209 | 87.0 |
| Body size | 3 | 1.4 |
| Food choice | 13 | 5.3 |
| **Total** | **240** | **100** |

**Discussion of findings**

The findings on the dietary habits of the students, findings showed that many (71.6%) of students ate three times each day, while some (16.86%) ate four times a day. None of the students indicated eating only once a day. This finding is in line with that of Otuneye et al. (2017), who studied the eating habits of secondary school students in Abuja Municipal and found that most of the students had complete meals each day. The finding on skipping meals showed that only a small proportion (16.8%) of them skipped meals with the majority (65.7%) skipping lunch and 34.3% skipping breakfast. The finding might be because many secondary school students in this part of the world do not usually go to school with lunch packs, thus, necessitating their missing lunch (Zarychta et al., 2016). During the interaction with the students, some reported that the reason for skipping meals was lack of time or because they were not used to the kinds of meals available. This habit may negatively affect the nutrient intake of the students as well as their health and could lead to reduced energy levels during school hours. As the findings of the study showed, all the students consumed snacks during school hours. This might be the reason a good number of them skipped meals. The snacks might be consumed to make up for the skipped meals. Most snacks and soft drinks sold in schools are usually sugar-dense and are therefore not healthy diets. The implication is that though the students may feel satisfied and full, this dietary pattern could contribute to the development of chronic health conditions such as obesity and metabolic disorders, ultimately affecting the long-term health and well-being of the students (Nwankwo, 2022). Further findings on the consumption pattern showed that many students consumed fruits at least two times weekly. It was also found that more than half of the students consumed vegetables at least 3 times weekly. The consumption of these fruits and vegetables implies that students through these sources can to some extent, make up for their poor eating habits. As Slavin and Lloyd (2012) noted, fruits and vegetables as part of the

diet provide minerals and vitamins and are sources of phytochemicals. This finding contrasts with the low consumption of fruits and vegetables as found by Okafor et al. (2018) in a study among female undergraduates of the University of Nigeria, Nsukka. While it is noteworthy that more than half of the students consume fruits and vegetables at least two or three times a week, it falls below the recommended daily intake. The World Health Organization (WHO) recommends that adolescents should consume at least five servings of fruits and vegetables daily. As earlier noted, fruits and vegetables are rich sources of vitamins and phytochemicals which are essential for overall health and well-being. Therefore, the relatively low consumption frequency among students suggests a potential deficiency in essential nutrients, which could negatively impact their health and development. Aside from the number of times one eats in a day, the timing for the consumption of those foods is also of great importance. In this study, the number of times in which meals were eaten by the students revealed that the majority (83.2%) of the students ate when food was available, and a few (11.1%) ate when hungry. The findings highlight important implications for their dietary habits and overall health. Eating primarily based on food availability can have several implications for the participants. Firstly, it may lead to irregular eating patterns, where meals are consumed at inconsistent times throughout the day. Irregular eating patterns have been associated with poor metabolic health, including increased risk of obesity, type 2 diabetes, and cardiovascular disease (Hemmer et al., 2021). Additionally, eating in response to external cues rather than hunger signals can disrupt the body's natural hunger and fullness cues, potentially leading to overeating or under-eating.

The findings on the nutritional knowledge level of the students showed that only a few (21.6%) of the students knew what an adequate diet entails. Many of them know about the six (6) classes of food, that carbohydrates are a good source of energy, that soybeans are a good source of protein, and that green leafy vegetables alongside fruits are good sources of vitamins and minerals. However, a good number of students do not know foods that are good sources of fiber. This result on the awareness of good sources of fiber is similar to that of Essien et al., (2014), who also found out that most of the students could not identify good sources of fiber. Only half (50.0%) of the students knew that carrot is a good source of vitamin A. This limited knowledge may hinder their ability to make informed food choices and maintain a balanced diet essential for growth, development, and overall health. A relatively high proportion of the students know that the best way to preserve raw food is to separate it from cooked food and store it in a refrigerator. Understanding the importance of separating raw and cooked foods and storing them properly is crucial for maintaining food safety and preventing food-borne illnesses. By following proper storage practices, such as storing perishable raw foods in the refrigerator and keeping them separate from cooked or ready-to-eat foods, the risk of bacterial contamination and food spoilage is significantly reduced. The study further observed that a high proportion of the students do not have adequate knowledge of what constitutes healthy nutrition. This is in relative agreement with Ajayi (2023) who showed that 52.0% of students in an urban slum setting in Ibadan, Oyo State, Nigeria indicated that they need nutrition

information on healthy food. It is also in agreement with the findings of Micheal (2023) about the nutrition knowledge of secondary school students in Aba, Abia State.

The findings on the factors that determined the foods eaten indicate that the major factor was availability of the food (87%). Other minor factors were friends (6.3%), food choice (5.3%), and body size (1.4%). This is in line with common knowledge and sense. People may want to eat certain foods but their availability or nonavailability more than the resources to purchase them determines whether they would be eaten or not. Friends can also influence the choice of food of their peers. At the age level of the students, peer influence can be relatively strong. Overall, the findings underline the crucial role of food availability in shaping dietary habits among secondary school students, with social influences and personal preferences also playing notable but comparatively lesser roles.

## Conclusion

This study aimed to achieve three main objectives which were to determine the dietary habits of secondary school students, assess their nutrition knowledge, and identify factors influencing their food choices. Regarding dietary habits, findings revealed that while most students consumed meals three times daily, a significant proportion skipped meals, predominantly lunch. Snack consumption was prevalent, with biscuits and soft drinks being popular choices. Despite moderate fruit and vegetable consumption, intake fell below the recommended levels. Nutrition knowledge varied among students, most demonstrating awareness of food classes and nutrient sources. However, misconceptions persisted, particularly regarding dietary fibre and vitamin A sources. Factors influencing food choices were primarily attributed to food availability, with social influences and personal preferences playing lesser roles. These findings underscore the importance of targeted nutrition education programs to promote healthier dietary habits and improve nutritional literacy among secondary school students.

## Recommendations

Based on the findings of this study, the following recommendations have been made:

1. There is a need for well-planned nutrition education programs in secondary schools that will be incorporated into their curriculum so that secondary school students can have a good knowledge of nutrition in order to foster good dietary practices and healthy life.
2. Dietary habits and nutrition education should be given to secondary school students to help in balance diet and proper nutritional intake in the Umuahia North Local Government Area of Abia State.

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