

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background to the study

The United Nations Food and Agriculture Organisation- FAO (2015) estimated that “about 795 million people of the 7.3 billion people in the world or one out of nine suffered from chronic undernourishment in 2016. Almost all the hungry people(780 million) live in developing countries, representing 12.9 percent, or one in eight of the population of developing countries”. “Sub-Saharan Africa including Nigeria is the region with the highest prevalence of undernourishment in the world at 23.2 percent, or almost one in every four people” (FAO, 2017). One of the major contributor to various health related problems of human and slow pace of economic development is food insecurity and hunger (Premanandh, 2011). Those who are food insecure were often deprived of the basic necessities for better life. The reverse of food insecurity is food security.

Food security is when everybody always have physical, social, economic and unrestricted access to enough, safe and nourishing food which satisfies their needed Nutrients and the choices of food made for a life full of sound health and agility(Marion, 2011). Ogundare (2015) opined that food security is the capability of individuals to attain their expected level of food consumption all the times coupled with access to social protection and services. The understanding of food security dynamics provides a better picture that can assist in the formulation of food security and nutrition policies and programmes.

There are many problems affecting food security. These include poverty, famine, climate change, population growth, crises, inadequate arable lands, shortage of water resources, availability of food, inadequate access to food, food losses and wrong food preferences. According to Otaha (2013), causes of food insecurity in Nigeria were gender inequality, inconsistent government policy, corruption, poverty, conflicts, natural disasters and low level of technology. Other possible reasons include the frequent changes of policies on agriculture, ignorance about agricultural credit scheme, poor remuneration for farm products and focus on oil exploration instead of agriculture (Ojo and Adebayo, 2012).

Food is regarded as the basic necessity of life and its importance as a major means of survival cannot be overemphasised. The quality and quantity of food taken by an individual is a major determinant for a healthy and productive life. A balanced food intake is essential and this can be ensured when the different classes of essential nutrients are combined in appropriate proportion. Nutritious food provides adequate diet from protein, fats, vitamins, carbohydrates, minerals and water to reduce the risk of chronic diseases for sustainable productive lifestyle (Awosan, Ibrahim, Essien, Yusuf and Okolo, 2013). Nutritional deficiencies become evitable when the correct amount of essential nutrients and calories by the body is taken. Proper nutrition however goes beyond having food on the table. According to Meludu (2007), nutrition is the science of right feeding; it is the consumption of foods with adequate nutrients for proper functioning of the body. The key factors impacting on human health were diet and nutrition; thus a healthy diet and the choice of food we eat can help prevent illness, particularly noncommunicable disease (Hawkes, 2013). The kinds of food people choose to eat depends on their preferences for such food items or groups.

Food preference indicates the choice of one food product over another and also reflects the quality assessment of food product (Franchi, 2012). Plessis and Victoria (2011) observed that food preference has led to increase in nutritional related diseases like cardiovascular disease, anaemia gingivitis, Type-2 diabetes, cancer, bulimia, osteoporosis, and anorexia nervosa which have been recognised as principal causes of disability and premature death in developing and developed countries. Mette and Harvard (2014) noted that there are numerous factors responsible for food preferences and choice; some people prefer peppery food while others do not, some consume variety of food while others are restricted to certain diets.

Food preference involves many processes that are cultural dependent and different factors such as personal, emotional, economic and social factors influence individual food preferences. It is noteworthy that at youthful age, individuals are more selective of what they eat compared to when they were children. Eating is viewed as a social act, hence social networks and family can influence preferences for different food items (Happel, 2013; Holms, 2016). Also, the knowledge to choose food that are healthy might influence eating habits, food preference and nutritional status (Gan, Mohammed, Zalilah, Hazizi, 2011). Food preference usually depends on the context of experience, hence different factors in the environments influence food preferences (King and

Meiselman, 2010). Food preference could be developed early in life or over a period of time as individuals continue to make choice to eat or not to eat a particular food item.

Food preferences is crucial to quality of life of an individual and has effects on the physical, mental and psychological development of individuals, particularly along gender categories and generation (youths, adults and elderly). Youths are a nutritionally vulnerable group of people because of their increased nutritional needs, food preferences and life styles; they are therefore, prone to environmental and peer influences. Food preference is of great concern to individuals of different gender as addiction to unhealthy food preference leads to obesity, high blood pressure, diabetes, cardiovascular diseases and cancer later in life (Schafer, Jaeger-Erben and Bamberg, 2012; Link and Sorenson, 2012; Dimitrijevi, Popovi, Sabljak, Škodri and Dimitrijevi, 2015).

According to Strauss and Howe cited in Özçelik (2015), generation was defined as “the aggregate of all people born over a span of roughly twenty years or about the length of one phase of life: childhood, youth, adult and elderly”. So, a generation is a group sharing an “age location in history”, such that they face key historical events and social trends during the same period of life (Özçelik, 2015). It helps to reveal the idea about people in a particular age group that tend to share a distinct set of beliefs, attitude, values and behaviour because they all grew up and came of age during a particular period in history (Hoover and Eric, 2011). In view of this, members of a generation are shaped in many ways by the era they encounter as childhood, youth, adult and elderly, they share certain common beliefs, behaviour and even food preferences (Drewnowski, Mennella, Johnson and Bellisle, 2012).

## **1.2 Statement of research problem**

Nigeria is inflicted with internal crises ravaging the entire nook and cranny of the country. In the North-East, there is Boko haram, in the North-Central, there is communal clashes and incessant herdsmen/Fulani clashes in South-west, south-east and North-west. This situation had negative effect on the food security of a nation. When a nation's food security dwindled, malnutrition becomes inevitable. Safari, Masanyiwa and Lwelamira (2015) stated that malnutrition is widespread in rural and urban centers. People living in rural areas are more vulnerable to shortages of food, malnourishment, unbalanced diets, erratic supply of food, low quality foods, high costs of food and sometimes total lack of food. In Nigeria, this incidence

occurs across people of different age groups and categories (Aliyu, Oguntunde, Dahiru, and Raji, 2012). Ocheke, John and Puoane (2014) reported that child malnutrition in the rural areas of Nigeria is high; the statistics differ from one geo-political zones to the other with 56% reported in the rural area of South West and 84.3% reported in three rural communities in the northern part of Nigeria.

With all these challenges facing Nigeria at the same time, the country is liable to food insecurity if urgent measures are not put in place. According to a report released by the World Food Programme and Food and Agriculture Organisation (FAO), 4.02 million Nigerians are at risk of food insecurity (Falaju, 2019). Coupled with this is increased food prices and decreased food availability due in part to limited access, disrupted markets, looted community grain depots and current economic recession". This call for investigation on all known causes of food insecurity including food preferences as it affect food security in view of advising people to make right choices or preferences to achieve food security.

Food preference is influenced by gender and generation as a result of physiological and anatomical composition of the individual. According to Spada, Conta, Danza and Nobile (2016), the human body has evolved over thousands of years to adapt the anatomy and physiology to a lifestyle including food preferences. Mette and Harvard (2014) also noted that ignorance is a major factor that influences wrong and unhealthy food preferences across all age groups and gender. They suggested that differences in preference might be linked to level of familiarity with available food items regardless of their nutritional values.

Food preference has lots of implications on food security of an individual, for instance youths are selective to the extent that they may not be able to have adequate nutrient for their body up keep. Adults on the other hand, tend not to eat enough food to avoid unnecessary weight gain, while the elderly may have good food preference, but health condition may not permit them to eat. Therefore, there is a need to discover the generation that feed adequately and are food secured in order to sensitise and educate people across all age groups on how to make healthy food choices.

Booth, Sharpe and Conner (2011) also stated that the major factor responsible for food preferences are genetic. This was corroborated by Mette and Harvard (2014) that food preferences are largely influenced by biological, gender and psychological factors. Eating habits are often developed from food preferences which are influenced by socio-economic factors, such

as educational level, gender (male and female), age, income level, choice and religion within their cadre of location and environmental positioning (urban or rural). The expression “eating right” is determined by “who” is eating, such as its gender, age group, “what” is being eaten and probably health state which should aim to maintain a healthy body function (Plessis and Victoria, 2011).

Otaha (2013) affirms that in Nigeria, food insecurity is still a major problem of concern that is yet to be analysed critically and adequately despite various attempts at solving the challenge. Iorlamen, Abu and Lawal (2014) noted that no success had been recorded despite huge amount of money spent in tackling food insecurity of Nigerians. Thus, there is the need for a fundamental review of previous approaches and achievements in order to learn new ways to re-strategize and develop an approach that will ensure the actualisation and sustainability of the first Millennium Development Goal (eradicate extreme poverty and hunger). Similarly, food insecurity is experienced by rural and urban inhabitants in Nigeria. An analysis of the level of food security status of both rural and urban dwellers will provide a clear picture of ways to ensure food security in Nigeria with the attendant improvements in food security when all the other necessary conditions, such as health and care are present.

Several studies have been carried out on gender and food security such as “gender contribution to rural household food security in south western, Nigeria” (Alade and Eniola 2012), “women’s roles in the West African food system: implications and prospects for food security and resilience” (Gnisci, 2016) and “challenging perceptions about men, women and forest product use” (food security): a global comparative study by Sunderlan, *et al.* (2014). However, little or no information is available on influence of food preference on food security. It is against this backdrop that this study investigated the influence of food preferences on rural and urban households’ food security in south western Nigeria by providing answers to the following research questions:

1. What are the socio-economic characteristics of respondents in the study area?
2. What are the sources of information on food preference available to the respondents?
3. What are the respondents’ levels of knowledge on food nutrition?
4. What are the respondents’ food preferences generation?
5. What are the challenges to food preference by generation?
6. What are the respondents’ food security (food availability, food accessibility, food affordability) levels?

### **1.3 Objectives of the study**

The general objective of the study was to evaluate the influence of food preferences on rural and urban households' food security in southwestern Nigeria. The specific objectives of the study were to:

1. describe the socio-economic characteristics of the respondents;
2. identify the sources of information used by respondents to access information on food preference;
3. determine respondents' level of knowledge on food nutrition;
4. ascertain respondents' food preferences by generation;
5. determine the challenges to food preferences by generation; and
6. ascertain the level of food security (food availability, food accessibility, food affordability) of the respondents in the study area.

### **1.4 Hypotheses of the study**

The following hypotheses were tested in a null form:

H0<sub>1</sub>: There is no significant relationship between selected socio-economic characteristics and food security level.

H0<sub>2</sub>: There is no significant relationship between food nutrition knowledge and food security level.

H0<sub>3</sub>: There is no significant relationship between food preferences of respondents and food security level.

H0<sub>4</sub>: There is no significant difference between food preferences in rural and urban areas of the study area.

H0<sub>5</sub>: There is no significant difference in food preferences across generations.

H0<sub>6</sub>: There is no significant difference between rural and urban food security level.

H0<sub>7</sub>: There is no significant difference in the level of food security across generations.

H0<sub>8</sub>: There is no significant contribution of food preference components to food security.

### **1.5 Significance of the study**

Knowledge of nutrition will help consumers to choose food with sufficient and adequate nutrients that will boost their health status. Furthermore, community nutritionists will be assisted to know how to properly counsel rural and urban dwellers on the right food to consume. Identification of the influence of generation food preferences among urban and rural dwellers in southwest Nigeria will assist to ascertain the role of generation in the preference of various food items across rural and urban areas as well as in identifying the food items that can be used in providing nutritional interventions in form of bio-fortified food from government and other health agencies. Furthermore, it will assist community nutritionists to know how to properly counsel rural and urban dwellers on the right food to consume.

The study would sensitise people living in the urban and rural areas and specific region of interest on how their food preferences can be well structured irrespective of the influencing factors they face in planning they food consume. Furthermore, since “the role of food in increased risk of certain diseases and their prevention has been scientifically established” (Coulston, Boushey, Ferruzzi, 2013), diet and lifestyle play a role in supporting youth, adult and elderly people to remain healthy and prevent diseases, especially chronic diseases such as obesity, anaemia and cardiovascular diseases. Therefore, the study would provide a platform for understanding and developing adequate dietary intake and proper food lifestyle resulting in good health.

### **1.6 Definition of terms**

**Food preference:** Food preference refers to the way in which people choose from among available foods on the basis of biological or economic perceptions including taste, value, purity, ease or difficulty of preparation, and the availability of fuel and other preparation strategies.

**Gender:** This simply refers to the differences in roles performed by male or female in social and cultural context rather than with reference to biological context.

**Generation:** This refers to people born and living about the same time, regarded collectively stage of life, age group or peer group. In this study, they are grouped into childhood, youth, adult and elderly. Childhood-from birth-17years, youth-18-40 years, adult-41-60 years and elderly- 61 years and above (National Bureau of Statistics, 2016)

**Food concept:** Things that are edible eaten by man or animal are referred to as food. Food has different meanings which extend to include convenience food, fast food, functional food, healthy food, drink food, seafood, soul food, whole food (Meludu, 2010).

**Food security:** Food security is when everyone have physical, social, economic and unrestricted access to enough, safe and nourishing food which satisfies their needed diets and the choices of food made for a life full of sound health and agility (Marion, 2011).

**Food availability:** Food availability is the physical presence of food either from personal production or market purchase.

**Food accessibility:** Food is accessible when every member of an household have enough quantity of food which might be gotten through crops grown or farm produce/products sold by households, other non-farm products and purchase.

There is accessibility to food when there is enough resources to purchase food needed by all member of a household for a balanced diet

**Food affordability:** This is when everybody has sufficient resources to purchase needed food for a nourishing diet.

**Food adequacy:** This is when household members eat well nourishing food in balanced proportion and in line with what is culturally acceptable by households.



## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 The concept of food security

Wusterfeld (2013) stated that food security exists when all people at all times have physical, social, economic and adequate access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life. Food security historically refers to the overall regional, national, or even global food supply and shortfalls in supply compared to requirements, but with increased observation of insufficient quality food intake by certain groups (despite overall adequacy of food supply). The term has recently been applied mostly at a community, local, household or individual level (Abdullateef and Ijaiya, 2010). Furthermore, food security is not limited to adequate supply of food but also entails vulnerability and sustainability.

According to FAO (2010), food security is achieved when it is ensured that everyone at all times, have physical, social and economic access to adequate, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Food, according to Ibiok, Idiong, Brown, Okon and Okon (2014) is defined as any substance that human beings eat or drink for sustenance. In this regard, clean and safe water is extremely an important part of the food needed by the body. Equally important is the environment where food is prepared; it should be neat and safe. This is termed 'nutrition security'. That is there is adequate nourishment of the body with protein, carbohydrates, fats and oils, water, vitamins, and minerals by all household members always (Ikelegbe and Edokpa, 2013).

The major focus of food security is on diet and health relationship. Consumers place premium on the health benefits of the food they purchase, and they want to be adequately informed on the various nutritional components. The need for communication on food nutrition and guidance in ensuring healthy food preferences arises in order to curb the increased incidence on diseases such as cardiovascular diseases and diabetes mellitus (Center for Disease Control, 2010). Labels on

food items are good way of communicating with consumers on the components food items were made of, and it is crucial that truthful information are placed on food labels.

In the opinion of Gruner, Fernández-Celemín, Wills, Genannt and Nureeva (2010), food labelling enable consumers to have adequate information on food contents, benefits and measures to curb unhealthy food marketing. Labelling provides more detailed information about healthy consumption of food especially encouraging fruits and vegetables consumption. However, there is the need for further developments on standards for production and processing in order to ensure that quality nutrients in food is maintained and that food products are safe for consumption. Presentation of products based on health and nutrition facts provides information on additional nutritional or health benefits. It is pertinent to note that consumers believe that products with certain claims written on them is good for their well-being and health. Department of Health (2011) stated that health claim is made possible first through profiling of nutrients. It is noteworthy that a measure of food security is by household food availability, food accessibility and food affordability.

### **2.1.1 Availability of food**

Akerele (2011) defined food availability as the physical presence of food either from personal production or market purchase. Lairon (2011) described food availability at the national level as a combination of food produced domestically, food imports on commercial basis and households' food in store, coupled with the underlying predictors of each of the aforementioned factors. Though the use of the word availability can be confusing at times, because it could imply availability of food at the household level and at regional or national level, the term is applied most commonly in reference to food supplies at the regional or national level (Adepoju and Adejare, 2013; FAO, 2017).

### **2.1.2 Accessibility to food**

There is accessibility to food when there is enough resources to purchase food needed by all member of a household for a balanced diet (Otaha, 2013; Sakyi, 2012). Household's accessibility to food is dependent on resources such as labour, capital and knowledge of food commodities prices. Access to food does not necessarily imply sufficiency of food production among households, rather increase in income generated by households is more important to attaining food sufficiency coupled with household production. Food accessibility is affected by the physical, social and political environment depending on how household's efficiency in

managing available resources were able to meet food security (Fasoyiro and Taiwo, 2012). Drastic changes of environmental factors such as drought periods or social conflict might seriously impair production strategies which threatens food accessibility of affected households. The detrimental effects of environmental factors is evident in the loss of household productive assets such as death of livestock which greatly limit households' productive potentials and the long term culminate into food insecurity (International Union for Conservation of Nature, 2013).

### **2.1.3 Affordability of food**

It is noteworthy that food affordability do not only connote financial capability to purchase food items when needed; social factors are equally important as well as economic factors. FSA(2016) conceptualized affordability of food as ability of individuals to be able to pay for the prices of food to be bought and more importantly whether consumers with low income were able to afford balanced diets.

## **2.2 Food security and stability of food supplies**

FAO (2010) defined food stability as constant adequate access to food without the risk of nutritional status deterioration. Economic factors such as unemployment, rising food prices; extreme weather conditions or political instability are detrimental to food security status (FAO, 2010). Households' food supplies are stable when there is no risk of losing access to food as a result of unprecedented shocks such as climatic crisis; or recurrent events such as seasonal food insecurity. It is pertinent to note that food security is dependent on household food stability. Past studies had revealed recent factors militating against the stability of food supply; such factors include effects of changes in climate and climate variability which affect yield stability severely and increase in the vulnerability of the food insecure (Ojo and Adebayo, 2012). Other factors were disruption of agro-ecosystem and global ecosystem resilience. These occur as a result of alarming erosion of environmental services; "and trade reform which affects development and seasonality of prices and quantities, with a negative impact on food security in rural areas particularly if it unduly lowers actual prices domestic farmers received" (Ojo and Adebayo, 2012).

Irregularity in food supplies as result of factors such as incidences of droughts, floods, price fluctuations or intermittent unemployment increases the vulnerability of the poor people. Ability to store food for future consumption and household saving potential determines the

stability of food supplies especially during off season. Market stability relied on the balance between what is produced and demand, the state government function in price regulation and control, and the government prompt response to act favorably in an emergency situation.

### **2.3 Food security and food utility**

Food utility is with reference to the socio-economic orientation of household food security. When there is availability and easy access to sufficient and nourishing food, decisions had to be made on what food items to be bought and prepared in line with household food demand; also important is the allocation of food within the household. Sometimes there is unequal distribution of resources within households, hence some members might suffer deficiency in food adequacy even if there seems to be absolute access to sufficient food at the aggregate level. This opinion holds if the nutrient composition of the food consumed is not in balance proportion (Otaha, 2013). The social factors associated with food is noteworthy in terms of cohesion within community through offerings of food used for ritual purposes, especially during period of food deficit. Knowledge of food nutrition and food habits determine the social factors associated with food and this is essential for feeding infants during breast feeding and weaning periods.

It is important to take into consideration the biological aspect of food utilization when an individual food security is being examined. Food utilization refers to the capability of the human body to convert food taken into energy which is either used to carry out day to day activities or the energy is stored for future use (Basorun, 2010). In as much as balance meals is crucial to the nutrients uptake of the body, the cleanliness of the physical environment which encompasses safe and clean drinking water, sufficient sanitary facilities in order to guard against disease outbreak, thorough knowledge of good health care, adequate food preparation and processes involved in food storage are equally important. The choice of food that we eat determines what is optimized by the human body.

### **2.4 The concept of food choice**

Mette and Havard (2014) described food choice as a very complicated process. Hausner, Hartvig, Reinbach, Wendin and Bredie (2012) noted that we consciously make several food choices everyday depending on what prompts our thoughts, culminating into easy and

quick decisions mostly based on behaviours that are unconsciously tracked. The food choices of individuals cannot be viewed in isolation owing to differences in individual preferences. Food choices are better viewed with respect to the complexity in social constructions. As human beings grow, their preferences for food changes due to the experiences they had with different food items and these usually affect food choice through life (Franchi, 2012). Hausner *et al.* (2012) highlights some of the factors responsible for food choices. These are state of health, food price, convenience in all aspects, feeling towards a particular food, control of weight, nutrient composition, familiarity with a particular food, individual beliefs and food preferences among others. There are varieties of food groups from which individuals do make their choices on daily basis.

## **2.5 Types of food groups**

Food is highly essential to life, so its importance cannot be over emphasised in dealing with matters pertaining to healthy living (Akbaraly, 2011). Groups of food are simply food collections that have resemblance in their nutritional composition or biological features. According to nutrition guide, foods are divided into different food groups and daily servings of each food group is recommended for a nutritious diets. There are basically five groups of food which are cereals; pulses and legumes; milk, egg and meat product; fruits and vegetables; and fats and sugars. A healthy and balanced diet will include food from each of the group (Nestle, 2013).

### **2.5.1 Cereals**

Cereals are also referred to as grains because they are always grainy (Dorota, James, and Natalie, 2014). Examples are maize, millet, rice and wheat which represent the basis of most diets. In the human diet, cereals are principal sources of energy as large quantities are usually consumed by most households. Whole cereals are rich in fibre which is very useful in maintaining a healthy digestive system. Furthermore, several life threatening diseases are curtailed by fibre content in cereals. The major nutrients present in this group were carbohydrates, proteins, vitamin B and iron.

### **2.5.2 Pulses and legumes**

Pulses and legumes are the main protein source of Asian diets particularly the vegetarians. Food in this category include cowpeas, peas, soya beans and so on. Considerable amount of

calcium, iron and vitamin B are present in pulses and legumes. The quality of protein in pulses can be enhanced when combined with cereals. It was advised that vegetarians be careful in adding both cereals and pulses in all meals in order to achieve optimum protein quality.

### **2.5.3 Milk, egg and meat product**

Milk is a very rich protein source and it also contains considerable amount of calcium, vitamin A and fat. This made milk a choice, best and complete food for small children. Skimmed milk contains very little fat. Almost every nutrient is contained in eggs with the exception of vitamin C. The protein content of eggs is of excellent quality and that is why eggs are specially recommended for growth enhancement in children, women who are pregnant and mothers who are lactating. Examples of meat products were fish, chicken and meat which are very rich sources of protein, vitamin A and vitamin B of high quality.

### **2.5.4 Fruits and vegetables**

Excellent sources of Vitamin C are citrus fruits such as sweet oranges, tangerines, tangelo, grape and lemon. Likewise, cheap and good sources of vitamin C include amla and guava. Mango and papaya owing to their yellowish contents contain carotene which is vital for vision improvement when converted to vitamin A in the human body. Appreciable amount of carbohydrates, calcium and iron are found in banana, while the main nutrient in pomegranate is iron. High fibre content present in all fruits which aids movement of the bowel. Walnuts, raisins, almonds and figs which are referred to as dried fruits are rich in calcium, fats, fiber and iron. It is noteworthy that fruits which are grown in the local environment should be encouraged as this will help ensure availability of fresh fruits that are economical.

Green leafy vegetables that are commonly found in rural areas include mint, *amaranth (chulai)*, fenugreek and spinach which are rich in vitamin C, iron, calcium and carotene. The aforementioned vegetables can easily be grown in home gardens. The importance of the inclusion of vegetables in every day meals cannot be overemphasized. Root and tuber crops such as carrots, radish, sweet potato, turnip and Irish potato are also regarded to as vegetables and they are rich in carbohydrates.

### **2.5.5 Fats and sugar**

The sources of fats include various oils such as soya oil, coconut oil, mustard oil, groundnut oil; butter and ghee. Fats are major source of energy which provides energy in the human body. Every day diet requires considerable amount of fat because they are essential

source of fatty acids. In addition, some nutrients like vitamins A, D, E and K are soluble in fat which are absorbed into the lymph and important to the body (Ogunba, 2014). Sweetening agents such as honey, jaggery and sugar provide the body with carbohydrates. Jaggery is an unrefined brown sugar made from palm sap which is preferable to white sugar. An important requirement for formation of Red Blood Cells in the human body is iron and this nutrient is found in jaggery. It is pertinent to note that sugar or jaggery should not be consumed excessively in human daily diet. This is because excess sugar consumed are converted into fat and when it is accumulated by the body, it makes one to become obese.

## **2.6 Food nutrients and its classification**

The chemical components in food that is responsible for sound health is referred to as food nutrients. Many food nutrients are important components of a diet which help the body to function and grow. Food nutrient enhances body nourishment through energy provision, provision of materials for body parts building and regulation of necessary/different body chemical processes. Carbohydrates, minerals, fats, protein, vitamins and water are examples of nutrients required in balance proportion by the human body (Ogunba, 2014).

### **2.6.1 Protein**

The building blocks of life is referred to as protein and it provides the structure for the different tissues in the body and it is also required in the blood stream for the transportation of essential elements (Genton, Melzer and Pichard, 2010). Proteins play an important role in the building and repair of worn out body tissues including bones, hair, blood, skin, muscles, internal organs and nails. The normal balance of the fluid in the body is maintained by protein as it is part of antibodies, enzymes and hormones in the body. Protein also gives the body energy but this is only when carbohydrates is deficient in the body. The deficiency of protein in most diets of Americans do not constitute any problem. This is because the daily requirement for protein is met when a person consumed two glass cups of skimmed milk in combination with about 4 ounces of fish or poultry.

Proteins are necessary for growth, provide energy and fight infections (Genton, Melzer, and Pichard, 2010). There are two main groups of protein, animal and plant protein. Animal protein is known as first class or complete because it contains all essential amino acids, namely histidine, phenylalanine, methionine, tryptophan, arginine, threonine, valine, lysine,

leucine and isoleucine. All these are essential for children and they cannot be synthesized in the body. The remainders are designated 'non-essential' amino acids (Ogunba, 2014). Examples of first class proteins are milk, fish, meat, egg and cheese. The second group is plant protein known as second class or incomplete protein because it lacks some essential amino acids. Examples of second class proteins are mushroom, beans, groundnut, locust bean and soybeans. The value of second class proteins could be supplemented and complimented in combined cooking, for example, cooking maize, beans and crayfish together. The main function of protein in the body is to maintain the growth of children and help repair tissues that are already worn out in adults.

### **2.6.2 Carbohydrates**

Energy production for daily activities, maintenance of body cells and heat generation in the body is achieved by calories in the body which is derived from carbohydrates (Andersson *et al.*, 2013). Also, carbohydrates help in body fat regulation and metabolism of body protein. Four calories of energy is supplied to the body by each gram of carbohydrates consumed. Carbohydrates are mainly derived from cereals, legumes, milk, breads, vegetables, fruits and other products from dairy. The division of carbohydrates is into two sub groups, namely simple carbohydrates and complex carbohydrates. Examples of carbohydrates referred to as simple include cakes, soda and candy; and had low nutrition value. The group of carbohydrates that are referred to as complex supply the body with many nutrients that are highly valuable and are also very good source of body fiber. According to Threapleton, Greenwood, Evans, *et al.* (2013), fibre aid in promotion of wellbeing of the body fibre, promotes health of the intestine, reduce the danger of being susceptible to many diseases and living conditions of life that are threatening. Fibre is vital in human diet as it helps in lowering the danger of susceptibility to cancer, health related diseases and cardiovascular disease. Some disorderliness in health that are associated with reduced consumption of fiber include disease of the gallbladder, obesity, constipation, hemorrhoids and diverticulitis.

Carbohydrate supplies the body energy and is the staple food and major part of total daily intake (Andersson *et al.*, 2013), carbohydrates is seen in three parts; all sugars, all starches, and cellulose. Cellulose is very important to adult in adding bulk to faeces and makes defecation easy. Examples of carbohydrate foods were cereals, tubers, legumes, sugars and honey. The bulk of energy needed by the body is provided by carbohydrates in diets. It is noteworthy that food rich in carbohydrates are normally affordable and readily available relative to protein



rich food and diets high in fat. Carbohydrate is also referred to as simple and complex. Sugar, the simplest form which is glucose and the end product of carbohydrate for absorption goes directly into the bloodstream, while the complex carbohydrate is broken down to the simplest form through various action of enzymes (digestion). However, complex carbohydrates contain more nutrients relative to simple carbohydrates. Examples of complex carbohydrates include grains that are not refined, tubers, fruits and many vegetables. It is noteworthy that the aforementioned sources of food also supply the body with vitamins, protein, minerals and fats.

### **2.6.3 Fats and oils**

Fat and oil provide the body with energy (The British Nutrition Foundation, 2012). Excess nutrients are usually stored as fat in the human body. The sole aim of fat is to produce energy and heat. Fats are of two major categories, namely saturated fats and unsaturated fats. Fats of animal origin such as fats from butter and meat are saturated. The consumption of butter increases the chances of heart related diseases and cancer in the body. Fats that are unsaturated are those gotten from vegetable oils, such as olive oil, soy bean oil, groundnut oil, corn oil and they cause less damage in the body. In fact, some fats are beneficial to the body as they aid in the prevention of certain heart diseases and cancers. An example of these fats are referred to as omega 3 fatty acids present in certain fishes, particularly fish found in cold-water; other sources of omega 3 fatty acids are various seeds, different kinds of green leafy vegetables, walnuts, soy bean, rapeseed oils (The British Nutrition Foundation, 2012).

The presence of fat in our daily diet is crucial as it supplies some vitamins for body utilization, aid in cushioning essential organs, serves as part of the components that made up all cells in the body, stores energy for future use and acts as an insulator in safeguarding heat in the human body. When food high in fats are consumed, one hardly goes hungry as the food is retained in the stomach for a long time before digestion. Though body fats perform beneficial functions in the body, after some time, too much consumption is not good as it put the organs in the body at a disadvantage thereby leading to health deterioration.

The main function of fats and oils is to supply warmth and act as cushioning agents to the internal organs of the body, 4g of fats produces 9kcal of energy which should not be carelessly used to supply the body energy (EFSA, 2010). Fatty acids that are beneficial to human health are those of omega 3 and omega 6 which are required for normal functioning of the body. They can be obtained from flax seed oil, fish oil and black currant seed oil. It is

recommended that omega 3 oils be increased particularly for the elderly to assist in lowering risk cardio-vascular diseases, inflammatory bowel diseases, dermatitis, cancer and symptoms of rheumatoid arthritis. Other readily available fats and oils are; butter, palm oil, vegetable oil, lard and groundnut.

#### **2.6.4 Vitamins**

Vitamins are essential for the growth, sustenance and good health of all things that have life in them. Basically, there are two categories of vitamins namely; vitamins soluble in fat which are vitamins A, D, E and K and vitamins soluble in water which are vitamin B complex and C. It is worthy of note that vitamins are not synthesized in the human body, hence it has to be gotten through a highly nutritious diet (Meludu, 2007). Various body functions are regulated by vitamins and these makes them important in diets. The general function of vitamins is to regulate body processes and maintenance of normal growth. Vitamin A (referred to as retinol) is a good and pure vitamin that is gotten from animal tissues such as fish, kidney and egg yolk, while carotene are impure ones gotten from plant tissues such as yellow maize, pawpaw, carrot, red and green pigments of plants. Vitamin A has been documented as good for eye sight and deficiency in night blindness, depression and stunted growth (Meludu, 2007).

Vitamin D is found in food sources like fish, milk, eggs and meat with edible bones, liver and margarine. Another good source of vitamin D is early morning sun, essential for strong bone and teeth formation, and the deficiency disease results in bone and teeth malformation and bow leg. Food sources of vitamin E are poly unsaturated fatty acids found in nuts and vegetables (Meludu, 2007). Other sources were apple, beef, liver, egg, wheat germ and margarine. It helps to maintain normal resistance of the red blood cells to rupture by oxidizing agents. Vitamin K is an anti-haemorrhage vitamin that is essential for clotting, fertility and reproduction. Food sources were egg yolk, soybean oil, liver, tomatoes and cow milk. Deficiency causes sterility and abortion.

Vitamin B and C are soluble in water. Vitamin B is complex because it is numerous and has vital role in the body. Ogunba (2014) outlined these vitamins as B1 (Thiamine), B2 (Riboflavin), B3 (Niacin), B5 (Pantothenic acid), B6 (Pyridoxine), B9 (Folate or Folic acid) and B12 (Cyanocobalamin). The food sources of this Vitamin B were almost the same as protein foods but with differing deficiency diseases. Vitamin B1 (Thiamine) deficiency disease is beriberi, fatigue and loss of appetite. It is essential for formation of blood when combined with

protein. Lack of vitamin B2 (Riboflavin) results in painful tongues, scaly skin and tissues, it is essential for metabolism of protein, carbohydrate and fat. The lack of vitamin B3 (Niacin) results in weakness of the body, constipation, burning sensation and irritability of the body. It is essential for metabolism and breakdown of protein for energy where carbohydrate is deficient, it is also essential for melanin and protein transmission. Vitamin B6 (Pyridoxine) deficiency is lack of immunity to diseases, so, it is essential in the building of specific immune to fight diseases. The deficiency of vitamin B9 in pregnant women diets could lead to reduce weight of babies at birth and in infants it can also increase the occurrence of defection of the neural tube (Ogunba, 2014). Vitamin B12 (Cyanocobalamin) deficiency results in stunted growth, anaemia and eventually death. It is essential for growth and manufacturing of genetic materials in the body cells. Also, it assists red blood cell production in the body.

All citrus fruits, green leafy vegetables and potatoes are excellent sources of Vitamin C known as ascorbic acid. It is vital for growth, repair and has wound healing potentials and has an antihistamine (Ogunba, 2014). It is a powerful antioxidant and may help to strengthen fragile capillaries. Deficiency is scurvy - beaded ribs and difficulty in breathing in children, and in adult, swollen gum and regular bleeding and loosen of teeth, a mouth infection known as gingivitis).

### **2.6.5 Minerals**

There various essential roles performed by minerals in the body. Minerals are components of all body cells, particularly those cells found in the teeth, bones and nails. Minerals play prominent role in body water balance maintenance (Meludu, 2007). Though, they are needed in small quantity by the body, some are classified as major minerals and some as trace elements. Major minerals are Magnesium, Sulphur, Calcium, Phosphorus, Chloride, Potassium and Sodium, while trace elements are Iron, Fluorine, Iodine, Zinc, Manganese, Chromium, cobalt, Selenium and Copper. All the aforementioned minerals are required in minute quantity and lack of these in the body results in deficiencies and diseases. For example lack of iron results in anaemia (shortage of red blood cells), so the little needed is essential for blood formation. Calcium is essential for bones and the deficiency is common in children and adult as well. In children it is rickets (formation of bow or k legs), while in adult it is osteoporosis (bone thinning).

### **2.6.6 Water**

Water is found in every cell of the body. WHO(2016) stated that human beings tend not to think of water as a nutrient, however, it is very important for metabolism. Water is an essential nutrient needed to sustain life. It helps in regulating the temperature of the body, transportation of nutrients to body cells and assists the body to get rid of waste substances. Water deficiency is rare particularly where body water balance is maintained through drinking in time of water loss during sickness. Meludu (2007) described water as the nutrient that is most principal and it is required for virtually all essential processes in the body. Water aids food digestion and absorption, its vital during circulatory process, removal of toxic waste substances, it builds and repair worn out body cells, and it helps in transportation of other nutrients. Every food has water, but it is much higher in foods in liquid forms and in fruits and vegetables. The water contents of the food we eat is not sufficient for normal body processes, hence, it is recommended that one takes eight glass cups(8oz.) of water every day.

## **2.7 Generational characteristics**

The concept of youth is not the same across different cultures and from one society to the other. On a general mode, it is the transition from childhood to young adult. It entails rapid growth and sexual development, there is a concurrent maturing of the whole person with the added stress and strains (Okeke, Onyechi and Ibeanu, 2011). At the youth age, individuals are filled with vitality, apt in thinking of new ideas, perform task enthusiastically, ensure realisation of set target and highly innovative. The vulnerability of youths are high out of all the generations of a nation's population because they are confronted with high levels of uncertainty in their socio-economic status which could make them volatile. No doubt, youths are the more energetic of the entire generation, but highly unstable and restless (Ayodeji, Salau, and Adeniyi, 2014). Adult stage is from young adult to adult - the fully grown people are usually matured, have confidence in themselves, make decisions on their own and stand by it, usually likes practicality of things and result oriented. Elderly stage is probably the greatest challenge an individual can face. It is from adulthood to the period referred to as senior citizens, a time of gradual rest from work. The body ages as minutes and day passes, but individual differences in the rate of ageing are great (Belsky *et al.*, 2015). Gerontology which is the scientific study of ageing processes places emphasis on the impairment of the performance capacity of an individual's cells and organs.

Geriatrics is the aspect of medicine concerned with the treatment and prevention of diseases of elderly persons. There is limited productivity in thinking, investigation, education and implementation. Many factors determine the health and longevity of people; heredity, quality of air, exposure to biological pathogens. The elderly have little or no control over these, but have control over food and physical activities. The reaction of the immune system decrease with age, causing impaired cell mediated immune defence, exposing elderly to infection (Ibeiezugbe and Odaman, 2014).

### **2.7.1 Physiological changes in the generation**

The maintenance of our physical growth necessitates the need to choose the right kind of food to eat and this is usually based on what is preferred by an individual. The survival of man is depended on how energetic he is and this is a function of the nutrient composition in the food he eats. It is natural for man to feel hunger and seek for ways to attain satisfaction. The physiological changes in youth and the demand for energy use calls for high food consumption in youth which should be adequate to the developmental stages. As people age, physiological changes occur. These have effects on nutritional intake and needs, therefore, having a good knowledge of the feeding patterns and food types among elderly is a crucial effort towards supporting this vulnerable segment of the population and reducing the problem of high amount being spent as well as concentrated medical care on institutions (Ibiezugbe *et al.*, 2015).

Some specific organ cells die and is replaced by some form of a cellular material. The total body water decreases with age but the water content of the cell remains constant. Basal metabolic rate decreases with age, another reflection of fewer live cells. Another pointer of cell deterioration is related to the discrete functions of the kidney cell death, which leads to gradual deficiency in organ functioning. The senses of smell and taste are less acute, so food is less appetizing. A less sensitive sense of smell may inhibit the flow of saliva and other digestive juices. Elderly people do not enjoy the aroma and taste of delicious foods as much as they used to (Ekong and Udobang, 2015).

### **2.7.2 Psychological changes in younger generation**

Formal education had broaden the horizon and thinking faculty of youngsters. Youths are filled with so much expectations and the quest to achieve their goal in life sometimes put them under pressure which might lead to social vices if not patient. "Studies also suggest that if adults work stress is prolonged or frequent then adverse dietary changes could result in

increasing the possibility of weight gain and consequently cardiovascular risk” (Yau and Potenza, 2015). There is greater rigidity, restraint, cautiousness, passivity and emotionality; these psychological changes have an influence in the attitudes of the elderly toward their food. Food is an important symbol of certain psychological aspects of life, such as social interchange, evidence of love, and the meaning of pressure. Declining strength and muscle tone, impaired hearing, retirement, death of a friend or spouse, all cause psychological problems making the elderly lose appetite for eating. Nutritional inadequacies among the elderly would not only complicate their wellbeing, but also predisposes them to major chronic diseases (Ibiezugbe *et al.*, 2015).

### **2.7.3 Economic and social conditions**

The youth have the ability to transform the economy of their nation but this has not been realistic as majority are unemployed which makes them feel socially neglected. The social status of youths can affect their preferences of food and a change in the kind of diet eaten (Higgs and Thomas, 2015). The elderly are probably, the single most economically deprived group in the nation in terms of income and consequently are extremely limited in their choice of lifestyles. This restricted income limits the purchase of nutritious food, preparation facilities and storage facilities.

## **2.8 Nutritional needs for gender and generation**

Youths are prone to eating disorder. In boys, the disorder is due to their involvement in competitive sports which require low fat body weight, in girls, it is due to their body images which are susceptible to anorexia nervosa and bulimia (both of which are eating disorders) (Ehimigbais, Otakpor and Uwadiae, 2017). When activity decreases, it is very easy to gain weight. If interest in food remains high, the intake of high calorie foods may need to be restricted, avoidance of second helping and stoppage of frequent snacking may be a good check. On the other hand, there is the possibility that in the later years, interest in food may diminish and calorie may be inadequate. In this instance, frequent small feedings and inclusions of some high calorie food may be necessary. Nutrition in adult years emphasizes the importance of diet in maintaining wellness, preventing diseases and promoting health (Okeke *et al.*, 2011).

As regards protein requirement, the best supply of essential amino acid to supplement the proteins found in vegetables and cereals is from animal protein. Lack of proteins in the

elderly can have serious consequence if the person must undergo an operation or suffers from bone injury because healing is prolonged. It may also cause an elderly person to be easily fatigued and more susceptible to infections, while it impairs growth in adolescent and youth. All nutrients must be available in meals for all ages; it is the quantity that varies. Nutritional requirement for youth/adolescent reach the maximum during this period, only during pregnancy and lactation do females surpass their male counterparts' requirement. The most crucial nutrient for this age is protein, iron and calcium. Males require more carbohydrate than females for strength. According to Okekeet *al*(2011), once the body reaches physiologic maturity, the rate of catabolic or degenerative changes may become greater than the anabolic regeneration. The resultant loss of cells can lead to varying degrees of decreased efficiency and impaired function. These changes can be influenced by life events, illness, genetics, socio-economic and lifestyle factors. Lifestyle factors that seem to positively influence physiologic age are adequacy and regularity of sleep, frequency of consumption of well balance meals and sufficient physical activity. Cigarette smoking, excessive alcohol consumption and over-weight can negatively affect physiological age. The diet must be adequate for maintaining body tissues so that its integrity is not threatened, that means quality protein, mineral and vitamin with sufficient amount of carbohydrates and needed to maintain a desirable body weight.

The nutrient water is highly vital for kidney functionality in carrying wastes excreted by the kidneys. Generous drinking of water also alleviate constipation which is an ailment of later life. Some nutrients which are very important to the elderly people's health include vitamin in combination with calcium, vitamin B12, folic acid - folate (Olasunbo and Ayo, 2013). Good feeding habit for healthy individuals is to incorporate the following food into their diet; milk, two or more cups of milk (488g or 0.48 litres) daily, four or more daily servings of vegetables and fruits, one serving as a source of vitamin C and vitamin A. Meat group; two or more serving a day (16 to 23g without bone) of kidney, poultry and eggs, liver, fish and shell fish or meat alternates. One cup of cooked beans (250 to 260g), dry peas or lentils, bread; cereal group; all bread and whole grain cereals, four servings per day(118g to 127g) cooked cornmeal, rice, etc. Fats and oils of unsaturated fatty acid are recommended.

## **2.9 Adaptation to the family diet**

Family should plan adequate meals to meet the body requirement of individuals in the home to the bearing maximum, in order to reduce rate of eating junks outside. Digestive difficulties makes some elderly persons prefer to have their dinner at noon and a light supper at night. Meals should not be too bulky as they may take too long to digest in an inactive job (Abegunde and Owoaje, 2013). An elderly person may sleep later in the morning and prefer to have breakfast in a more leisurely manner. This change in meal time has some disadvantages in that morale and appetite may be better if the elderly is up and eating with the rest of the family. Meat may be chopped or ground if there is a chewing problem with the elderly. When the elderly have difficulty in chewing, they may lapse into the bad habit of omitting meats and vegetables and leaning on carbohydrate foods that are easy to masticate. In these cases, egg and milk beverages, vegetables of different species and fruit juices and strained and are to be part of our daily diet. If the elderly seems to have little appetite, it is necessary that food be tastily prepared and make it look attractive. Serve little quantity at a time and allow second helping rather than overwhelming large serving. Light eaters could be helped by increasing their diets nutrients with addition of egg and concentrated evaporated or dried milk.

Use methods that save time and energy by using ready prepared ingredients or partially prepared food. This will make little demands on one's energy. Plan one dish meal like yam porridge enriched with vegetables and fishes, plan food with few pieces of equipment.

### **2.10.1 Food preference**

Few of the factors that influence food preference are cultural values, perceptions, beliefs, attitudes and social influences are also of importance to food choices (Nestle *et al.*,1998).Shepherd (2001) divides factors that influence food preference into three main groups; first, it is the product or food related factors which rely on the physical or chemical properties of the food, sensory attributes, functional factors and nutrient content. Second, there are the consumer related factors including personality, social psychological factors, and physiological factors. Third, there are environmentally related factors including economic, cultural and social issues. Many of the aforementioned factors are mediated by beliefs and attitudes held by the individual. For instance, the beliefs about the nutritional quality of a food product may be more important than the actual nutritional value of the food when consumers determine their food choice.



Marketing, economic, social, cultural, religious or demographic factors might also act through attitudes or beliefs held by the person (Shepherd, 2001). Franchi (2012) argues that the division of food preference factors outlined by Sheperd (2001) does not prioritize culture as an important factor. According to her we must not overlook the importance of the “feeling” consumers have that makes him/her prefer some foods to others.

### **2.10.2 Understanding the food choice process**

When consumers select a food product they go through a decision process considering different factors. This process may be more or less conscious and includes both cognitive and emotional dimensions; all of which involve past experiences, present needs, sentiments and values (Franchi, 2012). According to Franchi (2012), food choice cannot be translated into a rational or cognitive exercise as it involves several emotional dimensions. Several different models or assumptions exist that discuss the food choice process. The focus varies in the different subject areas such as sensory science, sociology or marketing (Franchi, 2012). Since several models of food choice have been developed throughout the years, it is not possible to cover all of them in this review, but a brief discussion of some of these will give a good overview of the complexity within food choice processes.

According to Furstet *al.*(1996) the life course must be explicitly considered when conceptualizing food choice. The life course consists of the personal roles a consumer has, as well as the social, cultural and physical context or environment where s/he spends his/her life. It also includes past influences like personal experiences and historical eras, as well as current trends. The influences are divided into five major categories, namely ideals, personal factors, resources, social framework and food context. These influences in turn contribute to people’s personal systems which include conscious value negotiations and unconscious operationalized strategies. The value negotiation system within this model is very dynamic, while the strategies are based more on routine.

### **2.10.3 The food preferences of urban and rural dwellers**

Fast foods which are mostly junk food had roles they played on the health of man when consumed. Either in the short or long run, nutrition habits had side effect on health; these happen when meal are not eaten at the regular period, feeding on junks and eating away from home which characterizes youths habit of feeding because of their adolescent nature (Brindal, 2010). Fast food conception had been broaden to include food sold in institutions (Kamal, Morteza,

Mohammad, Rahman, Maryam, Ghadir, Mostafa, Omid, Babak, Mehdi, Abdurrahman and Hossein, 2016). To some people, visitation to joints where fast foods are sold had become daily habit, even in most cities, fast food joints are opened inside and around the premises of schools, most especially tertiary institutions (Kamal *et al.*, 2016).

Right quantity of food is needed by individuals so as to be sound in health as long as he lives; variety in quality of food taken is necessary to meet the daily requirement of nutrient and energy needed for body processes (FAO, 2010). There are some beliefs that are not scientifically proven and such beliefs put people at a disadvantage from consuming nutrients rich food and adequate diet. Examples are children forbidden from eating eggs so that they will not be stealing and pregnant women forbidden from eating snail so that the baby will not be spitting when born. These taboos are common among people who reside in rural areas because of their old method of food preferences. Majority of rural dwellers are not capable of inducing their appetite to feed on variety of food where adequate nutrition could be made available to the body.

## **2.11 Theoretical framework**

Theories are tools used to look into subject matters of interest. The chosen theories for this study has helped in understanding the psychoanalysis of food consumption, how society, culture and personal preferences/differences influence food intake, while consumer behaviour theory is the relationship between our choices and the means/how and where to purchase our choices. These theories have been selected because they provide us with profound yardsticks to interpret and evaluate why the dependent (food security) and independent (socio-economic characteristics, sources of information, knowledge on food, affordability, availability, accessibility to good nutrition and challenges to food preferences) variables structured and affect food security the way they do. The theories relevant to this study were:

1. The Lacanian psychoanalytical theory of food consumption.
2. The Theory of consumer behaviour.

### **2.11.1 Lacanian psychoanalytical theory of food consumption**

The theory of Lacanian psychoanalytical food consumption makes provision for a framework that could be used to determinewhat is consumed and concerns in food preferences. The framework of Lacanian givesvaluable demonstration of the behavior of consumers. Schroeder (2004)opines that the central focus of desire exchange in the markets is within the

subject and social or in symbol form. Individual behaviour towards food can be better explained thus:

#### **2.11.1.1 Symbolic order**

This is crucial as it is a major component of food consumption theory which centered on individual behaviour and their reactions using symbols.

#### **2.11.1.2 Split subject**

There are conflicts over what to eat (Ojo *et al.*, 2012). However, the choice of what to eat do not overrule strive at times in making right choices which might necessitate anxiety. Psychological depressions model a way in which filling demand creates satisfaction.

#### **2.11.1.3 Desire**

When man is unable to completely recognise the order of symbols, it necessitates desires which is evident in its behaviour.

#### **2.11.1.4 Repetition**

There is continual re-establishment of symbolic order when it is repeated irrespective of benefits or harm of such behaviour (Ojo *et al.*, 2012).

#### **2.11.1.5 Masculine/feminine modes**

These modes were linked with the symbolic order (Schroeder, 2004). Individual decisions whether male or female on safety of what to eat or its acceptability holds even if it does not aligns with findings that had been scientifically proven owing to insufficiency of such findings.

#### **2.11.1.6 Real tightness**

“In Lacanian theory, the law structures behaviour and produces an excess, which leaves a residual or an open system” (Schroeder, 2004).

Lacanian theory however, relates to the study as it highlights consumers’ knowledge of the nutritional value of the food intake, but lots of factors tagged symbolic order conflicted over what to eat and desire with the fact that repetition of food behaviours taken to be true whether beneficial or harmful.

### **2.11.2 Theory of consumer behaviour**

Consumer behaviour is the study of how, when and why people buy what they buy. It attempts to explain the buyer decision-making process both individually and in groups. The theory of consumer behaviour assumes that a consumer is rational and aims at attaining the highest possible satisfaction given his income and the prevailing market prices. He attempts

spending his income in a way that gives him maximum satisfaction (Adeniyi, Omitoyin and Ojo, 2012).

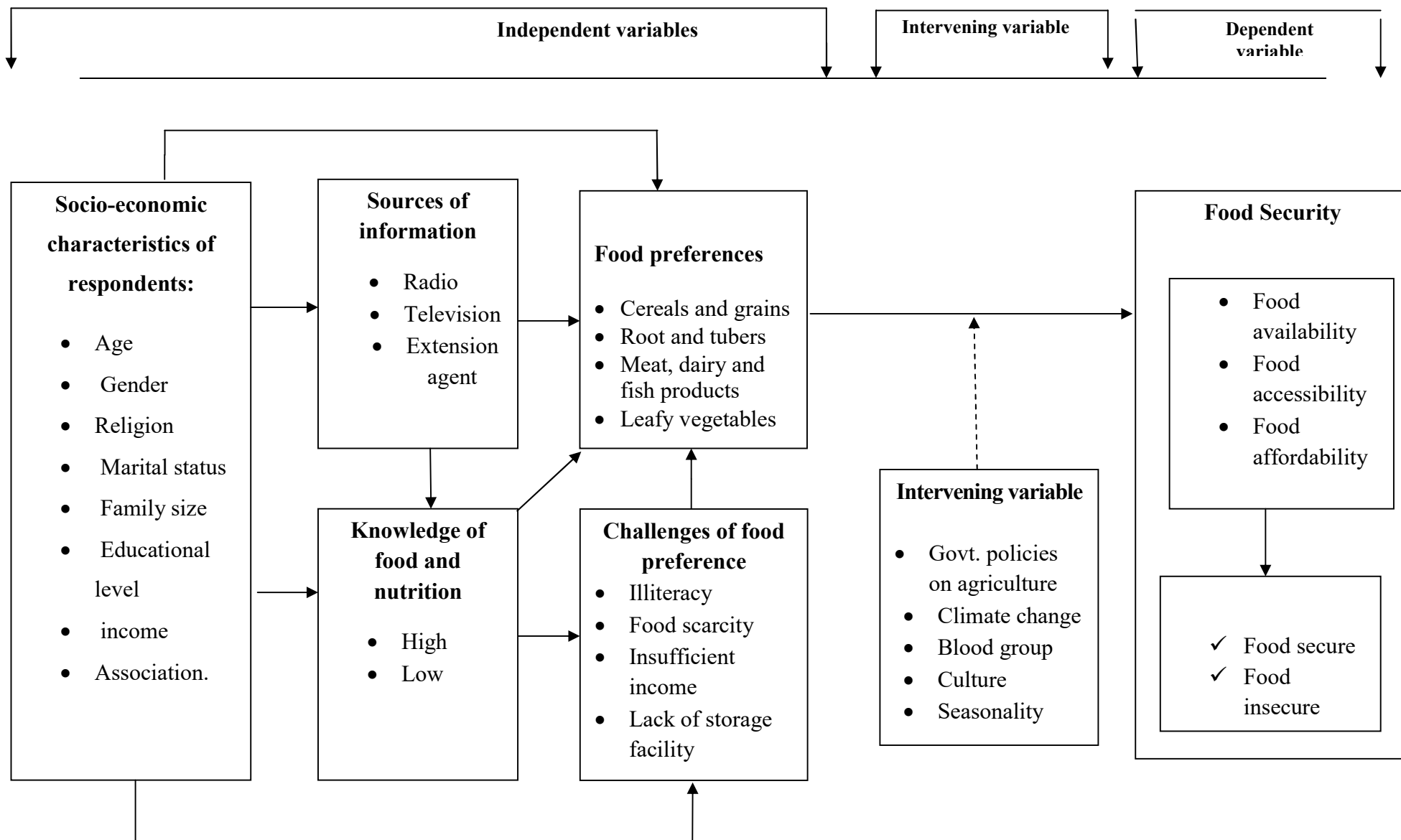
An individual's decision on what range and type of food to consume is influenced greatly by income and other factors such as social norms. Various theories exist in literature that explains people's behaviour in relation to rising income. One of such is Professor Milton Friedman's permanent income hypothesis that consumption is based on the long run permanent income. It is only if people believed that a rise in today's income is likely to be sustained as higher future incomes will, that a large rise in current income will be matched by a large rise in current consumption.

The Life Cycle hypothesis held that households or individuals maximize their utilities subject to their wealth, the main determinants of current consumption and that the average long run income would likely determine the total demand for consumer spending. According to Engel law, the income elasticity on food consumption is low since with increasing income, people's spending on food decreases and a large percentage of additional income is committed to luxuries. The life-style of people in urban cities is different from that of their counterparts in rural areas and this also influences to a considerable extent, their food preferences. Most urban low income households in Nigeria are plagued with inadequate animal protein intake due to lack of money to buy them, low level of income and price of the commodity.

Promoting healthy diets and life-styles for individuals and population groups to reduce the global burden of non-communicable diseases requires a multipronged approach involving the various relevant sectors in the society. The agricultural and food sectors feature prominently and must be given due priority. Food strategies must not merely be directed at ensuring food security for all, but must also achieve the consumption of adequate quantities of safe and good quality food that together make up a healthy diet. Theory of consumer behaviour stresses consumer's ability to think of how the income will be utilized despite the prices of foods that may be high while good quality should also be considered. Summarily, the theory explains that a consumer purchases based on his perceived need for effective utilization of his resources in order to get maximum value or worth of food.

## 2.12 Conceptual framework

The socio-economic characteristics have direct relationship with availability of food, affordability of food, accessibility to food, knowledge of food nutrition, food preferences and respondents' source of information (e.g. respondents' age influences the source of information of food). Food availability affect food affordability, which in turn affect accessibility while their source of information of food influences their knowledge and food preferences (e.g. nutritional food information source will determine their knowledge of nutrition. Knowledge of nutrition will therefore, influence their food preference whether high or low. Availability of food, affordability of food, accessibility to food and knowledge of food affect the food preferences. The respondents' challenging factors of food preference will have direct effect on availability of food, affordability of food, accessibility to food, knowledge of food nutrition, preferences for food and respondents' source of information. These have indirect influence on the intervening variables (like government policies and climate change). Food security which is the dependent variable is directly influenced by all the dependent variables (socioeconomic characteristics of respondents, sources of information, knowledge of food and nutrition, food preference and challenges of food preference). The dependent variable (food security) is indirectly influenced by the intervening variables (Fig 1).



**Figure 2.1: Conceptual framework on influence of food preferences on rural and urban households' food security in southwestern Nigeria**

## CHAPTER THREE

### METHODOLOGY

#### 3.0

#### 3.1 Study area

Southwest Nigeria is the study location and this comprises of six states namely; Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States. The major language spoken by indigenes of Southwest Nigeria is Yoruba, though there exist other tribes in the region. Rainy season in the region spans from April to October, while the dry season spans from November to March. The dry season announces the onset of the harmattan which is characterised by dry wind, dust and cold.

Oyo State, referred to as the Pacesetter State, was created in 1976 and it is made up of 33 local government areas (LGAs). The capital of Oyo State is Ibadan. The land area covered by the State is 28, 249 km<sup>2</sup>.and it consists of old hard rocks and dome shaped hills. Both dry and rainy season were characteristics of the weather condition of the State which is similar to what obtains in other States in the Southwest. Crops cultivated in the State include; cassava, banana, orange, cashew, yam, plantain, maize, millet, mango and rice.

Ondo State was created in 1976 and it is usually called the Sunshine State with Akure as its capital. Ondo State is made up of 18 LGAs and the land mass is 14,789sqkm. The State is characterised by the tropical climate and it is bounded by Kogi and Ekiti States in the North, Edo state in the East, Ogun and Oyo State in the West and the Atlantic Ocean in the South. The primary occupation of most people in the state especially in the rural area is farming which is largely at the subsistence level. Ondo State is notable for cocoa production. Other crops grown in the State include; cocoyam, maize, orange, oil palm, cassava, plantain, yam and banana. Fishing is also prominent in some parts of the State and some are into trading. It is noteworthy that people in the State are elites.

Lagos state, popularly referred to as 'center of excellence' was the former capital of Nigeria. Lagos State is very big and populous for its numerous economic activities. The State houses people of different origins and its capital is Ikeja city. The cities in the State covers about 37% of the land mass which houses about 90% of its population. Lagos State is characterized by

the tropical climate and has the island, mainland, beaches, international airport, and numerous companies. The State is very close to the Atlantic Ocean.

### **3.2 Population of the study**

The population for this study included male and female across rural and urban household members above 18 years of age in the study area.

### **3.3 Data collection**

Quantitative instrument used to collect data for the study was structured questionnaire for literate respondents and interview schedule for those who are not literate. Qualitative data was collected through the conduct of Focus Group Discussions (FGDs) sessions.

### **3.4 Sampling procedure and sample size**

Respondents were selected for this study through multi-stage sampling procedure. At the first stage, three out of the six states in the south west were randomly selected. This represents 50% of the total number of states in the south west, Nigeria. The States selected were Lagos, Ondo and Oyo States. At the second stage, the LGAs in the selected States were stratified into rural and urban LGAs. The number of rural and urban LGAs in Oyo State were 28 and 5 respectively; rural and urban LGAs in Ondo State were 8 and 10 respectively, while rural and urban LGAs in Lagos State were two (2) and 18 respectively. The third stage was simple random selection of 15% of LGAs in each of the stratum. Therefore, for Oyo State, four (4) and one (1) LGAs were sampled in rural and urban strata, respectively. For Ondo State, one (1) and two (2) in each of the respective stratum, while for Lagos State, one (1) and three (3) were sampled respectively.

The fourth stage involved the selection of three (3) communities in each of the selected stratified local governments. In Oyo State, urban LGA selected was Ibadan South East and the communities selected were Mapo, Idi-arere and Isopako, while rural LGAs selected were; Akinyele LGA and the communities selected were Adeogun, Akinlalu and Tela; Lagelu LGA and the communities selected were Aba Ago, Akinsola and Idi Osan; Surulere LGA and the communities selected were Alagbede, Elewuro and Okiti; and Itesiwaju LGA and the communities selected were Aba Ayede, Mokolade and Temidire. In Ondo State, urban LGAs



selected were Ondo West LGA and the communities selected were Lotogbe, Olosan camp and Igbado; and Akure South LGA and the communities selected were Awule, Igoba and Oyetedo. Rural LGA selected was Ile-oluji/Okeigbo and the communities selected were Bankemo, Oloruntele and Lipanu. In Lagos State, urban LGAs selected were Agege and the communities selected were Ogba, Ajegunle and Mangoro; Lagos Mainland LGA and the communities selected were Otto, Abule-nla and Iponri; and Ikoyi-Obalende LGA and the communities selected were Obalende, Dolphin and Barracks. The selected rural LGA in Lagos State was Epe and sampled communities were Abule Alabi, Ayesan and Obada.

At the fifth stage, from each of the 36 communities sampled, proportionate sampling was used to select 1% of the households in each of these communities. This made a total of 324 respondents (Tables 4.1).

**Table 3.1: Sampling procedure and sample size**

<b>1<sup>st</sup> stage: Random selection of 50% of State</b>	<b>2<sup>nd</sup> Stage: Stratification of L.G.A.s into urban and rural</b>	<b>3<sup>rd</sup> Stage: Random selection of 15% of L.G.As in each stratum of the State</b>	<b>4<sup>th</sup> Stage: 3 of communities in each of the selected LGAs</b>	<b>5<sup>th</sup> Stage: Systematic random selection of 1% household in each community</b>
Oyo	5 urban LGAs  28 rural LGAs	1 urban LGA  4 rural LGAs	Ibadan S/East (3)  Akinyele (3), lagelu (3), itesiwaju (3) , Surulere (3)	Mapo (10) Idi arere (10), Isopako (10)=30 Akinyele: Adeogun(7) Akinlalu(7) Tela(7) Lagelu : Aba Ago (7) , Akinsola (7) Idi Osan(7) Surulere: Alagbede (7), Elewuro (7) and Okiti (7) Itesiwaju: Aba Ayede (7) Mokolade (7) Temidire (7)=84
Ondo	10 urban LGAs  8 rural LGAs	2 urban LGAs  1 rural LGAs	Akure south (3), Ondo west (3)  Ile-Oluji/Okegbo (3)	Ondo West: Lotogbe (10), Olosan camp (10) Igbado (10). Akure South: Awule (10) Igoba (10) Oyetedo. (10) =60 Ile-oluji/Okeigbo: Bankemo (7) oloruntele (7) and lipanu. (7) =21
-Lagos	18 urban LGAs  2 rural LGAs	3 urban LGAs  1 rural LGAs	Agege (3), Lagos mainland (3) Ikoyi/Obalende (3)  Epe (3)	Agege: Ogba, (11) Ajegunle (11) Mangoro (11) Lagos Mainland: Otto (11), Abule-nla (11) Iponri (11) Ikoyi-Obalende: Obalende, (11) Dolphin (11) Barracks(11) =99 Epe: Abule Alabi (10), Ayesan (10) Obada. (10) =30
<b>Total</b>	<b>71 LGAs</b>	<b>12 LGAs</b>	<b>36 communities</b>	<b>324</b>

### **3.5 Validity of research instrument**

Face and content validity of the research instrument was carried out by the experts in the field of Human Ecology, Rural Sociology and Agricultural Extension.

### **3.6 Reliability of research instrument**

A split-half method was employed to determine the reliability of the instrument. A pre-test of the 40 copies of questionnaire were used in the southwest states other than states that were sampled for this study. This is to eliminate all ambiguities in the questionnaire. A reliability coefficient of 0.83 was obtained which was adjudged acceptable for the study.

### **3.7 Measurement of variables**

#### **3.7.1 Independent variables**

##### **A. Socio-economic characteristics**

1. Age: Respondents indicated their actual age in years.
2. Marital status: It was indicated by respondents whether they were single (1), married (2), divorced (3), separated (4) or widowed (5).
3. Educational level: It was indicated by respondents whether they had no formal education (1), primary education (2), secondary education (3), tertiary education (4) or had other forms of education (5).
4. Household size: Respondents were asked the exact number of their household size.
5. Actual monthly income: Respondents were asked to indicate their actual monthly income, which was measured at interval level.

##### **B. Information source on food nutrition**

A list of 10 information sources on food nutrition was presented to respondents and this was assessed on a 3-point Likert type scale. Respondents indicated whether the frequency of information received on food nutrition from indicated sources were regular with score of 2 assigned, occasional with score of 1 assigned or if they never (with score 0 assigned) received information from such sources. Each information source was ranked in order of importance based on the weighted mean score.

### **C. Knowledge on food nutrition**

A list of thirteen (13) statements were asked to test the knowledge of respondents on food, using yes and no response options. The score of one (1) was assigned to responses that are correct and the score of zero (0) to responses that are incorrect. Respondent with the lowest knowledge score had four (4), while respondent with the highest knowledge score had 24 and the mean was 18.40. Respondents were categorized using the mean value as the threshold. Respondents with high level of knowledge were those with scores from mean and above while respondents with low level of knowledge were those with scores below the mean score.

### **D. Food preference**

A list of 30 food items categorised based on food groups were presented to respondents to tick the expression that best suits their food preferences on a five-point Likert scale. Respondents indicated whether their dislike for a particular food is to the extreme rate = 1, moderate = 2, neither like nor dislike = 3, moderate likeness = 4 or extreme likeness = 5. Respondent with the lowest food preference score had 52, while respondent with the highest food preference score had 173 and the mean was 133.43. Respondents were categorized using the mean value as the threshold. Respondents with high level of food preferences were those with scores from mean and above while respondents with low level of food preferences were those with scores below the mean score.

### **E. Challenging factors**

A list of 15 possible challenges to consumption of preferred food were presented to the respondents to indicate by ticking the challenging factors that determine their food preferences on a 3 point Likert type scale. Respondents rated the challenges as whether severe = (2), mild = (1) or not a challenge (0). Respondent with the lowest constraints score had 0, while respondent with the highest constraints score had 30 and the mean was 20.31. The weighted mean score generated was used to rate each constraint items in order of severity.

### **3.7.2 Dependent variable**

#### **F. Food security**

Household food security was measured by assessing respondents' food availability, accessibility and affordability as indicators. Standardized scores of the three aforementioned variables were generated and then pooled together. The mean value was computed and used to categorise respondents' food security into high and low. Respondents were categorised based on the mean

value computed. Respondents who are food secure were those with scores from mean and above while respondents who are food insecure were those with scores below the mean score.

### **Food availability**

The list of 35 known foods in the study area was provided and the respondents were asked to tick those foods available for their consumption on a 2-point Likert-type scale of available and not available with scores of 1 and 0 assigned respectively. Respondent with the lowest score had 0, while respondent with the highest score had 70 and the mean was 40.92. Respondents' score on availability was added and the mean value was computed. Respondents were categorised based on the mean value computed. Respondents with high food availability level were those with scores from mean and above, while respondents with low level of food availability were those with scores below the mean.

### **Food accessibility**

A list of 20 items on food accessibility measured on a 3-point Likert-type scale were presented to respondents. Respondents indicated whether the frequency of accessibility to food were regular with score of 2 assigned, occasional with score of 1 assigned or if they never (with score 0 assigned) had access to such food. Minimum score was 0.00, maximum score was 37.00 and the mean was 15.79. Respondents' score on accessibility was added and the mean value was computed. Respondents were categorized based on the mean value computed. Respondents with high food accessibility level were those with scores from mean and above while respondents with low level of food accessibility were those with scores below the mean.

### **Food affordability**

The list of 35 known foods in the study area was provided and the respondents were asked to tick those foods affordable for their consumption on a 5-point Likert scale of 7 or more times, 5 - 6 times, 3 - 4 times, 1 - 2 times, and not at all with scores of 4, 3, 2, 1 and 0 assigned respectively. Respondent with the lowest score had 0, while respondent with the highest score had 122 and the mean was 47.30. Respondents' score on affordability was added and the mean value was computed. Respondents were categorized based on the mean value computed. Respondents with high food affordability level were those with scores from mean and above, while respondents with low level of food affordability were those with scores below the mean.

### **3.8 Data analysis**

The data gathered were analysed with the aid of descriptive statistics which entail the use of mean, frequency counts and percentages. Inferential statistics such as chi-square, Pearson Product Moment Correlation (PPMC), t-test, Analysis of Variance (ANOVA) and linear regression were used for test of hypotheses.

### **3.9 Test of hypotheses**

Hypothesis one was tested using Chi-square and PPMC, hypotheses two and three were tested using PPMC, hypotheses four and six were tested using t-test, hypotheses five and seven were tested using ANOVA, while hypothesis eight was tested using linear regression.

## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSION

#### 4.1 Socio-economic characteristics of respondents

##### 4.1.1 Age

Table 4.1 reveals that respondents who dwell in the rural areas had an average age of  $47.5 \pm 14.5$  years, depicting that the respondents were within the working age population. Thus, this placed them at an advantage of getting engaged in productive ventures, hence meeting the food scarcity demands of their households. The mean age ( $\bar{x} = 45.1 \pm 17.7$  years) of urban dwellers portrayed them as actively within the working age population, thus placing them at a better pedestal to seek for labour opportunities which to a large extent enable them to meet the food scarcity demands of their households. However, it is noted that there is a preponderance of respondents above 39 years for both rural (63.6%) and urban (53.7%) dwellers. This implies that a chunk of the working age population is aged and might not be energetic enough meet up with the demand for food. This may further threaten the food security of their households in future. A study by Olayemi (2012) in Nigeria found an inverse relationship between the age of household head and food security.

##### 4.1.2 Household size

The average household size obtained for respondents in the rural area ( $\bar{x} = 6.2 \pm 3.2$  members) as shown in Table 4.1 implies that the respondents have a sizable number of member in their household, thus, keeping up the pace regarding their household food security which could be challenging. The urban households have an average household size of  $6.3 \pm 2.3$  members. This also depict that there may be some level of food insecurity considering present economics indices vis a vis other family commitments that are demanding attention. The higher household size among urban households could be due to migration of rural dwellers to urban areas in search for white collar job and accessibility to social amenities. This finding is at variance with Adegoke *et al.* (2016) who found out that communities in the rural areas have higher members in their household ( $5.7 \pm 3.2$ ) relative to communities in the urban areas ( $4.7 \pm 2.1$ ).

### 4.1.3 Monthly income

Table 4.1 shows that on the average, rural dwellers earned ₦ 49,776±42,217.42 monthly. This amount portrayed them as low income earners when compared with present economic indices and other monetary demands the family is expected to address. With the foregoing, meeting food scarcity among rural households might be difficult. For respondent in the urban areas, the average monthly earning was ₦73,941±55,182.05. This amount may be fairer when compared to their rural counterparts. However, it does not place them above board considering the cost and standard of living in these areas. Hence, urban respondents might still have challenges with being food secure as it was discovered by Bashir *et al.* (2010) that individual income influences their food security status. The reason for this income variance may be because of the multiple streams of income available to the respondents in the urban areas. This view is consistent with Arene (2008) who posited that income of urban households are likely to be higher as a result of longer stay in their private and public endeavours.

### 4.1.4 Religion

As revealed in Table 4.1, 64.2% of the respondents in rural areas and 85.8% of the respondents in the urban areas were mainly Christians. Also, notable was those who belonged to Islam represented by 35.1% and 12.6% for rural and urban dwellers, respectively.

### 4.1.5 Marital status

Marital status of the respondents as shown in Table 4.1 revealed that 75.4% of the respondents in the rural areas were married while 17.9% were single. It is instructive to state that with this status there will be pulling of economic resources by the couple in a bid to attain food security status in the households. Comparatively, about half (53.2%) of the respondents in the urban area were married and this also place them at an advantage in attaining food security status as financial resources will be harmonized in meeting household food demand. However, it was observed that less than half 40.0% of the respondents in the urban areas were single, and these singles may likely engage in poor feeding lifestyle which will further compound their food security status. The increase in the number of singles is adduced to the fact that youths were also sampled from households because this research is a generational study. Hence, some respondents in urban that within the age bracket for youths were not married yet.



#### **4.1.6 Educational qualification**

The educational qualification of the respondents as shown in Table 4.1 revealed that there was a preponderance of respondents with formal education represented by primary (20.1%), secondary (35.1%) and tertiary (25.4%) relative to those with no formal education (16.4%) in the rural area. The same trend was observed in the urban areas with a preponderance of respondents with formal education represented by primary (11.1%), secondary (16.8%) and tertiary (63.7%). With more respondents having formal education in both rural and urban, they are expected to appreciate nutrition adequacy, the need for adequate meals and other issues that are related to food security. It was noted that there were more rural dwellers with no formal education (16.4%) relative to urban dwellers with no formal education (5.3%). This could be attributed to the infrastructure deficit observed in the rural areas. The finding of this study aligns with Adegboye (2016) that the proportion of rural dwellers with no formal education is higher when compared to that of urban dwellers.

**Table 4.1: Socio-economic characteristics of the respondents**

Variables	Rural (n=134)			Urban (n=190)		
	Freq	%	Mean±SD	Freq	%	Mean±SD
<b>Age</b>						
18-39	49	36.6	47.5	88	46.3	45.1
40-59	47	35.1	±	59	31.1	±
60 and above	38	28.3	14.5	43	22.6	17.7
<b>Household size</b>						
1 – 5	62	46.3	6.2	70	36.8	6.3
6 - 10	56	41.8	±	111	58.4	±
11 - 15	15	11.2	3.2	9	4.7	2.3
>15	1	0.7		0	0.0	
<b>Monthly income (₦)</b>						
≤ 20,000	17	12.7		31	16.3	
21,000 - 40,000	66	49.3	49,776.12	39	20.5	73,941.05
41,000 - 60,000	30	22.4	±	40	21.1	±
61,000 - 80,000	4	3.0	42,217.42	16	8.4	55,182.05
> 80000	17	12.7		64	33.7	
<b>Religion</b>						
Christianity	86	64.2		163	85.8	
Islam	47	35.1		24	12.6	
Traditional	1	0.7		3	1.6	
<b>Marital status</b>						
Single	24	17.9		76	40.0	
Married	101	75.4		101	53.2	
Divorced	1	0.7		3	1.6	
Separated	2	1.5		1	0.5	
Widowed	6	4.5		9	4.7	
<b>Education qualification</b>						
No formal education	22	16.4		10	5.3	
Primary	27	20.1		21	11.1	
Secondary	47	35.1		32	16.8	
Tertiary	34	25.4		121	63.7	
Vocational	4	3.0		6	3.2	

Source: Field Survey, 2017

## 4.2 Sources of information

Sources used by respondents to access information as revealed in Table 4.2 shows that respondents in the rural area sourced information mainly from radio ( $\bar{x}=1.50$ ), family and friends ( $\bar{x}=1.36$ ) and from extension workers ( $\bar{x}=1.30$ ). The dissemination of information on food via radio has been identified as a potent means to reach out to the rural populace and enlightened them on a variety of topics with food not being an exemption. Most rural inhabitants source for information via this medium due to its portability and ease of maintenance. The sourcing of information from family and friends established that members of one's family still remains a potent source of information in the rural environment, as family members will believe each other and share common thought or information on issues without exercising fear. Also observed, is the sourcing of information on food from extension workers. It was noted that part of the mandate of agricultural extension covers the welfare of rural inhabitants which is achieved by information dissemination. It was observed that the mandate is mostly driven by University Based Agricultural Extension System as Fanzo, Marshal, Merchan, Jaber, Souza and Verjee (2013) reflected "that right from inception, University Based Agricultural Extension System has been broad based, incorporating adult education, nutrition, home economics, agricultural extension, development communication and health activities". Conversely, information on food was least sourced from health practitioners ( $\bar{x}=0.35$ ), magazine ( $\bar{x}=0.66$ ) and workshops ( $\bar{x}=0.66$ ). It was noted that the former were informal media of information dissemination which is far from the formal means of information dissemination which forms part of the characteristics of the rural environment.

For respondents in the urban area, information was sourced mostly from family members ( $\bar{x}=1.54$ ), social media ( $\bar{x}=1.49$ ) and colleagues ( $\bar{x}=1.48$ ). It was noted that the family is still a potent source of information on a wide range of issues which food is inclusive. After getting information, most family members share such within the family in a bid to also modify the behaviour of the family member and share the benefits of the said information. The use of social media has been a tool for information sharing in recent times; hence, it is not surprising it occupies such a position as source of information on food within the urban populace. It was observed that information sharing through social media enables individuals to communicate between one another, spread information across long distances and maintain strong social ties. Archana and Jyotsna (2015) and Billedo, Amsterdam, Kerkhof, and Finkenauer (2015)

opined that utilization of social networking sites is mainly motivated by the need to communicate and build relationships that are socially based. On the contrary, information on food was least sourced from health practitioners ( $\bar{x}=0.55$ ), workshops ( $\bar{x}=0.83$ ) and extension workers ( $\bar{x}=0.85$ ). It was observed that because of the lifestyle of most inhabitants of urban areas, spreading information on food via these media may be challenging as audience may not be readily available. It was also noted that agricultural extension activities are sufficiently appreciated in peri-urban environment than in the city centres where the role of extension workers may not be appreciated.

**Table 4.2: Distribution of respondents based on their sources of information on food nutrition**

Information Sources	Rural (n=134)							Urban (n=190)						
	Never Freq	Never %	Occasionally Freq	Occasionally %	Regularly Freq	Regularly %	Mean	Never Freq	Never %	Occasionally Freq	Occasionally %	Regularly Freq	Regularly %	Mean
Radio	11	8.2	33	24.6	90	67.2	1.59	24	12.6	81	42.6	85	44.7	1.32
Television	20	14.9	67	50.0	47	35.1	1.20	14	7.4	75	39.5	101	53.3	1.46
Magazine	56	41.8	103	54.2	41	21.6	0.67	46	24.2	103	54.2	41	21.6	0.97
Extension workers	35	26.1	24	17.9	75	56.0	1.30	61	32.1	96	50.5	33	17.4	0.85
Health practitioners	92	68.7	37	27.6	5	3.7	0.35	101	53.2	74	38.9	15	7.9	0.55
Family members	11	8.2	64	47.8	59	44.0	1.36	9	4.7	70	36.8	111	58.4	1.54
Colleagues	17	12.7	61	45.5	56	41.8	1.29	13	6.8	73	38.4	104	54.7	1.48
Newspaper	41	30.6	74	55.2	19	14.2	0.84	27	14.2	101	53.2	62	32.6	1.18
Social media	59	44.0	29	21.6	46	34.3	0.90	18	9.5	60	31.6	112	58.9	1.49
Seminar	54	40.3	72	53.7	8	6.0	0.66	49	25.8	124	65.3	17	8.9	0.83

**n = number of respondents; freq. = frequency; % = percentage**

**Source: Field Survey, 2017**

### 4.3 Knowledge of food nutrition

#### 4.3.1 Knowledge of food nutrition among youths

Table 4.3 reveals that respondents indicated that having heavy food as supper is not good ( $\bar{x}=1.67$ ), nutrient requirements for infants is different from the nutrient requirements for toddlers and adolescents ( $\bar{x}=1.64$ ), excess intake of meat is good for adult ( $\bar{x}=1.57$ ), a sick person should not eat too much fatty food ( $\bar{x}=1.52$ ), serving of red meat is also a major source of protein ( $\bar{x}=1.22$ ) and less intake of energy giving food will not lead to overweight ( $\bar{x}=1.15$ ). The aforementioned knowledge statements ranked highest as indicators reflective of the knowledge of food nutrition among youth. While having heavy food as supper is not good ( $\bar{x}=1.72$ ), excess intake of meat is not good for adult ( $\bar{x}=1.64$ ), nutrient requirements for adult is different from the nutrient requirements for infants, toddlers and adolescents ( $\bar{x}=1.53$ ), a sick person should not eat too much fatty food ( $\bar{x}=1.39$ ), serving of red meat is also a major source of protein ( $\bar{x}=1.32$ ) and less intake of energy giving food will not lead to overweight ( $\bar{x}=1.24$ ) ranked highest as indicator reflective of the knowledge on food among youths in the urban area.

It was observed that respondents in the rural and urban area had same indicators reflecting the extent of knowledge of food nutrition among the youths. The wide range of indicators that the youths expressed are an indication that the youths are inclined to information concerning their nutrition, hence, it is inferred that they are informed and possess high nutritional knowledge. Anetor, Ogundele, and Oyewole (2012) acknowledged that nutritional education can be used to increase nutritional knowledge of adolescents and youths in order for them to improve their dietary habit. It is also plausible to state that the knowledge recorded may have been passed on to them from their parents, as most times, it is done when making food choices or relating reasons that informs the choices of food the parents make for the family. Few studies have examined the role of parental modeling as predictor of healthy eating in children (Zarnowiecki, Dollman, Parletta 2014; Reicks, Banna, Cluskey, Gunther and Hongu 2015).

On the contrary, skimmed milk is better than whole milk for adult ( $\bar{x}=0.76$ ), fruits and vegetables were major sources of micro-nutrients ( $\bar{x}=0.81$ ), vitamin D can be produced by the body from sunshine ( $\bar{x}=0.87$ ) and vitamin C prevents common cold ( $\bar{x}=0.87$ ) were indicated as least indicators reflecting knowledge of food nutrition in the rural area. For respondents in the urban centre, fruits and vegetables were major sources of micro-nutrients ( $\bar{x}=0.87$ ), vitamin C prevents common cold ( $\bar{x}=0.90$ ) were indicated as least indicators reflecting the respondents' knowledge of food nutrition.

**Table 4.3: Distribution of youth based on their level of knowledge of food nutrition**

Knowledge statements	Rural (n=49)							Urban (n=88)						
	Yes		No		I don't know		Mean	Yes		No		I don't know		Mean
	Freq	%	Freq	%	Freq	%		Freq	%	Freq	%	Freq	%	
Excess intake of meat is not good for adult	7	14.3	42	85.7	0	0.0	1.57	15	17.0	73	83.0	0	0.0	1.64
A source of protein is required in the diet every day	0	0.0	2	4.1	47	95.9	0.96	0	0.0	4	4.5	84	95.5	0.97
Less intake of energy giving food will not lead to overweight	23	46.9	26	53.1	0	0.0	1.15	35	39.8	53	60.2	0	0.0	1.24
Vitamin is a major nutrient present in fruits and vegetables	0	0.0	3	6.1	46	93.9	0.93	0	0.0	8	9.1	80	90.9	0.91
The food one eats has no effect on the risk of developing cancer	25	51.0	24	49.0	0	0.0	1.03	41	46.6	47	53.4	0	0.0	1.11
Micro nutrients are contained in fruits and vegetables	0	0.0	8	16.3	41	83.7	0.81	0	0.0	12	13.6	76	86.4	0.87
A serving of red meat is also a major source of protein	16	32.7	33	67.3	0	0.0	1.22	31	35.2	57	64.8	0	0.0	1.32
Nutrient requirement for adults is different from the nutrient requirement for infants, toddlers and adolescents	6	12.2	43	87.8	0	0.0	1.64	24	27.3	64	72.7	0	0.0	1.53
Skimmed milk is better than whole milk for adult	0	0.0	11	22.4	38	77.6	0.76	0	0.0	11	12.5	77	87.5	0.85
Vitamin D can be produced by the body from the sunshine	0	0.0	10	20.4	39	79.6	0.87	0	0.0	18	20.5	70	79.5	0.85
Vitamin C prevents common cold	0	0.0	6	12.2	43	87.8	0.87	0	0.0	10	11.4	78	88.6	0.90
A sick person should not eat too much fatty food	11	22.4	38	77.6	0	0.0	1.52	35	39.8	53	60.2	0	0.0	1.39
Heavy food for supper is not good	8	16.3	41	83.7	0	0.0	1.67	10	11.4	78	88.6	0	0.0	1.72

**n = number of respondents; freq. = frequency; % = percentage**

**Source: Field Survey, 2017**

### 4.3.2 Knowledge on food nutrition among adults

Table 4.4 reveals that respondents in the rural area indicated that “having heavy food as supper is not good” ( $\bar{x}=1.69$ ), “nutrient requirements for adult is different from nutrient requirement for infants, toddlers and adolescents” ( $\bar{x}=1.64$ ), “excess intake of meat is not good for adults” ( $\bar{x}=1.57$ ), serving of red meat is also a major source of protein” ( $\bar{x}=1.22$ ), “less intake of energy food will not lead to overweight” ( $\bar{x}=1.15$ ) and “the food one eats has no effect on the risk of developing cancer” ( $\bar{x}=1.03$ ) as the indicators that reflected the knowledge of food nutrition among adults. From the foregoing, one can substantially attest that the respondents have sufficient knowledge of the nutrient requirements needed by them. It was also reliably established that the respondents know the type of meals that is suitable during specific period of the day and when experiencing unpleasant health challenge. Also, one can reliably establish that as a result of the extent of knowledge of these, individuals are not likely to have issues with undernutrition. On the contrary, the respondents least rated that skimmed milk is better than whole milk for adults ( $\bar{x}=0.76$ ), little vitamin A could be helpful to the body ( $\bar{x}=0.81$ ), vitamin D can be produced by the body from sunshine ( $\bar{x}=0.87$ ), vitamin C prevents common cold ( $\bar{x}=0.87$ ) as indicators of food nutrition they had shallow knowledge of.

In the urban area, respondents revealed having “heavy food for supper is not good” ( $\bar{x}=1.72$ ), excess intake of meat is not good for adults” ( $\bar{x}=1.64$ ), nutrient requirements for adults is different from nutrient requirements for infants, toddlers and adolescents” ( $\bar{x}=1.53$ ), “a sick person should not eat too much fatty food” ( $\bar{x}=1.59$ ), “serving of red meat is also major source of protein” ( $\bar{x}=1.32$ ), “less intake of energy giving food will not lead to overweight” ( $\bar{x}=1.24$ ) and “the food one eats has no effect on the risk of developing cancer” ( $\bar{x}=1.09$ ) highest as indicators reflecting their knowledge of food nutrition. Notably, one can attribute that the respondents have wide range of knowledge on increase in the awareness of people on the role nutrition play in establishing and enhancing sound health.

Conversely, respondents in the urban areas indicated that “vitamin D can be produced by the body from sunshine” ( $\bar{x}=0.85$ ), “skimmed milk is better than whole milk for adults” ( $\bar{x}=0.85$ ), “little vitamin A could be helpful to the body” ( $\bar{x}=0.87$ ) and “vitamin C prevents common cold” ( $\bar{x}=0.90$ ) as indicators that ranked least on knowledge of food nutrition. The low knowledge the respondents had on these indicators depicts that the respondents have little knowledge on the subject which suggests that the respondents have insufficiency of this food



nutrient (Vitamins). The above assertion aligns with Sette *et al.* (2011) that there is higher intake of energy and macronutrients with simultaneous intake of some micronutrients (folate, calcium, vitamin D and iron) at a lower rate which is against the recommendations for adults.

**Table 4.4: Distribution of adults based on their level of knowledge of food nutrition**

Knowledge statements	Rural (n=41)							Urban (n=51)						
	Yes		No		I don't know		Mean	Yes		No		I don't know		Mean
	Freq	%	Freq	%	Freq	%		Freq	%	Freq	%	Freq	%	
Excess intake of meat is not good for adult	10	24.4	31	75.6	0	0.0	1.52	6	11.8	45	88.2	0	0.0	1.64
A source of protein is required in the diet every day	0	0.0	3	7.3	38	92.7	0.96	0	0.0	1	2.0	50	98.0	0.97
Less intake of energy giving food will not lead to overweight	16	39.0	25	61.0	0	0.0	1.15	17	33.3	34	66.7	0	0.0	1.24
Vitamin is a major nutrient present in fruits and vegetables	0	0.0	4	9.8	37	90.2	0.93	0	0.0	3	5.9	48	94.1	0.91
The food one eats has no effect on the risk of developing cancer	17	41.5	24	58.5	0	0.0	1.03	22	43.1	29	56.9	0	0.0	1.09
Micro nutrients are contained in fruits and vegetables	0	0.0	10	24.4	31	75.6	0.81	0	0.0	8	15.7	43	84.3	0.87
A serving of red meat is also a major source of protein	15	36.6	26	63.4	0	0.0	1.22	17	33.3	34	66.7	0	0.0	1.32
Nutrient requirement for adults is different from the nutrient requirement for infants, toddlers and adolescents	12	29.3	29	70.7	0	0.0	1.64	9	17.6	42	82.4	0	0.0	1.53
Skimmed milk is better than whole milk for adult	0	0.0	11	26.8	30	73.2	0.76	0	0.0	8	15.7	43	84.3	0.85
Vitamin D can be produced by the body from the sunshine	0	0.0	4	9.8	37	90.2	0.87	0	0.0	3	5.9	48	94.1	0.85
Vitamin C prevents common cold	0	0.0	8	19.5	33	80.5	0.87	0	0.0	4	7.8	47	92.2	0.90
A sick person should not eat too much fatty food	11	26.8	30	73.2	0	0.0	1.52	12	23.5	39	76.5	0	0.0	1.39
Heavy food as supper is not good	7	17.1	34	82.9	0	0.0	1.69	8	15.7	43	84.3	0	0.0	1.72

**n = number of respondents; freq. = frequency; % = percentage**

**Source: Field Survey, 2017**

### 4.3.3 Knowledge on food nutrition of the elderly

Data on Table 4.5 reveals that nutrient requirements for adults is different from nutrient requirement for infants, toddlers and adolescents ( $\bar{x}=1.73$ ), “having heavy food as supper is not good” ( $\bar{x}=1.73$ ), “a sick person should not eat too much fatty food” ( $\bar{x}=1.55$ ), “excess intake of meat is not good for adult” ( $\bar{x}=1.45$ ), “less intake of energy giving food will not lead to overweight” ( $\bar{x}=1.81$ ) and “serving of red meat is also a major source of protein” ( $\bar{x}=1.05$ ) as indicators of knowledge of food nutrition that ranked highest among elders in the rural areas. It was observed that the knowledge base of the elderly on the items aforementioned, reflects that they appreciate the role nutrition and food adequacy play in improving their health at the later days of their lives. Also, noted as indicators of knowledge on food nutrition by the elders include; “a source of protein is required in the diet everyday” ( $\bar{x}=0.98$ ), “vitamin is a major nutrient present in fruits and vegetables” ( $\bar{x}=0.95$ ) and “the food one eats has no effect on the risk of developing cancer” ( $\bar{x}=0.95$ ). However, the respondents least rated “skimmed milk is better than whole milk” for adults ( $\bar{x}=0.77$ ), “little vitamin A could be helpful to the body” ( $\bar{x}=0.84$ ), “vitamin D can be produced by the body from sunshine” ( $\bar{x}=0.91$ ) and “vitamin C prevents common cold” ( $\bar{x}=0.91$ ) as indicators of food nutrition they had little knowledge of.

Result shows that for respondents in the urban area indicated that “having heavy food as supper is not good” ( $\bar{x}=1.65$ ), “a sick person should not eat too much fatty food” ( $\bar{x}=1.57$ ), “nutrients requirement for adults is different from nutrient requirement for infants, toddlers and adolescents” ( $\bar{x}=1.53$ ), “excess intake of meat is not good for adults” ( $\bar{x}=1.49$ ), “serving of red meat is also a major source of protein” ( $\bar{x}=1.33$ ), “less intake of energy giving food will not lead to overweight” ( $\bar{x}=1.22$ ) and “the food one eats has no effect on the risk of developing cancer” ( $\bar{x}=1.10$ ) ranked highest as indicators of knowledge of food nutrition among elders. From the foregoing, one can posit that these respondents have sufficient knowledge of the role food play. The increased knowledge exhibited by the respondents could be as a result of the current appreciation of the role food and nutrition play in ensuring and enhancing the health of individuals. The data also portray that the respondents appreciate the therapeutic role food play in reversing some food related health conditions.

Conversely, “skimmed milk is better than whole milk for adult” ( $\bar{x}=0.82$ ), “vitamin D can be produced by the body from sunshine” ( $\bar{x}=0.86$ ) and “vitamin is a major nutrient present in fruits and vegetables” ( $\bar{x}=0.88$ ) were least indicators reflecting the knowledge of the role food

play among the elderly in the urban areas. With the low knowledge base on the identified indicators, one can infer that feeding on these food items by the respondents will be inadequate, as they cannot sufficiently feed on what they are not knowledgeable about.

**Table 4.5: Distribution of elders based on their level of knowledge of food nutrition**

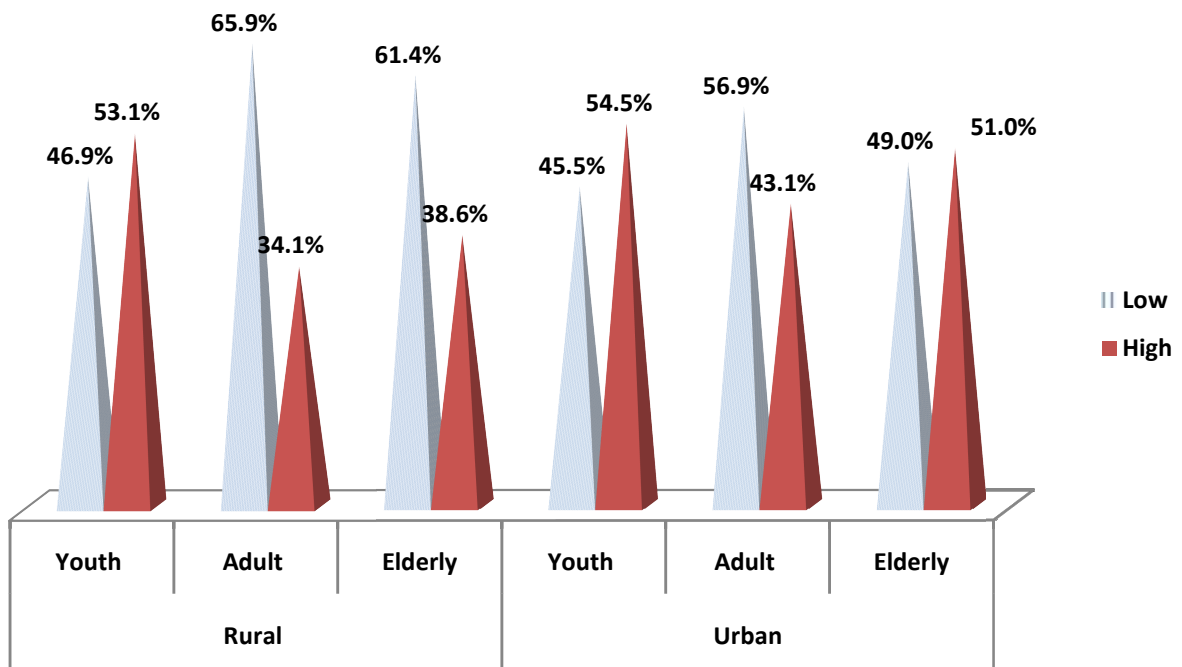
Knowledge statements	Rural							Urban						
	Yes		No		I don't know		Mean	Yes		No		I don't know		Mean
	Freq	%	Freq	%	Freq	%		Freq	%	Freq	%	Freq	%	
Excess intake of meat is not good for adult	12	27.3	32	72.7	0	0.0	1.45	13	25.5	38	74.5	0	0.0	1.49
A source of protein is required in the diet every day	0	0.0	1	2.3	43	97.7	0.98	0	0.0	1	2.0	50	98.0	0.98
Less intake of energy giving food will not lead to overweight	18	40.9	26	59.1	0	0.0	1.18	20	39.2	31	60.8	0	0.0	1.22
Vitamin is a major nutrient present in fruits and vegetables	0	0.0	2	4.5	42	95.5	0.95	0	0.0	6	11.8	45	88.2	0.88
The food one eats has no effect on the risk of developing cancer	23	52.3	21	47.7	0	0.0	0.95	23	45.1	28	54.9	0	0.0	1.11
Micro nutrients are contained in fruits and vegetables	0	0.0	7	15.9	37	84.1	0.84	0	0.0	4	7.8	47	92.2	0.92
A serving of red meat is also a major source of protein	21	47.7	23	52.3	0	0.0	1.05	17	33.3	34	66.7	0	0.0	1.33
Nutrient requirement for adults is different from the nutrient requirement for infants, toddlers and adolescents	6	13.6	38	86.4	0	0.0	1.73	12	23.5	39	75.5	0	0.0	1.53
Skimmed milk is better than whole milk for adult	0	0.0	10	22.7	34	77.3	0.77	0	0.0	9	17.6	42	82.4	0.82
Vitamin D can be produced by the body from the sunshine	0	0.0	4	9.1	40	90.0	0.91	0	0.0	7	13.7	44	86.3	0.86
Vitamin C prevents common cold	0	0.0	4	9.1	40	90.9	0.91	0	0.0	5	9.8	46	90.2	0.90
A sick person should not eat too much fattyfood	10	22.7	34	77.2	0	0.0	1.55	11	21.6	40	78.4	0	0.0	1.57
Heavy food as supper is not good	6	13.6	38	86.4	0	0.0	1.73	9	17.6	42	82.4	0	0.0	1.65

**freq. = frequency; % = percentage**

**Source: Field Survey, 2017**

#### **4.3.4 Categorisation of respondents' knowledge on food nutrition according to generation**

Figure 2 reveals that in the rural areas the knowledge on food nutrition for youth (53.1%) was high but was low for both adult (34.1%) and elderly (38.6%). In the urban areas, the knowledge of food nutrition was high for youth (54.5%) and elderly (51.0%). However for adults, the knowledge of food nutrition was low (43.1%) in urban. The high knowledge level of the youth may be due partly to the educational exposure the respondents had received. With this, they appreciate the diverse issues revolving around food and nutrition adequacy. The low knowledge on food nutrition for adults could be associated with the fact that they are preoccupied with making ends meet thereby having less flair for knowledge on food, making them to eat just to keep life and in most cases might even forget to eat. According to Banna *et al.*, (2016), there is an association between nutrition knowledge and preference for different food items.



**Figure 4.1: Categorisation of respondents' knowledge according to generation**  
**Source: Field survey, 2017**

#### **4.3.5 Categorisation of respondents based on their knowledge of food nutrition in rural and urban**

Table 4.6 reveals the knowledge level of respondents on food nutrition. It was found that knowledge of food nutrition was high among rural (74.6%) and urban (72.1%) respondents. This implies that respondents had knowledge of the benefits of different categories of food items and their importance to the body. The importance of knowledge in the achievement of an endeavour cannot be overemphasized. It is noteworthy that knowledge of the right food to combine in the right proportion acts a major role in the attainment of food security of an household and even the nation at large.



**Table 4.6: Categorisation of respondents based on their knowledge of food nutrition in rural and urban**

<b>Knowledge</b>	<b>Rural</b>		<b>Urban</b>		<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
	<b>Freq</b>	<b>%</b>	<b>Freq</b>	<b>%</b>				
Low	34	25.4	53	27.9	18.40	4.68	4.00	24.00
High	100	74.6	137	72.1				

#### 4.4 Respondents' food preference

##### 4.4.1 Food preference among youth

Table 4.7 reveals that youths in the rural area mostly preferred rice ( $\bar{x}=4.49$ ), cowpea ( $\bar{x}=4.12$ ) and maize ( $\bar{x}=3.69$ ) under the cereals and legumes sub-component of food classification. In the urban area, rice ( $\bar{x}=4.12$ ), cowpea ( $\bar{x}=3.94$ ) and groundnut ( $\bar{x}=3.67$ ) were most preferred. The ratings of these food crops as most preferred could be because these crops were mostly produced in the study area and they were notable as the crops that were mostly consumed by the respondents, hence they were regarded as the food that were preferred most by the respondents. International Food Information Council (2012) noted that food preferences are strongly associated with food eaten. However, Table 5.6 reveals that groundnut ( $\bar{x}=3.53$ ) and wheat ( $\bar{x}=3.37$ ) were least preferred among youths in rural area, while least preferred food among youths in urban area were maize ( $\bar{x}=3.41$ ) and wheat ( $\bar{x}=3.27$ ).

Under the roots and tuber food sub-component, youths in the rural area mostly preferred yam ( $\bar{x}=4.12$ ), gari ( $\bar{x}=4.06$ ) and sweet potatoes ( $\bar{x}=3.73$ ), the same trend was observed for youths in the urban area as they preferred yam ( $\bar{x}=3.92$ ), gari ( $\bar{x}=3.85$ ) and sweet potatoes ( $\bar{x}=3.70$ ) most. Their preference of yam and garri could be because these food items serve as a major staple which is relatively cheap and sufficiently provides the youths with energy. The preference of sweet potatoes can be attributed to its appealing taste. This assertion corroborates Drewnowski *et al.* (2012) that people appreciate food items that are sweet when tasted, and tend to reject those that are bitter in taste. Under the meat, dairy and fish product sub-component of food, fish ( $\bar{x}=4.24$ ), milk ( $\bar{x}=4.06$ ), poultry and poultry products ( $\bar{x}=3.94$ ) and beef ( $\bar{x}=3.86$ ) were most preferred food items among youths in rural areas. The preference of these food items may be attributed to its rich content of protein coupled with the fact that some of these food items were relatively cheap. It is noteworthy that youths in rural areas have the privileges of having access to bush meat and they also rear local fowls. However, it was noted that snail ( $\bar{x}=3.59$ ) and pork ( $\bar{x}=2.94$ ) were rated as the least preferred food items by the youths in rural areas. The rating of these food items as least preferred sources may be because of the high price of these food items. It was noted that as a result of the low cholesterol level of snails, most vegetarians rely on them as source of protein. Hence, they attract high prices particularly for respondents in the urban areas.

In the urban areas, poultry and poultry products ( $\bar{x}$ =4.07), fish ( $\bar{x}$ =4.31), milk ( $\bar{x}$ =3.89), snail ( $\bar{x}$ =3.74) and beef ( $\bar{x}$ =3.74) were most preferred by youths. The preference of poultry and poultry products, fish and milk might be because these food items serve as rich sources of protein. It was observed that most urban households rely on these food items because they provide/serve as cheap sources of protein especially for the children and infants in the homes, hence it was mostly preferred by the youth. The preference of snail and beef might be because they can be afforded by the youth. A male participant during FGD in Lotogbe community of Ondo West LGA in Ondo State comments:

*'I like to relax eating fried snail and drinks so I wait to buy while driving along the road no matter how costly it may be'*

However, it was observed that pork ( $\bar{x}$ =2.60) ranked least of food items that was preferred most. This may be attributed to the nature of the animal with respect to its production, as most times they look repulsive. Hence, respondents must have found it difficult feeding on them owing to the nature of the animal as it is associated with dirt especially when produced via extensive system of management.

Under the fruit sub component of food items, youth in rural areas mostly preferred citrus such as oranges ( $\bar{x}$ =4.18), banana ( $\bar{x}$ =4.08), pineapple ( $\bar{x}$ =3.96), garden egg ( $\bar{x}$ =3.84) and mango ( $\bar{x}$ =3.78). The preference of these fruits may be because of its health benefits. It was noted that fruits have laxative effects, boost immunity and contribute to proper maintenance of the body. The preference of these fruits over the others can also be attributed to the relatively low cost of these fruits, hence it is expected that youth would prefer fruits that have health benefits and are relatively cheap compared to others. It is also plausible to say that some of these fruits were grown by the respondents and since they grow these fruits, they tend to prefer them above other fruits. Conversely, cashew ( $\bar{x}$ =3.59), cucumber ( $\bar{x}$ = 3.47), cherry ( $\bar{x}$ =3.27) and avocado pear ( $\bar{x}$ =3.10) were least preferred by youth in rural areas. The low preference for these fruits may be because they were not commonly grown fruits and the relatively high cost of these fruits coupled with their high demand and low supply.

For youth in urban areas, banana ( $\bar{x}$ =4.18), citrus - orange ( $\bar{x}$ =3.99), pineapple ( $\bar{x}$ =3.99), mango ( $\bar{x}$ =3.60) and cucumber ( $\bar{x}$ = 3.58) were mostly preferred. The preference of these fruits over the others may be attributed to their relatively cheap cost during their peak production season compared to other fruits. Also, the knowledge of the youth on the nutritional benefits

these fruits offers can also be adduced as a reason for the preference of those fruits compared to others. The above is supported by a male participant during FGD in Mapo community of Ibadan South East LGA in Oyo State:

*'I prefer these fruits because my friend say is good for health'.*

This view was also supported by Otuneye, Ahmed, Abdulkarim *et al.*, (2017) that the difference in the nutritional habits among adolescents can be caused by economic and educational factors.

Under the leafy and fruits vegetable sub component of food items, tomatoes ( $\bar{x}$ =4.18), pepper ( $\bar{x}$ =3.98), water leaf ( $\bar{x}$ = 3.96), okro ( $\bar{x}$ =3.92) and amaranths ( $\bar{x}$ =3.86) were most preferred among youth in rural. It is noteworthy that the preference for these crops could be as a result of their relatively cheap price compared to other leafy and fruits vegetables under this category. It is also plausible to state that their preference for these food items may be as a result of their availability, as some of these leafy and fruit vegetables were grown at subsistence level by the respondents. Conversely, spinach ( $\bar{x}$ =3.63), fluted pumpkin ( $\bar{x}$ =3.49), cabbage ( $\bar{x}$ =3.24) and lettuce ( $\bar{x}$ =3.16) were least preferred by the youth, probably because of the high cost of these fruit vegetables when compared to others. It is also plausible to state that the non preference of these food items might be partly due to the fact that these food items were not produced in this climate.

Table 4.7 reveals that for youth in urban, tomatoes ( $\bar{x}$ =4.15), pepper ( $\bar{x}$ =3.86), water leaf ( $\bar{x}$ =3.86), amaranths ( $\bar{x}$ =3.60), bitter leaf ( $\bar{x}$ =3.58) and okro ( $\bar{x}$ =3.55) were mostly preferred. The preference for these food items may be closely associated with the fact that these food items were readily available and are of relatively low cost compared to others food items under this category. However, it was observed that cabbage ( $\bar{x}$ =3.47), fluted pumpkin ( $\bar{x}$ =3.41), spinach ( $\bar{x}$ =3.31) and lettuce ( $\bar{x}$ =3.18) were least preferred by the youth in urban. The low preference of these food items may be linked to the non/low production of the food items in the study area. Thus, making it rarely available and subsequently its low preference. It could also be as a result of the observed relatively high prices of those leafy and fruit vegetables compared to others in the same category. It was noted that the trend of food preference observed among youth in urban was similar to that obtained in rural.

**Table 4.7a: Distribution of youth based on their food preference**

Food	Rural												Urban											
	DE		DM		NLD		LM		LE		$\bar{x}$	R	DE		DM		NLD		LM		LE		$\bar{x}$	R
F	%	F	%	F	%	F	%	F	%	F			%	F	%	F	%	F	%	F	%	F		
<b>Cereals and legumes</b>																								
Maize	2	4.1	2	4.1	11	22.4	28	57.1	6	12.2	3.70	3	8	9.1	7	8.0	22	25.0	43	48.9	8	9.1	3.41	4
Cowpea	0	0.0	1	2.0	5	10.2	30	61.2	13	26.5	4.12	2	3	3.4	8	9.1	10	11.4	37	42.0	30	34.1	3.94	2
G. Nut	0	0.0	4	8.2	19	38.8	22	44.9	4	8.2	3.53	4	5	5.7	3	3.4	24	27.3	40	45.5	16	18.2	3.67	3
Rice	0	0.0	0	0.0	2	4.1	21	42.9	26	53.1	4.49	1	3	3.4	2	2.3	10	11.4	39	44.3	34	38.6	4.13	1
Wheat	0	0.0	6	12.2	21	42.9	20	40.8	2	4.1	3.37	5	8	9.1	7	8.0	34	38.6	31	35.2	8	9.1	3.27	4
<b>Roots and Tubers</b>																								
Yam	0	0.0	1	2.0	10	20.4	20	40.8	18	36.7	4.12	1	3	3.4	6	6.8	9	10.2	47	53.4	23	26.1	3.92	1
Gari	0	0.0	2	4.1	7	14.3	26	53.1	14	28.6	4.06	2	2	2.3	5	5.7	19	21.6	40	45.5	22	25.0	3.85	2
Irish potatoes	3	6.1	1	2.0	26	53.1	16	32.7	3	6.1	3.31	5	12	13.6	8	9.1	29	33.0	31	35.2	8	9.1	3.17	4
Sweet potatoes	0	0.0	0	0.0	16	32.7	30	61.2	3	6.1	3.73	3	5	5.7	6	6.8	18	20.5	40	45.5	19	21.6	3.70	3
Cocoyam	2	4.1	7	14.3	15	30.6	23	46.9	2	4.1	3.33	41	13	14.8	10	11.4	29	33.0	28	31.8	7	8.0	3.03	5
<b>Meat, Dairy and Fish products</b>																								
Fish	0	0.0	1	2.0	5	10.2	24	49.0	19	38.8	4.24	1	0	0.0	4	4.5	5	5.7	39	44.3	40	45.5	4.31	2
Milk	0	0.0	1	2.0	4	8.2	35	71.4	9	18.4	4.06	2	1	1.1	6	6.8	14	15.9	48	54.5	19	21.6	3.89	3
Snail	1	2.0	5	10.2	19	38.8	12	24.5	12	24.5	3.59	5	8	9.1	6	6.8	13	14.8	35	39.8	26	29.5	3.74	4
Pork	10	20.4	6	12.2	15	30.6	13	26.5	5	10.2	2.94	6	24	27.3	20	22.7	20	22.7	15	17.0	9	10.2	2.60	6
Beef	0	0.0	0	0.0	14	28.6	28	57.1	7	14.3	3.86	4	5	5.7	7	8.0	13	14.8	44	50.0	19	21.6	3.74	4
Poultry & Poultry Products	0	0.0	1	2.0	8	16.3	33	67.3	7	14.3	3.94	3	4	4.5	1	1.1	10	11.4	43	48.9	30	34.1	4.07	1
<b>Fruits</b>																								
Garden egg	0	0.0	1	2.0	13	26.5	28	57.1	7	14.3	3.84	4	8	9.1	9	10.2	20	22.7	35	39.8	16	18.2	3.48	6
Banana	0	0.0	0	0.0	7	14.3	31	63.3	11	22.4	4.08	2	2	2.3	5	5.7	6	6.8	37	42.0	38	43.2	4.18	1
Citrus (oranges)	0	0.0	1	2.0	9	18.4	19	38.8	20	40.8	4.18	1	3	3.4	5	5.7	10	11.4	42	47.7	28	31.8	3.99	2
Cashew	0	0.0	3	6.1	18	36.7	24	49.0	4	8.2	3.59	6	10	11.4	10	11.4	21	23.9	38	43.2	9	10.2	3.30	8
Cucumber	1	2.0	4	8.2	19	38.8	21	42.9	4	8.2	3.47	7	6	6.8	4	4.5	26	29.5	37	42.0	15	17.0	3.58	5
Cherry	2	4.1	5	10.2	23	46.9	16	32.7	3	6.1	3.27	8	8	9.1	8	9.1	27	30.7	33	37.5	12	13.6	3.38	7
Avocado Pear	4	8.2	6	12.2	22	44.9	15	30.6	2	4.1	3.10	9	14	15.9	8	9.1	30	34.1	29	33.0	7	8.0	3.08	9
Mango	0	0.0	1	2.0	15	30.6	27	55.1	6	12.2	3.78	5	6	6.8	4	4.5	22	25.0	43	48.9	13	14.8	3.60	4
Pineapple	0	0.0	0	0.0	14	28.6	23	46.9	12	24.5	3.96	3	3	3.4	4	4.5	11	12.5	43	48.9	27	30.7	3.99	2

**Table 4.7b: Distribution of youth based on their food preference**

Food	Rural											Urban												
	DE		DM		NLD		LM		LE		$\bar{x}$	R	DE		DM		NLD		LM		LE		$\bar{x}$	R
	F	%	F	%	F	%	F	%	F	%			F	%	F	%	F	%	F	%	F	%		
<b>Leafy and fruit Vegetables</b>																								
Pepper	0	0.0	0	0.0	10	20.4	30	61.2	9	18.4	3.98	2	2	2.3	3	3.4	15	17.0	53	60.2	15	17.0	3.86	2
Spinach	0	0.0	2	4.1	18	36.7	25	51.0	4	8.2	3.63	6	10	11.4	7	8.0	29	33.0	30	34.1	12	13.6	3.31	9
Okro	0	0.0	2	4.1	11	22.4	25	51.0	11	22.4	3.92	4	7	8.0	4	4.5	21	23.9	46	52.3	10	11.4	3.55	6
Cabbage	3	6.1	5	10.2	20	40.8	19	38.8	2	4.1	3.24	8	5	5.7	8	9.1	25	28.4	41	46.6	9	10.2	3.47	7
Amaranths	0	0.0	1	2.0	14	28.6	25	51.0	9	18.4	3.86	5	3	3.4	9	10.2	19	21.6	46	52.3	11	12.5	3.60	4
Fluted Pumpkin	2	4.1	2	4.1	20	40.8	20	40.8	5	10.2	3.49	7	7	8.0	8	9.1	27	30.0	34	38.6	12	13.6	3.41	8
Bitter leaf	0	0.0	2	4.1	8	16.3	32	65.3	7	14.3	3.40	9	2	2.3	6	6.8	26	29.5	47	53.4	7	8.0	3.58	5
Water leaf	0	0.0	1	2.0	10	20.4	28	57.1	10	20.4	3.96	3	1	1.1	3	3.4	18	20.5	51	58.0	15	17.0	3.86	2
Lettuce	5	10.2	4	8.2	22	44.9	14	28.6	4	8.2	3.16	10	11	12.5	8	9.1	31	35.2	30	34.1	8	9.1	3.18	10
Tomatoes	0	0.0	0	0.0	10	20.4	20	40.8	19	38.8	4.18	1	2	2.3	1	1.1	9	10.2	46	52.3	30	34.1	4.14	1

DE= Dislike Extremely, DM= Dislike Moderately, NLD= Neither Like nor Dislike, LM= Like Moderately, LE= Like Extremely, F=Frequency,

%=percentage; R=Rank;  $\bar{x}$ =Mean value

Source: Field survey, 2017

#### 4.4.2 Food preference among adults

Table 4.8 reveals that under the cereal and legume subcomponent of food items, adults in rural area mostly preferred rice ( $\bar{x}=4.29$ ), cowpea ( $\bar{x}=4.24$ ) and groundnut ( $\bar{x}=3.90$ ), while maize ( $\bar{x}=3.98$ ) and wheat ( $\bar{x}=3.45$ ) were least preferred. Similarly in urban, rice ( $\bar{x}=4.27$ ), cowpea ( $\bar{x}=4.25$ ) and groundnut ( $\bar{x}=4.16$ ) were most preferred, while maize ( $\bar{x}=3.94$ ) and wheat ( $\bar{x}=3.51$ ) were least preferred. The preference of these food items could be attributed to the fact that they were the major staple food families rely on for household feeding. It is also plausible to state that the aforementioned food items could sufficiently provide the needed food nutrient sources (carbohydrates and protein) needed by the family, hence, they were mostly preferred.

Under the roots and tubers sub component of food items, the adults in rural mostly preferred yam ( $\bar{x}=4.20$ ), garri ( $\bar{x}=4.10$ ) and sweet potatoes ( $\bar{x}=3.68$ ), while cocoyam ( $\bar{x}=3.51$ ) and Irish potatoes ( $\bar{x}=3.12$ ) were least preferred. It was also observed that the same trend of food preference was recorded for the adults in the urban as they mostly preferred yam ( $\bar{x}=4.14$ ), gari ( $\bar{x}=3.84$ ) and sweet potatoes ( $\bar{x}=3.78$ ), while cocoyam ( $\bar{x}=3.76$ ) and irish potatoes ( $\bar{x}=3.59$ ) were least preferred. The preference of the earlier mentioned food items could be because those food items provide sufficient calories of energy that is needed to feed the household. It could also be because of its relatively cheap prices compared to other food items in the same category. It is plausible to state that the preference of the initially stated food items could be because they are produced in this agro ecological zone of the country unlike the latter that is not supported by the climatic and edaphic factors of this zone, hence the low production and low preference recorded for this food items.

Under the meat, dairy and fish products sub component of food items, the adults in the rural mostly preferred milk ( $\bar{x}=4.05$ ), beef ( $\bar{x}=4.02$ ), fish ( $\bar{x}=4.17$ ) poultry and poultry products ( $\bar{x}=3.71$ ), while snail ( $\bar{x}=3.59$ ) and pork ( $\bar{x}=2.46$ ) were least preferred. The preference of the initially mentioned food sources might be partly because these food items were relatively cheap and are rich sources of animal protein (beef, fish, poultry and poultry products) that the families rely on. It was observed that these sources of animal protein were relatively cheap when the household size to be fed is put in perspective. The low preference reported for snail and pork may be as a result of the high cost of these sources of animal protein compared to the earlier mentioned sources.

For the adults in urban, they mostly preferred fish ( $\bar{x}=4.37$ ), poultry and poultry products ( $\bar{x}=4.12$ ), snail ( $\bar{x}=3.94$ ) and milk ( $\bar{x}=3.90$ ). The preference of these food items may be as a result of the high educational level of the respondents as these animal protein sources are less in cholesterol. Studies had shown that the behaviour of people towards what they eat is determined by their educational status (KeBanna, Buchthal, Delormier, Kanashiro and Penny, 2016). Conversely, the adults in urban least preferred beef ( $\bar{x}= 3.75$ ) and pork ( $\bar{x}=2.69$ ). The low preference of pork could be as a result of the nature of its production, most especially when it is the extensive system of production.

Under the fruit subcomponent of food items, the adults in rural mostly preferred pineapple ( $\bar{x}=4.27$ ), tomatoes ( $\bar{x}=4.24$ ), banana ( $\bar{x}=4.05$ ), citrus - orange ( $\bar{x}=4.05$ ), mango ( $\bar{x}=3.66$ ) and garden egg ( $\bar{x}= 3.63$ ), while the least preferred fruits were cucumber ( $\bar{x}=3.32$ ), avocado pear ( $\bar{x}= 3.20$ ), cashew ( $\bar{x}= 3.17$ ) and cherry ( $\bar{x}=2.93$ ). For the adults in urban, citrus - oranges ( $\bar{x}= 4.33$ ), tomatoes ( $\bar{x}=4.29$ ), pineapple ( $\bar{x}= 4.22$ ), banana ( $\bar{x}= 4.20$ ), garden egg ( $\bar{x}= 4.10$ ) and mango ( $\bar{x}= 3.98$ ) were mostly preferred, while the fruits least preferred were cashew ( $\bar{x}=3.69$ ), avocado pear ( $\bar{x}=3.63$ ), cucumber ( $\bar{x}=3.59$ ) and cherry ( $\bar{x}=3.55$ ). The preference of some fruits over the other could be as a result of the availability of these fruits compared to other. It was observed that some fruits were not commonly seen during their production season probably as a result of low production, so they are least preferred compared to those that are always available. The preference of some fruits over the other might be as a result of the price of these fruits. Fruits that were readily available at cheap prices will be preferred compared to expensive fruits. It has been observed that people with limited income flow lack financial capacity to eat balance diet and this usually result in low intake of essential nutrients needed by the body (De Irala- Esterez *et al.*, 2000; Msambichaka *et al.*, 2018).

Furthermore, Table 4.8 reveals that adults in rural mostly preferred tomatoes ( $\bar{x}=4.24$ ), okro ( $\bar{x}= 4.07$ ), amaranths ( $\bar{x}= 4.02$ ), pepper ( $\bar{x}= 4.00$ ), bitter leaf ( $\bar{x}= 3.93$ ) and spinach ( $\bar{x}= 3.95$ ). It is plausible to state that the preference of the aforementioned vegetables could be adduced to their availability as they are commonly grown by most rural households. It could be posited that the nutritional and medical benefits of these vegetables can be largely attributed to the increased awareness of its potentials among adults. Increase in fruits and vegetables consumption had been noted to be associated with the interrelationship between education and



behaviour (Chong, Lee, Ng *et al.*, 2017). However, it was observed that waterleaf ( $\bar{x}$ =3.71) cabbage ( $\bar{x}$ =3.22), fluted pumpkin ( $\bar{x}$ =3.29) and lettuce vegetables were least preferred by adults.

For adults in urban tomatoes ( $\bar{x}$ =4.29), pepper ( $\bar{x}$ =4.18), amaranths ( $\bar{x}$ = 4.10), water leaf ( $\bar{x}$ = 4.00), okro ( $\bar{x}$ = 3.98) and bitter leaf ( $\bar{x}$ = 3.90) were most preferred. The preference of these food items may be attributed to the availability of these vegetables and their relatively low price compared to other vegetables under this category. It was observed that these vegetables were used to complement major food items that were consumed by the family. It is noteworthy that adults in urban got some of these food items from the home gardening, hence increased consumption and preferences for these vegetables. The increase in availability and how fruits and vegetable look is proven to be a success in worksite canteen (Lassen *et al.*, 2004). Conversely, the adults least preferred fluted pumpkin ( $\bar{x}$ =3.84), spinach ( $\bar{x}$ =3.80), cabbage ( $\bar{x}$ = 3.65) and lettuce ( $\bar{x}$ =3.49). This may be attributed to their relatively high cost compared to other vegetables within this category.

**Table 4.8a: Distribution of adult based on their food preference**

Food	Rural											Urban										
	DE F	%	DM F	%	NLD F	%	LM F	%	LE F	%	$\bar{x}$	DE F	%	DM F	%	NLD F	%	LM F	%	LE F	%	$\bar{x}$
<b>Cereals</b>																						
Maize	0	0.0	1	2.4	5	12.2	29	70.7	6	14.6	3.98	1	2.0	3	5.9	4	7.8	33	64.7	10	19.6	3.94
Beans	0	0.0	0	0.0	1	2.4	29	70.7	11	26.8	4.24	0	0.0	1	2.0	3	5.9	29	56.9	18	35.3	4.25
G. Nut	0	0.0	1	2.4	7	17.1	28	68.3	5	12.2	3.90	0	0.0	0	0.0	4	7.8	35	68.6	12	23.5	4.16
Rice	0	0.0	0	0.0	3	7.3	23	56.1	15	36.6	4.29	0	0.0	0	0.0	6	11.8	25	49.0	20	39.2	4.27
Wheat	1	2.4	4	9.8	14	34.1	20	48.8	2	4.9	3.44	3	5.9	3	5.9	14	27.5	27	52.9	4	7.8	3.51
<b>Roots and Tubers</b>																						
Yam	0	0.0	0	0.0	3	7.3	27	65.9	11	26.8	4.19	0	0.0	0	0.0	4	7.8	36	70.6	11	21.6	4.14
Gari	0	0.0	0	0.0	3	7.3	31	75.6	7	17.1	4.10	2	3.9	1	2.0	10	19.6	28	54.9	10	19.6	3.84
Irish potatoes	4	9.8	6	14.6	15	36.6	13	31.7	3	7.3	3.12	1	2.0	2	3.9	19	37.3	24	47.1	5	9.8	3.59
Sweet potatoes	1	2.4	1	2.4	10	24.4	27	65.9	2	4.9	3.69	0	0.0	3	5.9	14	27.5	25	49.0	9	17.6	3.78
Cocoyam	2	4.9	5	12.2	8	19.5	22	53.7	4	4.1	3.51	0	0.0	3	5.9	13	25.5	28	54.9	7	13.7	3.76
<b>Meat, Dairy and Fish products</b>																						
Fish	0	0.0	0	0.0	3	7.3	28	68.3	10	24.4	4.17	1	2.0	0	0.0	2	3.9	24	47.1	24	47.1	4.37
Milk	0	0.0	0	0.0	4	9.8	31	75.6	6	14.6	4.05	1	2.0	3	5.9	9	17.6	25	49.0	13	25.5	3.90
Snail	3	7.3	2	4.9	10	24.4	20	48.8	6	14.6	3.59	0	0.0	2	3.9	10	19.6	28	54.9	11	21.6	3.94
Pork	10	24.4	10	24.4	14	34.1	6	14.6	1	2.4	2.46	14	27.5	7	13.7	16	31.4	9	17.6	5	0.8	2.69
Beef	0	0.0	1	2.4	4	9.8	29	70.7	7	17.1	4.02	3	5.9	2	3.9	9	17.6	28	54.9	9	17.6	3.75
Poultry	2	4.9	2	4.9	7	17.1	25	61.0	5	12.2	3.71	0	0.0	1	2.0	6	11.8	30	58.8	14	27.5	4.12
<b>Fruits</b>																						
Tomatoes	0	0.0	0	0.0	4	9.8	23	56.1	14	34.1	4.24	1	2.0	0	0.0	1	2.0	30	58.8	19	37.3	4.29
Garden egg	0	0.0	3	7.3	10	24.4	27	65.9	1	2.4	3.63	0	0.0	3	5.9	7	13.7	23	45.1	18	35.3	4.10
Banana	1	2.4	0	0.0	3	7.3	29	70.7	8	19.5	4.05	0	0.0	1	2.0	5	9.8	28	54.9	17	33.3	4.19
Citrus (oranges)	0	0.0	0	0.0	6	14.6	27	65.9	8	19.5	4.05	0	0.0	0	0.0	3	5.9	28	54.9	20	39.2	4.33
Cashew	2	4.9	9	22.0	11	26.8	18	43.9	1	2.4	3.17	2	3.9	4	7.8	13	25.5	21	41.2	11	21.6	3.69
Cucumber	3	7.3	6	14.6	10	24.4	19	46.3	3	7.3	3.32	5	9.8	1	2.0	15	29.4	19	37.3	11	21.6	3.59
Cherry	6	14.6	6	14.6	14	34.1	15	36.6	0	0.0	2.93	4	7.8	2	3.9	18	35.3	16	31.4	11	21.6	3.55
Avocado	2	4.9	7	17.1	16	39.0	13	31.7	3	7.3	3.20	2	3.9	2	3.9	19	37.3	18	35.3	10	19.6	3.63
Mango	2	4.9	2	4.9	8	19.5	25	61.0	4	9.8	3.66	1	2.0	2	3.9	10	19.6	22	43.1	16	31.4	3.98
Pineapple	0	0.0	0	0.0	3	7.3	24	58.5	14	34.1	4.27	0	0.0	2	3.9	5	9.8	24	47.1	20	39.2	4.22

**Table 4.8b: Distribution of adult based on their food preference**

Food	Rural										Urban												
	DE		DM		NLD		LM		LE		$\bar{x}$	DE		DM		NLD		LM		LE		$\bar{x}$	
F	%	F	%	F	%	F	%	F	%	F		%	F	%	F	%	F	%	F	%	F		%
<b>Vegetables</b>																							
Pepper	0	0.0	0	0.0	6	14.6	29	70.7	6	14.6	4.00	2	2.3	3	3.4	15	17.0	53	60.2	15	29.4	4.18	
Spinach	0	0.0	0	0.0	10	24.4	23	56.1	8	19.5	3.95	1	2.0	2	3.9	15	29.4	21	41.2	12	23.5	3.80	
Okro	0	0.0	0	0.0	2	4.9	34	82.9	5	12.2	4.07	0	0.0	1	2.0	10	19.6	29	56.9	11	21.6	3.98	
Cabbage	4	9.8	5	12.2	10	24.4	19	46.3	3	7.3	3.29	2	3.9	4	7.8	11	21.6	27	52.9	7	13.7	3.64	
Amaranths	1	2.4	0	0.0	6	14.6	24	58.5	10	24.4	4.02	1	2.0	1	2.0	7	13.7	25	49.0	17	33.3	4.10	
Pumpkin	3	7.3	4	9.8	14	34.1	18	43.9	2	4.9	3.29	4	7.8	2	3.9	8	15.7	21	41.2	16	31.4	3.84	
Bitter leaf	0	0.0	0	0.0	9	22.0	26	63.4	6	14.6	3.93	4	7.8	2	3.9	5	9.8	24	47.1	16	31.4	3.90	
Water leaf	0	0.0	3	7.3	13	31.7	18	43.9	7	17.1	3.71	2	3.9	2	3.9	6	11.8	25	49.0	16	31.4	4.00	
Telfaria	2	4.9	1	2.4	16	39.0	15	36.6	7	17.1	3.59	2	3.9	3	5.9	2	3.9	19	37.3	25	49.0	4.22	
Lettuce	2	4.9	8	19.5	12	29.3	17	41.5	2	4.9	3.23	5	9.8	2	3.9	15	29.4	21	41.2	8	15.7	3.49	

DE= Dislike Extremely, DM= Dislike Moderately, NLD= Neither Like nor Dislike, LM= Like Moderately, LE= Like Extremely,

F=Frequency; %=Percentage; $\bar{x}$ =Mean value

Source: Field survey, 2017

#### 4.4.3 Food preference among elderly

Table 4.9 reveals that under the cereals and legumes component of the food items, the elders in the rural area mostly preferred rice ( $\bar{x}=4.07$ ), cowpea ( $\bar{x}=4.07$ ) and wheat ( $\bar{x}=3.31$ ). The preference of those food items against other food items in this category might be because these food items were the common staple foods that provide the household basic nutrients (carbohydrates and proteins) at relatively cheap cost, more importantly when the quantity required by these households are considered. The preference for wheat could be because of health reason as most elderly people are on this diet. It was observed that the elders least preferred maize ( $\bar{x}=3.7$ ) and groundnut ( $\bar{x}=3.43$ ) in rural. For the elders in urban, rice ( $\bar{x}=4.56$ ), groundnut ( $\bar{x}=3.94$ ) and cowpea ( $\bar{x}=3.92$ ) were mostly preferred. The preference for these food items over the others in this category could be partly due to the provision of nutrients to the respondents through these staple foods. It could also be because these staple foods can be conveniently prepared when compared to other food items in the same category. It is plausible to admit that these food items are relatively cheap when placed aside others in the same category.

For the root and tuber sub component of food items, data in Table 5.9 reveals that yam ( $\bar{x}=4.14$ ), garri ( $\bar{x}=3.98$ ) and sweet potatoes ( $\bar{x}=3.55$ ) were most preferred by the elders in rural, while cocoyam ( $\bar{x}=3.14$ ) and irish potatoes ( $\bar{x}=2.98$ ) were least preferred. Likewise in urban, yam ( $\bar{x}=3.98$ ), garri ( $\bar{x}=3.61$ ) and sweet potatoes ( $\bar{x}=3.55$ ) were mostly preferred, while cocoyam ( $\bar{x}=3.29$ ) and irish potatoes ( $\bar{x}=3.27$ ) were least preferred. The preference of the food items could probably be as a result of their relatively cheap price compared to other food items that fall under the same category that the respondent feed on. It may also be acknowledged that the preference for the food items could be as a result of the ease of preparation into consumable form.

For the meat, dairy and fish products sub component of food items, the elders in rural mostly preferred fish ( $\bar{x}=4.00$ ), milk ( $\bar{x}=3.82$ ), poultry and poultry products ( $\bar{x}=3.82$ ) and beef ( $\bar{x}=3.73$ ). The preference for these food items could be largely attributed to the provision of sufficient nutrients (proteins and minerals) at relatively cheap cost. The preference of poultry and poultry products might be attributed to the observed high level of production of poultry birds especially through extensive system of management. Conversely, the elders in rural least preferred snails ( $\bar{x}=3.23$ ) and pork ( $\bar{x}=2.64$ ). The low preference for these food items might be as a result of the low cost of the former when compared to the latter mentioned food items that was preferred by the elders. For elders in the urban, fish ( $\bar{x}=4.06$ ), milk ( $\bar{x}=3.86$ ), poultry and poultry

products ( $\bar{x}$ =3.69) and snail ( $\bar{x}$ =3.67) were mostly preferred. The preference of these food items could be partially attributed to the provision of sufficient nutrients to the respondents at a relatively cheap price when compared to other food items under the same component/category. The preference of poultry products and snails might be attributed to the low fat composition of these sources of animal protein. The low fat composition of these food items make them widely preferred by the elders because of the health benefits derived from its consumption. The preference of these food items could also be attributed to the appealing taste they have. The views expressed aligns with Majabadi, Solhi, Montazeriet *al.*, (2016) that factors affecting food choices were convenience taste, weight, cost and nutrition

Under the fruit sub component of food items, elders in the rural areas mostly preferred banana ( $\bar{x}$ =4.14), pineapple ( $\bar{x}$ =4.14), citrus ( $\bar{x}$ =3.95), mango ( $\bar{x}$ =3.68), garden egg ( $\bar{x}$ =3.54) and cashew ( $\bar{x}$ =3.45). The preference of these fruits over the other fruits in this category may be due to the availability and accessibility of these fruits. It is noteworthy that these fruits are relatively cheap and were largely produced in most rural climes, hence their high preference. Conversely, the respondents least preferred cucumber ( $\bar{x}$ =3.20), avocado pear ( $\bar{x}$ =3.05) and cherry ( $\bar{x}$ =2.89). The low preference recorded for these fruits may be due to the fact that cucumber and avocado pear were not produced in this agro ecological zone of the country. In view of this, these fruits might not be readily available at commercial quantity and when they are available, they are often expensive. For the elders in urban, banana ( $\bar{x}$ =3.96) pineapple ( $\bar{x}$ =3.88), mango ( $\bar{x}$ =3.69), garden egg ( $\bar{x}$ =3.63) and cashew ( $\bar{x}$ =3.57) were mostly preferred. The preference for these fruits may be attributed to the availability, accessibility and affordability of these fruits in the city centers. It was observed that these fruits at times were hawked by fruits vendors who package a collection of each of the fruits in disposable packs which is cheap and convenient for the elders to purchase rather than buying the whole fruit that is expensive and can be wasteful if not consumed at once. Fruits that were least preferred by the elders in urban were avocado pear ( $\bar{x}$ =3.41), cucumber ( $\bar{x}$ =3.39) and cherry ( $\bar{x}$ =3.29). The low preference for these fruits might be because of the low availability and accessibility of the fruits in the urban area.

Under the fruit and leafy vegetable sub component of food items the elders in the rural areas mostly preferred tomatoes ( $\bar{x}$ =4.00), bitter leaf ( $\bar{x}$ =3.91), okra ( $\bar{x}$ =3.89), pepper ( $\bar{x}$ =3.89), amaranths ( $\bar{x}$ =3.77) and water leaf ( $\bar{x}$ =3.68). The preference for these food items can be attributed to the fact that they were used as complementary meals, that is, they accompany the main meal. It

is noteworthy that the health benefits derived from these food items could be partly responsible for their preferences compared to others in the same category. However, Table 5.8 showed that respondents rarely preferred spinach ( $\bar{x}=3.64$ ), fluted pumpkin ( $\bar{x}=3.55$ ), cabbage ( $\bar{x}=3.11$ ) and lettuce ( $\bar{x}=3.09$ ). The low preference recorded for these food items might largely be attributed to the non/low production of these vegetables in the study area. This also contributed to the low availability and accessibility of these food items. It is also worthy of note that the low preference for these vegetables might be because of their relatively high cost when compared to other vegetables in the same category.

For respondents in urban, Table 4.9 reveals that the elders mostly preferred tomatoes ( $\bar{x}=3.94$ ), pepper ( $\bar{x}=3.84$ ), bitter leaf ( $\bar{x}=3.84$ ), okra ( $\bar{x}=3.76$ ), water leaf ( $\bar{x}=3.78$ ), spinach ( $\bar{x}=3.57$ ) and fluted pumpkin ( $\bar{x}=3.59$ ). The preference for these vegetables over the others might as well be attributed to their availability and accessibility, coupled with the fact that they are used in preparing complementary dishes that most households consume. The relative affordability of these vegetables compared to other vegetables is also noteworthy. Conversely, the elders least preferred amaranths ( $\bar{x}=3.57$ ), lettuce ( $\bar{x}=3.43$ ) and cabbage ( $\bar{x}=3.39$ ). The low preference recorded for lettuce could be adduced to its low availability and accessibility as it was not commonly cultivated in this zone of the country. In addition, the cost of these vegetable items when compared to other vegetables in this sub group is higher, hence the low preference recorded for them.

**Table 4.9a: Distribution of elderly respondents based on their food preference**

Food	Rural (n=44)											Urban (n=51)										
	DE F	%	DM F	%	NLD F	%	LM F	%	LE F	%	$\bar{x}$	DE F	%	DM F	%	NLD F	%	LM F	%	LE F	%	$\bar{x}$
<b>Cereals</b>																						
Maize	0	0.0	1	2.4	5	12.2	29	70.7	6	14.6	3.71	2	3.9	7	13.7	8	15.7	23	45.1	11	21.6	3.67
Beans	0	0.0	0	0.0	5	11.4	31	70.5	8	18.2	4.07	2	3.9	2	3.9	6	11.8	29	56.9	12	23.5	3.92
G. Nut	0	0.0	5	11.4	16	36.4	22	50.0	1	2.3	3.43	2	3.9	3	5.9	6	11.8	25	49.0	15	29.4	3.94
Rice	0	0.0	2	4.5	4	9.1	25	56.8	13	29.5	4.11	2	3.9	0	0.0	6	11.8	23	45.1	20	39.2	4.16
Wheat	2	4.5	6	13.6	12	27.3	24	54.5	0	0.0	3.32	2	3.9	3	5.9	19	37.3	23	45.1	4	7.8	3.47
<b>Roots and Tubers</b>																						
Yam	0	0.0	0	0.0	4	9.1	30	68.2	10	22.7	4.14	1	2.0	3	5.9	7	13.7	25	49.0	15	29.4	3.98
Gari	0	0.0	0	0.0	8	18.2	29	65.9	7	15.9	3.97	4	7.8	6	11.8	7	13.7	23	45.1	11	21.6	3.61
Irish potatoes	3	6.8	10	22.7	16	36.4	15	34.1	0	0.0	2.97	4	7.8	8	15.7	13	25.5	22	43.1	4	7.8	3.27
Sweet potatoes	1	2.3	4	9.1	10	22.7	28	63.6	1	2.3	3.55	4	7.8	4	7.8	12	23.5	22	43.1	9	17.6	3.55
Cocoyam	5	11.4	6	13.6	11	25.0	22	50.0	0	0.0	3.14	2	3.9	7	13.7	17	33.3	24	47.1	1	2.0	3.29
<b>Meat, Dairy and Fish products</b>																						
Fish	0	0.0	1	2.3	4	9.1	33	75.0	6	13.6	4.0	2	3.9	1	2.0	7	13.7	23	45.1	18	35.3	4.06
Milk	0	0.0	1	2.3	8	18.2	33	75.0	2	4.5	3.82	2	3.9	3	5.9	8	15.7	25	49.0	13	25.5	3.86
Snail	4	9.1	4	9.1	19	43.2	12	27.3	5	11.4	3.23	6	11.8	2	3.9	8	15.7	22	43.1	13	25.5	3.67
Pork	9	20.5	6	13.6	22	50.0	6	13.6	1	2.3	2.64	16	31.4	7	13.7	16	31.4	9	17.6	3	5.9	2.53
Beef	0	0.0	2	4.5	9	20.5	32	72.7	1	2.3	3.73	6	11.8	3	5.9	9	17.6	24	47.1	9	17.6	3.53
Poultry	0	0.0	1	2.3	8	18.2	33	75.0	2	4.5	3.82	2	3.9	3	5.9	11	21.6	28	54.9	7	13.7	3.69
<b>Fruits</b>																						
Tomatoes	0	0.0	0	0.0	7	15.9	30	68.2	7	15.9	4.00	3	5.9	1	2.0	8	15.7	23	45.1	16	31.4	3.94
Garden egg	0	0.0	4	9.1	13	29.5	26	59.1	1	2.3	3.55	2	3.9	5	9.8	12	23.5	23	45.1	9	17.6	3.63
Banana	0	0.0	0	0.0	4	9.1	30	68.2	10	22.7	4.14	2	3.9	3	5.9	5	9.8	26	51.0	15	29.4	3.96
Citrus (oranges)	0	0.0	0	0.0	9	20.5	28	63.6	7	15.9	3.95	3	5.9	1	2.0	5	9.8	28	54.9	14	27.5	3.96
Cashew	2	4.5	2	4.5	18	40.9	18	40.9	4	9.1	3.45	4	7.8	5	9.8	11	21.6	20	39.2	11	21.6	3.57
Cucumber	3	6.8	5	11.4	18	40.9	16	36.4	2	4.5	3.20	6	11.8	3	5.9	12	23.5	25	49.0	5	9.8	3.39
Cherry	3	6.8	11	25.0	19	43.2	10	22.7	1	2.3	2.87	6	11.8	2	3.9	19	37.3	19	37.3	5	9.8	3.29

**Table 4.9a: Distribution of elderly respondents based on their food preference**

Food	Rural (n=44)											Urban (n=51)										
	DE		DM		NLD		LM		LE		$\bar{x}$	DE		DM		NLD		LM		LE		$\bar{x}$
	F	%	F	%	F	%	F	%	F	%		F	%	F	%	F	%	F	%	F	%	
<b>Fruits</b>																						
Avocado	2	4.5	11	25.0	14	31.8	17	38.6	0	0.0	3.05	4	7.8	5	9.8	18	35.3	14	27.5	10	19.6	3.41
Mango	0	0.0	4	9.1	9	20.5	28	63.6	3	6.8	3.68	3	5.9	4	7.8	10	19.6	23	45.1	11	21.6	3.69
Pineapple	0	0.0	1	2.3	3	6.8	29	65.9	11	25.0	4.14	2	3.9	4	7.8	6	11.8	25	49.0	14	27.5	3.88
<b>Vegetables</b>																						
Pepper	0	0.0	0	0.0	10	22.7	29	65.9	5	11.4	3.89	2	3.9	0	0.0	10	19.6	31	60.8	8	15.7	3.84
Spinach	2	4.5	0	0.0	12	27.3	28	63.6	2	4.5	3.64	3	5.9	5	9.8	13	25.5	20	39.2	10	19.6	3.57
Okro	1	2.3	0	0.0	6	13.6	33	75.0	4	12.2	3.89	3	5.9	2	3.9	10	19.6	25	49.0	11	21.6	3.76
Cabbage	2	4.5	11	25.0	11	25.0	20	45.5	0	0.0	3.11	4	7.8	8	15.7	12	23.5	18	35.3	9	17.6	3.39
Amaranths	0	0.0	0	0.0	14	31.8	26	59.1	4	9.1	3.77	4	7.8	3	5.9	13	25.5	22	43.1	9	17.6	3.57
Pumpkin	0	0.0	1	2.3	20	45.5	21	47.7	2	4.5	3.55	3	5.9	7	13.7	8	15.7	24	47.1	9	17.6	3.57
Bitter leaf	0	0.0	0	0.0	8	18.2	32	72.7	4	9.1	3.91	2	3.9	3	5.9	9	17.6	24	47.1	13	25.5	3.84
Water leaf	1	2.3	4	9.1	10	22.7	22	50.0	7	15.9	3.68	6	11.8	0	0.0	7	13.7	24	47.1	14	27.5	3.78
Telfaria	1	2.3	6	13.6	11	25.0	20	45.5	6	13.6	3.55	1	2.0	6	11.6	6	11.8	22	43.1	16	31.4	3.90
Lettuce	7	15.9	4	9.1	14	31.8	16	36.4	3	6.8	3.09	7	13.7	3	5.9	9	17.6	25	49.0	7	13.7	3.43

**DE= Dislike Extremely, DM= Dislike Moderately, NLD= Neither Like nor Dislike, LM= Like Moderately, LE= Like Extremely, F=Frequency, %=Percentage,  $\bar{x}$ =Mean value**

**Source: Field survey, 2017**



#### **4.4.4 Food preference categories of respondents**

The result of respondents' categorisation based on their food preferences was presented in Table 4.10. It was found that preferences for cereals were high in both rural (53.7%) and urban (55.3%) areas. The preference level of root and tubers was high in rural (55.2%), but low in urban (52.6%). There was low preference for meat among rural respondents (59.0%), however preference for meat was high among the respondents in urban (53.2%). High preference for fruits was observed among urban respondents (55.3%), but it was low in rural (50.7%). Vegetables were preferred in both rural (51.5%) and urban (56.3%). It can be inferred that the food preference level of rural households is largely adduced to the fact that different kinds of crops were cultivated by them, hence, they are not likely to purchase most food crops. It is noteworthy that because most food crops were usually transported to the urban areas, the level of food preference attained by urban households could be attributed to their capability to purchase these food items which is largely dependent on their income. As shown in Table 5.10, on the overall, food preferences was high in rural (53.7%) and urban (53.7%).

**Table 4.10: Categorisation of respondents based on their food preference**

Food groups	Rural		Urban		Min	Max	Mean	SD
	Freq	%	Freq	%				
<b>Cereals</b>								
Low	62	46.3	85	44.7	5.00	25.00	19.14	2.89
High	72	53.7	105	55.3				
<b>Root and tubers</b>								
Low	60	44.8	100	52.6	5.00	25.00	18.17	3.02
High	74	55.2	90	47.4				
<b>Meat</b>								
Low	79	59.0	89	46.8	22.10	3.58	10.00	30.00
High	55	41.0	101	53.2				
<b>Fruits</b>								
Low	68	50.7	85	44.7	37.16	6.05	13.00	50.00
High	66	49.3	105	55.3				
<b>Vegetables</b>								
Low	65	48.5	83	43.7	36.86	5.70	10.00	50.00
High	69	51.5	107	56.3				
<b>Overall preference</b>								
Low	62	46.3	88	46.3	52.00	173.00	133.36	16.76
High	72	53.7	102	53.7				

**F=Frequency, %=Percentage**

**Source: Field survey 2017**

## 4.5 Challenging factors influencing food preference

### 4.5.1 Challenging factors influencing food preference among youth

Table 4.11 reveals that in the rural area, food availability ( $\bar{x}=1.82$ ), cost of food ( $\bar{x}=1.55$ ), unpredictability of climate ( $\bar{x}=1.53$ ), lack of storage facilities and insufficient income ( $\bar{x}=1.51$ ) were most prominent as factors affecting food preference of youths in the rural area. Availability of food would influence their food preference as most food choices are made depending on the food that are at the disposal of the individual making the choice of what to eat. It is noteworthy that the choice of food to eat depends on the available resources. This result agrees with Reicks *et al.* (2015) and Venkatesh, Sangeetha and Singh (2016), that availability of food is a factor that influences what and how much one eats. The role of climate in making food choices could be attributed to the energy demand of the individual or otherwise. One expects that during hot weather there will be increased metabolic activities and respondents will most likely opt for energy supplying diets. Individuals who have access to storage facilities may prefer perishable food items owing to their ability to store them. Whereas, individuals who do not have access to storage facilities may opt for food items that have longer shelf life without placing them in storage facilities. Individual's food preference can also be informed by his income as individuals can only make rational and informed choices based on their financial capacity to execute such food choices they have preferred. This finding is consistent with that of Adeniyi, Omitoyin and Ojo (2012) having reviewed the theory of consumer behavior, presumes that consumers think carefully before making decisions on what to buy so as to attain maximum satisfaction depending on the present income and the present monetary value of the items to be bought. A consumer hopes to spend his money judiciously, satisfactorily and maximally. Also, considered as factor that influences food preference is the individual's accessibility to food ( $\bar{x}=1.51$ ) implying that 'you will only make choices on what you can have access to'.

Other factors that influence the food preference of youth in rural were health status ( $\bar{x}=1.41$ ), taste of the food ( $\bar{x}=1.35$ ) and the seasonality of the food item ( $\bar{x}=1.35$ ). It was noted that the status of an individual's health will inform the kind of food he/she would take in a bid to boost the individual's immunity, improve the state of health and ensure recovery from a particular illness. Conversely, the food preferences of the youth in rural area was least influenced by illiteracy ( $\bar{x}=1.31$ ), unpredictable climate ( $\bar{x}=1.07$ ), locality ( $\bar{x}=1.20$ ), culture ( $\bar{x}=1.06$ ), preparatory time ( $\bar{x}=0.90$ ) and religion ( $\bar{x}=1.06$ ).

For respondents in urban, the youth had their food preference influenced by food availability ( $\bar{x}$ =1.61), health status ( $\bar{x}$ =1.60), accessibility of food ( $\bar{x}$ =1.55), cost of food ( $\bar{x}$ =1.53), lack of storage facilities ( $\bar{x}$ =1.44), taste of food ( $\bar{x}$ =1.41), time required to prepare the food ( $\bar{x}$ =1.40) and seasonality of the food item ( $\bar{x}$ =1.38). The result of this study shows that food availability and accessibility is vital to individuals' food preferences. Thus, for individuals to make food choices, they will have to consider if the food is available and if they can access them. This view corroborates that of Essien, Emebu, Iseh and Haruna, (2014). It could be deduced that the health status of the individuals would also influence the choices of food they prefer as individuals will be mindful of what they eat in a bid to improve their health. It could also be deduced from the findings that if the taste of the food item is appealing, the youth will readily prefer to opt for that food item compared to a food item that is bitter. Equally, if the time required to prepare a food item is short, there is likelihood of increase in individuals' preferences for such food items compared to food items that require long duration for their preparation. Seasonality of food items suggest that food items will be preferred by the respondents when they are in season or it is available and accessible across seasons compared to food items that are seasonally available. Income ( $\bar{x}$ =1.20), nutritional education ( $\bar{x}$ =0.80), climate ( $\bar{x}$ =1.07), locality ( $\bar{x}$ = 1.14), culture ( $\bar{x}$ =1.13) and religion ( $\bar{x}$ =1.15) were least factors that influenced food preference by the youths in the urban area.

**Table 4.11: Distribution of youth based on challenging factors to food preference**

Challenges	Rural (n=49)							Urban (n=88)						
	Not a Challenge		Mild Challenge		Severe Challenge		Mean	Not a Challenge		Mild Challenge		Severe Challenge		Mean
	F	%	F	%	F	%		F	%	F	%	F	%	
Food availability	1	2.0	7	14.3	41	83.7	1.82	4	4.5	25	28.4	59	67.1	1.61
Illiteracy	6	12.2	22	44.9	21	42.9	1.31	38	43.2	16	31.4	13	25.5	0.79
Insufficient income	5	10.2	14	28.6	30	61.2	1.51	20	22.7	30	34.1	38	43.2	1.20
Unpredictable climate	5	10.2	13	26.5	31	63.3	1.53	18	20.5	46	52.3	24	27.3	1.07
Locality	9	18.4	21	42.9	19	38.8	1.20	17	19.3	42	47.7	29	33.0	1.14
Taste	7	14.3	18	36.7	24	49.0	1.35	9	10.2	34	38.6	45	51.1	1.41
Preparatory time	17	34.7	20	40.8	12	24.5	0.90	11	12.5	31	35.2	46	52.3	1.40
Cost of food	4	8.2	14	28.6	31	63.3	1.55	6	6.8	29	33.0	53	60.2	1.53
Seasonality	2	4.1	28	57.1	19	38.8	1.35	8	9.1	39	44.3	41	46.6	1.38
Culture	13	26.5	20	40.8	16	32.7	1.06	16	18.2	45	51.1	27	30.7	1.13
Religion	14	28.6	18	36.7	17	34.7	1.06	19	21.6	37	42.0	32	36.4	1.15
Health status	6	12.2	17	34.7	26	53.1	1.41	9	10.2	17	19.3	62	70.5	1.60
Food scarcity	5	10.2	12	24.5	32	65.3	1.13	13	14.8	27	30.7	48	54.5	1.40
Lack of storage facilities	4	8.2	15	30.6	30	61.2	1.53	11	12.5	27	30.7	50	56.8	1.44
Accessibility to food items	3	6.1	18	36.7	28	57.1	1.51	7	8.0	26	29.5	55	62.5	1.55

**F=Frequency, %=Percentage**

**Source: Field survey, 2017**

#### 4.5.2 Challenging factors influencing food preference among adults

The food preference for adults in rural areas was influenced by food availability ( $\bar{x}=1.85$ ), availability of storage facilities ( $\bar{x}=1.63$ ), accessibility of food ( $\bar{x}=1.61$ ) and health status ( $\bar{x}=1.59$ ) of the respondents. It is expected that respondents will only prefer food items that were available and accessible to them. It was noted that one of the major physical factors affecting the choice of what to eat is accessibility to where it could be bought which is largely depended on mobility (Okolo and Obidigbo, 2015). The availability of storage facilities will be considered because of the need to preserve some food items for longer period. With storage facilities at the disposal of the respondents, they can prefer perishable food items against food items that were not perishable owing to its health benefits. It could be deduced that the status of an individual's health will dictate the choice of food to be eaten, as there might be need to take specific meals that have therapeutic attributes relating to health conditions. However, Table 4.12 reveals that nutrition education ( $\bar{x}=1.24$ ), income ( $\bar{x}=1.46$ ), climate ( $\bar{x}=1.49$ ), locality ( $\bar{x}=1.24$ ), taste ( $\bar{x}=1.17$ ), time required to prepare the food ( $\bar{x}=1.29$ ), seasonality ( $\bar{x}=1.32$ ), culture ( $\bar{x}=1.07$ ), religion (1.15) were least challenging factors influencing food preferences of adults.

For adults in urban, their food preference was influenced by food availability ( $\bar{x}=3.55$ ), health status ( $\bar{x}=1.73$ ), taste ( $\bar{x}=1.63$ ), accessibility of food ( $\bar{x}=1.57$ ) and seasonality ( $\bar{x}=1.51$ ). It was observed that the aforementioned factors affecting individual's food preferences in urban was similar to that obtained among their counterpart in rural. Thus, it was established that in both urban and rural, food availability and accessibility are factors that affect food preference. Also, the taste of the food will inform food choices as food with appealing taste would be preferred over food whose taste are bitter or sour. Tomstad *et al.* (2012) posited that taste serves as a guide in the choice of food to eat. However, adults food preference was least influenced by nutrition education ( $\bar{x}=0.82$ ), income ( $\bar{x}=1.33$ ), climate ( $\bar{x}=1.24$ ), locality ( $\bar{x}=1.18$ ), time required to prepare food ( $\bar{x}=1.37$ ), culture ( $\bar{x}=1.00$ ) and religion ( $\bar{x}=1.12$ ) in the urban centers.

**Table 4.12: Distribution of adults based on their challenging factors to food preference**

Challenges	Rural						Urban							
	Not a Challenge		Mild Challenge		Severe Challenge		Mean	Not a Challenge		Mild Challenge		Severe Challenge		Mean
	F	%	F	%	F	%		F	%	F	%	F	%	
Food availability	0	0.0	6	14.6	35	85.4	1.85	1	2.0	10	19.6	40	78.4	3.55
Illiteracy	9	22.0	13	31.7	19	46.3	1.24	22	43.1	16	31.4	13	25.5	0.82
Insufficient income	4	9.8	14	34.1	23	56.1	1.46	10	19.6	14	27.5	27	52.9	1.33
Unpredictable climate	5	12.2	11	26.8	25	61.0	1.49	7	13.7	25	49.0	19	37.3	1.24
Locality	7	17.1	17	41.5	17	41.5	1.24	8	15.7	26	51.0	17	33.3	1.18
Taste	11	26.8	12	29.3	18	43.9	1.17	3	5.9	13	25.5	35	68.6	1.63
Preparatory time	7	17.1	15	36.6	19	46.3	1.29	6	11.8	20	39.2	25	49.0	1.37
Cost of food	3	7.3	9	22.0	29	70.7	1.63	4	7.8	15	29.4	32	62.7	1.55
Seasonality	5	12.2	18	43.9	18	43.9	1.32	5	9.8	15	29.4	31	60.8	1.51
Culture	12	29.3	14	34.1	15	36.6	1.07	15	29.4	21	41.2	15	29.4	1.00
Religion	9	22.0	17	41.5	15	36.6	1.15	13	25.5	19	37.3	19	37.3	1.12
Health status	2	4.9	13	31.7	26	63.4	1.59	4	7.8	6	11.8	41	80.4	1.74
Food scarcity	1	2.4	6	14.6	34	82.9	1.80	8	15.7	15	29.4	28	54.9	1.39
Lack of storage facilities	4	9.8	7	17.1	30	73.2	1.63	5	9.8	13	25.5	33	64.7	1.55
Accessibility to food items	3	7.3	10	24.4	28	68.3	1.61	4	7.8	14	27.5	33	64.7	1.57

**F=Frequency; %=Percentage**

**Source: Field survey, 2017**

### 4.5.3 Challenging factors influencing food preference of the elderly

Table 4.13 reveals that food availability ( $\bar{x}=1.78$ ), accessibility of food ( $\bar{x}=1.50$ ), income ( $\bar{x}=1.39$ ), climate ( $\bar{x}=1.39$ ), availability of storage facilities ( $\bar{x}=1.39$ ) and locality ( $\bar{x}=1.36$ ) were factors that could influence food preference of the elders in the rural area. It was observed that these aforementioned factors also cut across earlier discussed generations (youths and adults). Thus, depicting that these factors were common across board. The locality of the individual is likened to the type of people in that area, considering the extent of exposure of the individuals with respect to trying new food. Conversely, food preferences of the elders were least informed by nutritional education ( $\bar{x}=1.25$ ), taste of food ( $\bar{x}=1.16$ ), time required to prepare food ( $\bar{x}=1.20$ ), seasonality ( $\bar{x}=1.30$ ), culture ( $\bar{x}=0.98$ ), religion ( $\bar{x}=1.02$ ) and health status ( $\bar{x}=1.23$ ).

The food preference of elders in the urban area was influenced by food availability ( $\bar{x}=1.65$ ), taste of food ( $\bar{x}=1.51$ ), health status ( $\bar{x}=1.47$ ), time required to prepare the food ( $\bar{x}=1.39$ ), accessibility of the food ( $\bar{x}=1.39$ ) and seasonality ( $\bar{x}=1.37$ ). The aforementioned factors follow the trend of previous generations discussed (youths and adults). It was noted that in the urban, time needed to prepare food would be considered because of the tight time schedule for the respondents in the cities. Most urban inhabitants will prefer food items that will require short duration to their preparation as against food that will be prepared using long hours. However, nutritional education ( $\bar{x}=0.94$ ), income ( $\bar{x}=1.25$ ), climate ( $\bar{x}=1.16$ ), locality ( $\bar{x}=1.10$ ), culture ( $\bar{x}=1.16$ ), religion ( $\bar{x}=1.16$ ) and availability of storage facilities ( $\bar{x}=1.25$ ) were factors that least affect the elders preferences for food. From the foregoing, this finding agrees with Ekwochi, Osuorah, Ndu *et al.* (2016) who reported that there are people who might consume or not take certain food items based on political, religion or social benefits.



**Table 4.13: Distribution of the elderly based on their challenging factors to food preference**

Challenges	Rural						Urban						Mean	
	Not a Challenge		Mild Challenge		Severe Challenge		Not a Challenge		Mild Challenge		Severe Challenge			
	F	%	F	%	F	%	F	%	F	%	F	%		
Food availability	1	2.3	8	18.2	35	79.5	1.78	5	9.8	8	15.7	38	74.5	1.65
Illiteracy	12	27.3	9	20.5	23	52.3	1.25	24	47.1	6	11.8	21	41.2	0.94
Insufficient income	5	11.4	17	38.6	22	50.0	1.39	14	27.5	10	19.6	27	52.9	1.25
Unpredictable climate	6	13.6	15	34.1	23	52.3	1.39	11	21.6	21	41.2	19	37.3	1.16
Locality	5	11.4	18	40.9	21	47.7	1.36	14	27.5	18	35.3	19	37.3	1.10
Taste	8	18.2	21	47.7	15	34.1	1.16	8	15.7	9	17.6	34	66.7	1.51
Preparatory time	7	15.9	21	47.7	16	36.4	1.20	10	19.6	11	21.6	30	58.8	1.39
Cost of food	3	6.8	11	25.0	30	68.2	1.61	9	17.6	9	17.6	33	64.7	1.47
Seasonality	8	18.2	15	34.1	21	47.7	1.30	11	21.6	10	19.6	30	58.8	1.37
Culture	14	31.8	17	38.6	13	29.5	0.98	14	27.5	15	29.4	22	43.1	1.16
Religion	12	27.3	19	43.2	13	29.5	1.02	17	33.3	14	27.5	20	39.2	1.06
Health status	6	13.6	21	47.7	17	38.6	1.25	9	17.6	9	17.6	33	64.7	1.47
Food scarcity	5	11.4	9	20.5	30	68.2	1.57	11	21.6	7	13.7	33	64.7	1.43
Lack of storage facilities	9	20.5	9	20.5	26	59.1	1.39	14	27.5	10	19.6	27	52.9	1.25
Accessibility to food items	5	11.4	12	27.3	27	61.4	1.50	9	17.6	13	25.5	29	56.9	1.39

**F=Frequency, %=Percentage**

**Source: Field survey, 2017**

## Dependent variable

### 4.6 Food security of respondents

#### 4.6.1 Food availability

Data in Table 4.14 reveals that rice ( $\bar{x}=1.82$ ), cowpea ( $\bar{x}=1.69$ ) and maize ( $\bar{x}=1.28$ ) ranked highest as cereals and legume that were mostly available in rural areas. The availability of rice could be because of its ease of preparation in most household and is one of the common staple food. The availability of cowpea might be because it is the cheapest source of protein to household in the rural area. Cereals like maize is used in the preparation of other meals (pap and solid pap) that are used as complements when taking other food sources. It is seemingly reasonable to state that maize availability is adduced to respondents' production of maize as an arable crop on their farms owing to its friendly agronomic practices; also bearing in mind that farming is a major occupation of most rural populace. This view is in consonance with Oyebanji (2005) that cereals constitute major crops produced in Nigeria with 22, 729 metric tons production each year. Conversely, it was noted that wheat ( $\bar{x}=0.78$ ) and groundnut ( $\bar{x}=0.92$ ) were ranked least as available cereal and legume in the rural area and this could be partly due to the non/low production of these food items. This assertion could be reliably sustained because the agro-climatic requirement of these crops are not present in this part of the country.

In urban, it was observed that rice ( $\bar{x}=1.86$ ), cowpea ( $\bar{x} = 1.63$ ) and groundnut ( $\bar{x} = 1.27$ ) ranked highest under cereals and legumes available to the respondents. It is seemingly reasonable to state that the increase in local production of rice increased its availability within urban households coupled with its ease of preparation. Cowpea is a cheap source of protein commonly sold in most markets in urban and can be prepared in different forms which might have increased its demand. Cowpea availability in the study area can be attributed to its commercial cultivation in the northern part of Nigeria from where they are transported to the south. It is noteworthy that the availability of groundnut in the urban area is as a result of its value addition, leading to its increased acceptability by urban respondents. Thus, an increase in its demand ensured its availability. On the contrary, maize ( $\bar{x} = 1.17$ ) and wheat ( $\bar{x} = 0.99$ ) were least available to respondents in urban. Possible reasons could be because these food items are not produced in the urban coupled with the fact that these food items require further processing (transformed to other food meal sources) before they can be consumed, hence, its low availability. Vividly in both rural and urban areas, rice and cowpea were the most available

cereal and legume owing to its ease of preparation and its cheap source of protein. Wheat was least available, probably as a result of non-production of it in this agro-climatic zone or as a result of cultural factors attached to its utilization by the respondents.

Tables 4.14 reveals that garri ( $\bar{x} = 1.78$ ), yam ( $\bar{x} = 1.69$ ) and cocoyam ( $\bar{x} = 0.86$ ) were rated most available by the respondents in rural area under the root and tuber sub-component of the food items. The availability of garri could be attributed to the role this food item plays as a complementary meal when compared with other sources of food nutrients. It is worthy of note that cassava can be available all year round after processing into different products. Also, cassava provides the body with energy and its cultivation is enhanced by its tolerance to adverse weather events coupled with the fact that it is suitable to most farming system. The availability of yam and cocoyam could be attributed to their servings as staple food for the family coupled with the fact that the preparation of this meal is quite easy, hence, the demand for them could be the reason for their availability. Sweet potatoes ( $\bar{x} = 0.83$ ) and irish potatoes ( $\bar{x} = 0.43$ ) were least available to the respondents in rural areas. This could be because these food items are not produced in this agro climatic zone. More so, they are higher in price when compared to other root and tuber crops available to the family.

In urban, garri ( $\bar{x} = 1.71$ ), yam ( $\bar{x} = 1.53$ ) and sweet potatoes ( $\bar{x} = 0.98$ ) were the food items mostly available to the respondents under the root and tuber sub classification. The availability of garri could be as a result of its relatively cheap price with respect to feeding of large households *vis-a-vis* other food items under the root and tubers category. It is noteworthy that garri is a rich and cheap source of energy for the family when compared to other food items. This view was consistent with Achinihu and Onuamanam (2001) who affirmed that the energy produced by consuming cassava products is higher relative to energy gotten from rice, sorghum and maize. The availability of yam could be because it is a rich source of energy that is also relatively cheap with the number of households to feed in perspective. Perhaps, yam is culturally acceptable because it serves as a traditional staple “pounded yam”, hence, its increased demand was responsible for its availability. The availability of sweet potatoes is partly attributed to the respondents being able to purchase it as it is relatively costly with feeding of large households in perspective. On the contrary, cocoyam ( $\bar{x} = 0.75$ ) and irish potatoes ( $\bar{x} = 0.72$ ) ranked least as root and tuber crops available to the respondents. These food items were relatively expensive in urban area and when compared to the amount of energy these food items will offer and the household

size that is to be catered for, respondents might opt for others that will serve their purposes. Comparing the availability of root and tuber across rural and urban areas, both garri and yam were mostly available. This is largely attributable to its cheap price when compared to other food items under this category. Irish potato ranked least as available root and tuber partly because its production is not supported by the agro climatic zone, and it is expensive when compared to other food items under this category.

Table 4.14 reveals that fish and sea products ( $\bar{x} = 1.46$ ), beef ( $\bar{x} = 1.33$ ) and milk/cheese ( $\bar{x} = 1.21$ ) were mostly available to the respondents under meat, dairy and fish products in rural. It was noted that the nutritional value of fish and its relatively low cost when compared to other food items that can supplement for fish under this category contributed to the increased availability observed. It is noteworthy that in rural areas, different kinds of bush meat abound that can serve households' need for meat. The observed availability of milk and cheese can be attributed to the processing of milk directly from cow in the rural climate. In the contrary, snail ( $\bar{x} = 0.72$ ) and pork ( $\bar{x} = 0.35$ ) were ranked as least available to the respondents probably because of their prices when compared to other food items that can supplement for them under this category. It was noted that snail in the wild is no longer sufficient to meet household use, leaving household to purchase it as the only alternative which is less feasible at times. This view was expressed by a female participant during one of the FGD sessions:

*“we desire to eat snails but they are expensive these days, the amount for snail to feed the entire household for a meal can be sufficient for fish for the whole week and beyond”.*

In urban area, fish and sea products ( $\bar{x} = 1.70$ ), poultry and poultry products ( $\bar{x} = 1.37$ ) and milk/cheese ( $\bar{x} = 1.37$ ) were mostly available. It was noted that these products are relatively cheap and supply protein and other micro nutrients. The increasing demand for eggs in most urban centers is to enable household feed their children with egg owing to the amino acids available in them which is richly needed by the children for growth and vitality. Conversely, beef ( $\bar{x} = 1.32$ ), snail ( $\bar{x} = 0.99$ ) and pork ( $\bar{x} = 0.47$ ) were least available to the respondents. It was noted that the increased sensitization of the urban populace about food and feeding pattern might be the reason for the low availability of beef owing to its cholesterol content, while the price of snail might be the reason for its ranking. It is believed that feeding of household using snail will be

financially demanding, hence other alternatives to snail is sought to meet household need. The nature of breeding pig could be the reason for their non-acceptance as substantially, pig production is done by extensive system. Thus, making pigs feed on detestable substances, leading to reduction in their demand and availability. It is noteworthy that pig production in the intensive system is expensive, leading to only few farmers engaging in it. Across rural and urban areas, fish and sea products were mostly available owing to its price and rich nutrient composition, while pork was ranked least available owing to its poor management system and low acceptability in the study area.

Data in Table 4.14 reveals that banana ( $\bar{x}=1.24$ ), citrus ( $\bar{x}=1.19$ ) and pineapple ( $\bar{x}=1.18$ ) were ranked highest by respondents in rural. The reason for the availability of these fruits is because most of them were found within the locality of the respondents. It was noted that during the fruiting season of these fruits, value addition is not carried out on them, hence they are richly available to the respondents at a relatively cheap cost. In contrast, cherry ( $\bar{x}=0.70$ ) and avocado pear ( $\bar{x}=0.45$ ) ranked least as fruits that were available to the respondents. It was noted that the rare availability of cherry and avocado pear could be as a result of the wide seasonality experienced with its fruiting coupled with the fact that the volume produced is minimal. The economic value of these fruits are enhanced, for they are most times transported to the urban centers where they are more appreciated.

In the urban centers, banana ( $\bar{x}=1.35$ ), citrus ( $\bar{x}=1.35$ ), pineapple ( $\bar{x}=1.26$ ) and garden egg ( $\bar{x}=1.08$ ) were the fruits most available to the respondents. It was observed that substantial part of these fruits come from the rural area where little or no value addition is carried out on them. Hence, they are readily made available in urban where they are disposed off in good time. It was noted that with increase in the appreciation of urban agriculture, most of the respondents might have some of these fruits at their home garden, thus, making them have easy access to these fruits and most times the fruits were cultivated at the onset of land acquisition. This view corroborates Redwood (2009) that “hundreds of millions of urban dwellers rely on urban agriculture for part of their food consumption or income as they sell high value crops or non food crops or raise livestock for sale”. On the contrary, avocado pear ( $\bar{x}=0.66$ ) and cherry ( $\bar{x}=0.63$ ) were the fruits that were least available to the respondents. This is partly due to the fact that the volume of production of these fruits is seasonally low. Hence, these fruits were limited in supply and respondents hardly have a hand-fill of these fruits before their fruiting season terminates.

Data in Table 4.14 reveals that tomatoes ( $\bar{x}=1.74$ ), pepper ( $\bar{x}=1.72$ ), bitter leaf ( $\bar{x}=1.28$ ) and water leaf ( $\bar{x}=1.26$ ) were most available of the leafy and fruit vegetables in the rural area. The availability of tomatoes and pepper might be attributed to serving of most meals alongside prepared sauce made with tomatoes and pepper. It is noteworthy that both fruit vegetables are medicinal to the human system and they are used in the preparation of most meals, hence its increased availability. The availability of bitter leaf can be attributed to the medicinal properties of the leaf, hence, it is often times requested for by the respondents for immediate use. Bitter leaf is a choice vegetable for soup preparation and it is commonly found in most rural households. According to Masaba (2000), the aqueous and alcoholic crude extracts of the roots, stem, leaves and bark were claimed to be used widely as anti-malaria, treatment of eczema and as a purgative. The availability of water leaf is because they are often picked from the wild owing to its wide dispersal mechanism and ability to multiply. Water leaf is used in preparation of meals for the household, even when it is bought, it is relatively very cheap. However in rural, pumpkin ( $\bar{x}= 0.75$ ), cabbage ( $\bar{x} = 0.71$ ) and lettuce ( $\bar{x}= 0.63$ ) were least available to respondents. These categories of vegetables are quite expensive and may not cater for the nutritional needs of an ideal rural household. Also, cabbage and lettuce are not common vegetables cultivated in the study area, hence, its decreased availability.

Data in Table 4.14 reveals that respondents in the urban area rated tomato ( $\bar{x} = 1.74$ ), pepper ( $\bar{x} = 1.74$ ) and bitter leaf ( $\bar{x} = 1.27$ ) as vegetables that were most available. The reason for the availability of tomato and pepper could be as a result of them serving as complimentary meals with other food items such as rice, cassava flour and yam flour. The availability of bitter leaf can be attributed to the medicinal value attached to the plant alongside its ability to thrive on different soil conditions. This view supports Amira and Okubadejo (2007) that extracts of bitter leaf plant is taken by some people in Nigerian as tonic; also for hypertension treatment. A male participant during an FDG session stated that:

*“I have the plant at my backyard, I don’t feed the plant, its not a nuisance, I squeeze the leave and drink periodically, we believe it’s the best natural body cleanser”*

Conversely, pumpkin ( $\bar{x}=0.95$ ), okro ( $\bar{x}=1.35$ ) and lettuce ( $\bar{x}=0.76$ ) were least available to respondents in the urban areas. It is plausible to state that these pumpkin and lettuce are not well

supported by the climate of this zone, hence, its low availability. This is in agreement with the view of the discussants at the one of the FGDs that:

*“the climatic condition of our area is not favourable for the cultivation of pumpkin and lettuce so we don’t cultivate them in this area”.*

It is noteworthy that the consumption of these two vegetables might be expensive for some household to maintain. Hence, respondents will opt for vegetables that are relatively cheap yet of high nutritional content.

**Table 4.14a: Distribution of respondents based on food availability**

Food Items	Never		Rural		Always		Mean	Rank	Never		Urban		Always		Mean	Rank
	Freq	%	Sometimes Freq	%	Freq	%			Freq	%	Sometimes Freq	%	Freq	%		
<b>Cereals and legumes</b>																
Maize	20	14.9	56	41.8	58	43.3	1.28	3	26	13.7	106	55.8	58	30.5	1.17	4
Cowpea	5	3.7	31	23.1	98	73.1	1.69	2	4	2.1	62	32.6	124	65.3	1.63	2
G. Nut	37	27.6	71	53.0	26	19.4	0.92	4	20	10.5	99	52.1	71	37.4	1.27	3
Rice	4	3.0	15	11.2	115	85.8	1.83	1	3	1.6	20	10.5	167	87.9	1.86	1
Wheat	49	36.6	66	49.3	19	14.2	0.78	5	46	24.2	100	52.6	44	23.2	0.99	5
<b>Root and Tubers</b>																
Yam	4	3.0	34	25.4	96	71.6	1.67	2	7	3.7	75	39.5	108	56.8	1.53	2
Gari	5	3.7	20	14.9	109	81.3	1.78	1	8	4.2	39	20.5	143	75.3	1.71	1
Irish																
Potatos	80	59.7	51	38.1	3	2.2	0.43	5	71	37.4	101	53.2	18	9.5	0.71	5
Sweet																
Potatoes	37	27.6	83	61.9	14	10.4	0.83	4	36	18.9	122	64.2	32	16.8	0.98	3
Cocoyam	38	28.4	76	56.7	20	14.9	0.87	3	72	37.9	94	49.5	24	12.6	0.76	4
<b>Meat, dairy and fish products</b>																
Fish and sea																
products	7	5.2	58	43.3	69	51.5	1.46	1	35	2.6	47	24.7	138	72.6	1.70	1
Milk and																
Cheese	20	14.9	66	49.3	48	35.8	1.21	3	25	13.2	71	37.4	94	49.5	1.36	3
Snail	46	34.3	80	59.7	8	6.0	0.72	5	72	37.9	88	46.3	30	15.8	0.78	5
Pork	97	72.4	27	20.1	10	7.5	0.35	6	123	64.7	44	23.2	23	12.1	0.47	6
Beef	12	9.0	65	48.5	57	42.5	1.34	2	30	15.8	63	33.2	97	51.1	1.35	4
Poultry and																
products	25	16.7	72	53.7	37	27.6	1.07	4	20	10.5	80	42.1	90	47.4	1.37	2



**Table 4.14b: Distribution of respondents based on food availability**

Food Items	Rural								Urban							
	Never		Sometimes		Always		Mean	Rank	Never		Sometimes		Always		Mean	Rank
Freq	%	Freq	%	Freq	%	Freq			%	Freq	%	Freq	%	Freq		
<b>Fruits</b>																
Garden egg	27	20.1	78	58.2	29	21.6	1.01	4	34	17.9	106	55.8	50	26.3	1.08	4
Banana	9	6.7	84	62.7	41	30.6	1.24	1	10	5.3	104	54.7	76	40.0	1.35	1
Citrus	20	14.9	69	51.5	45	33.6	1.19	2	17	8.9	90	47.4	83	43.7	1.35	1
Cashew	51	38.1	72	53.7	11	8.2	0.70	6	68	35.8	95	50.0	27	14.2	0.78	7
Cucumber	57	42.5	60	44.8	17	12.7	0.70	6	46	24.2	99	52.1	45	23.7	0.99	5
Cherry	71	53.0	57	42.5	6	4.5	0.51	8	81	42.6	98	51.6	11	5.8	0.63	9
Avocado	80	59.7	48	35.8	6	4.5	0.44	9	80	42.1	95	50.0	15	7.9	0.66	8
Mango	26	19.4	99	73.9	9	6.7	0.87	5	32	16.8	132	71.3	35	10.8	0.97	6
Pineapple	10	7.5	90	67.2	34	25.4	1.18	3	14	7.4	113	59.5	63	33.2	1.26	3
<b>Leafy and Fruit Vegetables</b>																
Pepper	10	7.5	18	13.4	106	79.1	1.72	2	12	6.3	25	13.2	153	80.5	1.74	1
Spinach	23	17.2	86	64.2	25	18.7	1.01	7	48	25.3	94	49.5	48	25.3	1.00	7
Okro	9	6.7	58	43.3	67	50.0	1.43	5	23	12.1	78	41.1	89	46.8	1.35	9
Cabbage	58	43.3	57	42.5	19	14.2	0.71	9	48	25.3	106	55.8	36	18.9	0.94	5
Amaranths	14	10.4	77	57.5	43	32.1	1.22	6	48	25.3	79	41.6	63	33.2	1.08	6
<b>Fluted</b>																
Pumpkin	56	41.8	55	41.0	23	17.2	0.75	8	52	27.4	96	50.5	42	22.1	0.95	8
Bitter leaf	15	11.2	66	49.3	53	39.6	1.28	3	21	11.1	79	41.6	90	47.4	1.36	3
Waterleaf	21	15.7	57	42.5	56	41.8	1.26	4	21	11.1	97	51.1	72	37.9	1.27	5
Lettuce	66	49.3	51	38.1	17	12.7	0.63	10	69	36.3	97	51.1	24	12.6	0.76	10
Tomatoes	2	1.5	31	23.1	101	75.4	1.74	1	6	3.2	37	19.5	147	77.4	1.74	1

F=Frequency; %=Percentage;  $\bar{x}$ =Mean value

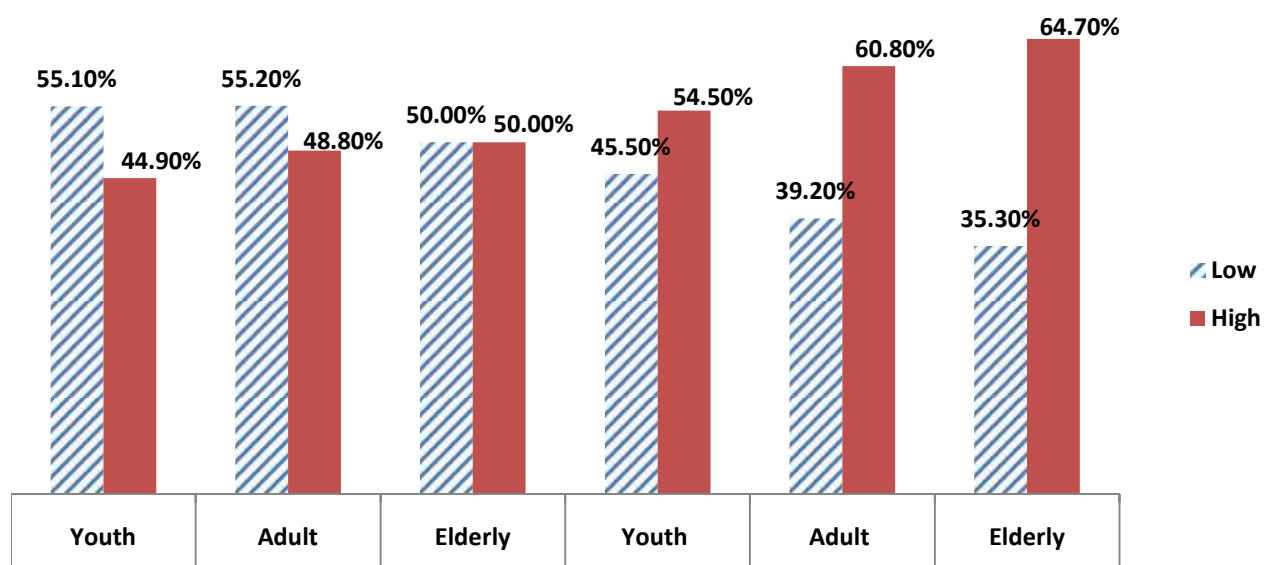
Source: Field survey, 2017

#### 4.6.2 Categorisation of food availability according to generation

Figure 3 reveals that the mean of food availability across generation was  $40.92 \pm 11.84$ . Food availability level was low for youth (55.1%), adults (55.2%) and elders (50.0%) in the rural areas. The reason for the low availability level of food observed among youth and adult could be because vast population of the rural inhabitants (youth and adults inclusive) are migrating to the urban centers in quest for better opportunities to enable them to change their standard and level of living, hence, they are fast disengaging in farming which has been primary source of employment for these set of respondents. This view is consistent with Cohen and Garret (2009) that there is “a shift in employment within the food system with fewer people working in agriculture and more working in transport, wholesaling, retailing food processing and vending”. Thus, most food items were no longer readily available to the rural populace. It is also reasonable to admit the low availability of some food items that are not entirely locally produced, some are sourced, thus making them expensive to purchase. The availability of these food items to the elderly may be attributed to them being dependent on their children who are responsible in making these food items available. Also, since they are no longer engaged in productive income generating activities, the bulk of the food items are made available to them.

However, in the urban areas, food availability was high across the generation; youth (54.5%), adult (60.8%) and (64.7%) elderly. The availability of food recorded across the generation may be attributed to the fact that respondents in the urban areas are inundated with information on nutrition. Since they are more enlightened than those in rural areas, urban dwellers will likely appreciate adequate nutrition. It is noteworthy that elders are placed on special diet as a result of their health and advice from their nutritionist. Hence, the observed increased availability of food when compared to other generations.

Studies had confirmed that education of adults can determine their behavior towards the type of food consumed (Kearney, 2000). The availability of food recorded for youth and adult could be as a result of the increase in possible avenues where these food items were sold particularly in urban. More so, the role played by fruits in the human system is increasingly appreciated by respondents in the urban centres. Comparatively, it was observed that food availability was high for the elderly with observed reduction among adult and youth across rural and urban centres. This could be attributed to the fact that the elderly being dependents are adequately provided for by their care givers.



**Figure 4.2: Categorisation of food availability according to generation**

Source: Field survey, 2017

#### 4.6.4 Food accessibility

Table 4.15 reveals accessibility of rural respondents to food. It was found that respondents in rural area agree that they have enough of all kinds of food to eat ( $\bar{x}=1.28$ ), due to scarcity of some food items, they eat the same kind of food ( $\bar{x}=1.22$ ), have enough but not always the kind of food they wish to eat ( $\bar{x}=1.05$ ). The aforementioned statements ranked highest as indication of food accessibility by respondents in the rural area. From the foregoing one can state that, accessibility to food in the rural area encompasses, sufficiently, having all the kinds of food one would need to have for a healthy life at all time. For rural dwellers to be adjudged to have access to food sufficiently, regularity of food items remains pertinent. It is worthy of note that this assertion is dependent on financial resources or other forms of assets that serve as store for wealth. This view corroborate that of FAO (2009), that households with sufficient resources can still cope when crop production is poor and during the period of food scarcity. However, it was observed that respondents in rural areas indicated that access to food is affected by ill health ( $\bar{x}=0.29$ ), inability to access food due to scarcity of food ( $\bar{x}=0.32$ ), it is often difficult to get to the store or market ( $\bar{x}=0.37$ ), hardly have time to settle down to eat ( $\bar{x}=0.42$ ) and inability to cook or eat because of tiredness which affects their access to food ( $\bar{x}=0.52$ ). The aforementioned statements ranked least as indicators that depict food accessibility in the rural areas. Conclusively, it can be inferred that access to food in the rural areas is principally hinged on sufficiency of those food items in season and out of season.

In the urban area, prominent indicators that reflect respondents' accessibility to food include; "I have enough of all kind of food to eat" ( $\bar{x}=1.46$ ), "I have enough but not always the kind of food I wish to eat" ( $\bar{x}=1.10$ ) and "due to scarcity of some food items we eat the same kind of food" ( $\bar{x}=1.02$ ). This trend was also observed for respondents in rural area and this implies that availability of food items is largely the reflection of respondents' accessibility to food. On the contrary, "my access to food is affected by ill health" ( $\bar{x}=0.30$ ), "I am unable to access food due to scarcity of cooking fuel" ( $\bar{x}=0.48$ ), "I often do not have enough to eat" ( $\bar{x}=0.53$ ) and "I hardly have time to settle down to eat" ( $\bar{x}=0.53$ ) ranked least as indicators of food accessibility by the respondents. From the foregoing, these were not sufficient to determine ones access to food in the rural area as against having enough food both in season and out of season. Conclusively, it was observed that the same indicators as observed among rural and urban respondents shaped their accessibility to food.

**Table 4.15: Distribution of respondents based on food accessibility**

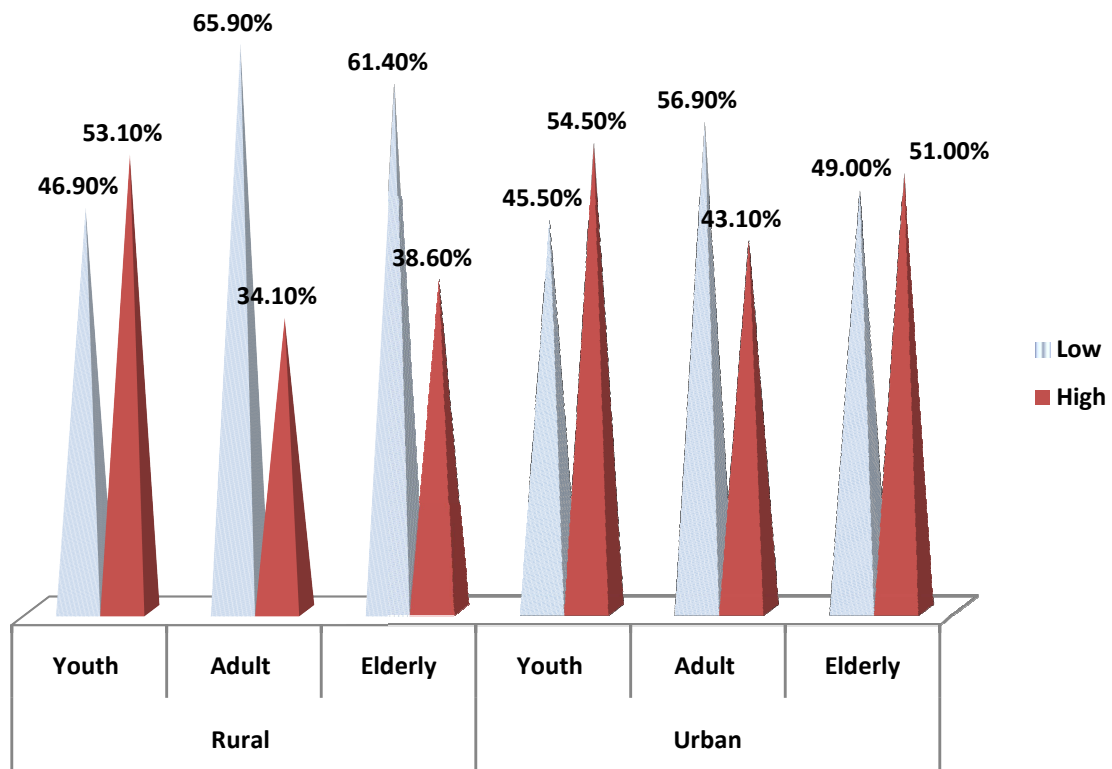
Statements	Rural							Urban						
	Not at all Freq	%	Occasionally Freq	%	Regularly Freq	%	Mean	Not at all Freq	%	Occasionally Freq	%	Regularly Freq	%	Mean
I have enough of all the kinds of food to eat	19	14.2	58	43.3	57	42.5	1.28	7	3.7	89	46.8	94	49.5	1.46
I have enough but not always the kind of food I wish to eat	21	15.7	85	63.4	28	20.9	1.05	30	15.8	111	58.4	49	25.8	1.10
I rarely have time for shopping and cooking	71	53.0	49	36.6	14	10.4	0.57	63	33.2	105	55.3	22	11.6	0.78
It is often difficult to get to the store or market	95	70.9	29	21.6	10	7.5	0.37	96	50.5	76	40.0	18	9.5	0.59
I am unable to access food due to scarcity of cooking fuel	94	70.1	37	27.6	3	2.2	0.32	114	60.0	61	32.1	15	7.9	0.49
My access to food is affected by my ill health	101	75.4	27	20.1	6	4.5	0.29	149	78.4	25	13.2	16	8.4	0.30
I often do not have enough to eat	62	46.3	59	44.0	13	9.7	0.63	108	56.8	64	33.7	18	9.5	0.53
Due to scarcity of some food items we eat the same kinds of food	21	15.7	62	46.3	51	38.1	1.22	47	24.7	92	48.4	51	26.8	1.02
My lack of time for food preparation affects my access to food	77	57.5	42	31.3	15	11.2	0.54	86	45.3	77	40.5	27	14.2	0.69
I hardly have time to settle down to eat	82	61.2	48	35.8	4	3.0	0.42	98	51.6	73	38.4	19	10.0	0.58
Lack of storage facilities hinders storage facilities	67	50.0	25	18.7	42	31.3	0.81	99	52.1	61	32.1	30	15.8	0.64
My inability to cook or eat because of tiredness affects my access to food	70	52.2	58	43.3	6	4.5	0.52	82	43.2	95	50.0	13	6.8	0.64
My inability to hire a steward affects my access to food	78	58.2	34	25.4	22	16.4	0.58	100	52.6	43	22.6	47	24.7	0.72

**Freq=Frequency, %=Percentage****Source: Field Survey, 2017**

#### **4.6.4 Categorisation of food accessibility according to generation**

Figure 4 reveals that in rural area, only youth (53.1%) had high accessibility to food, while adult (65.9%) and elderly (61.4%) had low accessibility to food. The high accessibility to food recorded among youths could be attributed to their productive age. Youths have the energy to engage in both on farm and non farm income generating activities that can help harness financial resources which would help cultivate crops and gain access to required food items. It should be noted that the entrepreneurial drive in youths would have also contributed to their ability to have access to food items. However, both adults and the elderly had waning strength for production of food crops. This could be due to other personal and family responsibilities, hence the shortage of resources to guarantee access to food. It is also noteworthy that during these ages, there is relative decline in their drive to source for household food needs, thereby resulting in low accessibility to these food items.

In the urban area, youths (54.5%) and elderly (51.0%) had high accessibility to food, while adults (56.9%) had low accessibility to food. The high accessibility recorded for youth is likewise attributed to them being in their productive ages which enables them engage in productive ventures that are financially rewarding, thereby, enhancing their access to food items. It is also plausible to state that because the youths possess strength, they will be able to engage in subsistence or commercial farming which will give them the opportunity to readily have access to food. For the elderly, one can attribute accessibility to food in reference to their dependency state. Most elderly people especially in the urban areas are being catered for by their children or are enjoying one form of social support either from religious organization or private bodies. It is worthy of note that most elders are entitled to monthly stipend after long years of services. This might have attributed to the high accessibility to food recorded for the elderly in the urban area. The low accessibility to food recorded for adults in the urban area can be attributed to their lean financial resources. Adults are responsible for meeting the needs of other household members; children, parents and other dependents as dictated by the society. With this pressure on the resources of adults, their accessibility to food is affected.



**Figure 4.3: Categorisation of food accessibility according to generation**  
**Source: Field survey, 2017**

#### 4.6.5 Food affordability

Result in Table 4.16 reveals that in the rural area, rice ( $\bar{x}=2.81$ ), cowpea ( $\bar{x}=2.17$ ) and maize ( $\bar{x}=1.73$ ) were mostly affordable by the respondents. The affordability recorded for rice may be as a result of it being considered as a staple food in most household. Rice is appreciated in most households and cannot be pushed aside. At times, income is set aside to purchase it irrespective of the cost. The affordability of maize could be adduced to its cultivation in the rural areas owing to favourable climatic conditions. Hence, the price for maize is relatively cheap, thereby making it affordable for respondents in relation to other food items under this category. It is noteworthy that some households need not purchase maize as it is a common cultivated crop in rural areas. Conversely, affordability of groundnut ( $\bar{x}=1.17$ ) and wheat ( $\bar{x}=0.88$ ) ranked least among respondents in the rural area. This might be because these crops were not supported by the agro climate of the study area. Hence, when they are transported into these areas (after other processes they have gone through along its value chain), the crops are expensive when compared to other crops under this category, thus leading to the inability of the respondents to conveniently afford them. Additionally, transportation cost contributed to the market price of these crops.

For respondents in the urban area, Table 4.16 reveals that rice ( $\bar{x}=2.33$ ), cowpea ( $\bar{x}=1.66$ ) and groundnut ( $\bar{x}=1.38$ ) ranked highest as food items that were affordable under the cereals and legumes sub group. The affordability of rice might partially be due to it being known as a common staple food for most households. Rice is being relied on as a source of carbohydrate and it commonly features in the urban household food budget, as most children had developed likeness for this staple food. It is also plausible to state that the current efforts being made by the government to encourage local rice production (such as lake rice) is partly responsible for its affordability by most urban households, as local production saw a fall in the price of rice. The affordability recorded for cowpea may be because cowpea is a common staple food that serves as protein source for the family. It is noteworthy that cowpea is still a relatively cheap source of protein when compared to other sources of protein available to the family. The affordability of groundnut could be linked to the wide acceptance of groundnut in most households in the urban area. Hence, most urban households include the purchase of groundnut in their budgetary allocation for food, leading to the observed affordability recorded for groundnut. Most times roasted groundnut sales is a means of livelihood for some individuals, and groundnut is usually consumed alongside with garri or roasted plantain by most people. Conversely, maize ( $\bar{x}=1.12$ )



and wheat ( $\bar{x}=0.90$ ) ranked least of food items under cereals and legumes. This might be because when these food items were transported from the centre of production to the urban areas, they become more expensive, hence the observed less affordability recorded.

Result in Table 4.16 reveals that garri ( $\bar{x}= 2.86$ ), yam ( $\bar{x}= 2.05$ ) and sweet potatoes ( $\bar{x}=1.07$ ) ranked highest as food items affordable to respondents in the rural areas under the root and tuber sub classification. The affordability of garri could be attributed to the recent drop in price of cassava. This might be due to the recent clamor by the present administration encouraging people to go back to the farm, as a result, cassava production cost is reduced, leading to the reduction in the cost of this food item. The affordability recorded for yam and sweet potatoes might be as a result of relative reduction in the price of these food items owing to the large volume of production when in season. Cocoyam ( $\bar{x}=0.91$ ) and irish potatoes ( $\bar{x}=0.49$ ) ranked least of crops that were affordable to respondents in the rural areas under the root and tuber classification. The low affordability recorded might be because these crops are not commercially produced under the agro-ecological zone of this study, leading to the high cost and low affordability obtained. It is worthy of note that the cost of transporting these food crops from the point of production to the point of consumption is high, hence the reduced ability of purchase recorded. Households with limited amount on money to spend on food is worst hit by hike in prices of food items and this especially affect their food affordability (Steenhuis *et al.*, 2011).

For respondents in urban, garri ( $\bar{x}=1.96$ ), yam ( $\bar{x}=1.37$ ) and sweet potatoes ( $\bar{x}=0.85$ ) were most affordable under the root and tuber classification. The affordability recorded for garri may be due to the observed reduction in the price of the raw material (cassava), leading to a reduction in the cost of production and a consequent reduction in the price of this food item. It is also plausible to state that most urban households have alternatives to garri such as wheat, semolina, yam flour, pondo yam among others. This contributed to the reduction in the demand and price for this food items, thereby leading to its increased affordability. The affordability observed for yam and potatoes could be because they are close substitutes for rice as carbohydrate source used to feed the household. It is noteworthy that these food items are relatively cheap when compared to other carbohydrate sources. Hence, its purchase for household consumption is taken as a regular occurrence in view of their placement in the affordability ranking. However, cocoyam ( $\bar{x}=0.73$ ) and irish potatoes ( $\bar{x}=0.64$ ) were ranked least as food items that were affordable. It is worthy to note that the production of these food items are not appreciably encouraged by the

agro-climatic conditions available in the study area. Hence, they are transported from where they are produced to where they are being utilized. All these chain of events increase the price of these food items thereby making it expensive for respondents to purchase them. This view corroborates that of Gustafson (2013) that high food cost affects its affordability.

Table 4.16 shows that for respondents in the rural areas, fish and sea products ( $\bar{x}$ = 2.30), beef ( $\bar{x}$ = 2.19), milk/cheese ( $\bar{x}$ = 1.43) and poultry and poultry products ( $\bar{x}$ = 1.37) ranked highest as sources of protein affordable by the respondent. Fish affordability might be attributed to the fact that they are relatively cheap sources of protein compared to some other sources of protein when the family size to be catered for is considered. It is noteworthy that majority have come to appreciate fish over the years because it is very rich in protein in comparison to other sources of protein in this category. It was noted that beef is the close alternative to fish, hence, majority still prioritize its purchase for family consumption. As a result, an amount of money could be earmarked for its purchase under the family feeding budget, leading to its affordability. The rating given to milk and cheese as observed might be because these items were processed and sold by the female Fulani folk in most rural communities at relatively cheap prices. In view of this, these items are readily available and affordable. The affordability recorded for poultry and poultry products might be because most rural households raise birds by extensive system of management and decide to dispose them off at relatively cheap prices when they are in need of money. Thus, poultry products are affordable by the rural populace. Though, birds might not be fed on immediately, they are raised for a while to bear chicks before they are fed on. On the contrary, snails ( $\bar{x}$ = 0.66) and pork ( $\bar{x}$ =0.32) ranked least as meat that were affordable to the respondents in rural. It is worthy of note that snail meal does not have cholesterol and it is of high demand by vegetarians. Snails are very expensive to buy and also expensive to raise, hence its increase in price. The low affordability recorded for pork reflect that this meat is expensive probably because of its cost of production. In addition, it is noteworthy that some people are naturally irritated by pig because of the believe that they are always found in dirty places, thereby discouraging their consumption.

For respondent in urban, fish and sea products ( $\bar{x}$ =2.21), beef ( $\bar{x}$ =1.76) and milk/cheese ( $\bar{x}$ =1.63) ranked highest as protein sources affordable. The affordability of fish might be as a result of it serving as a rich and relatively cheap protein source compared to other sources of protein available to the respondents in urban. It is also plausible to state that because of the value

placed on these food items by the respondents, the family earmarks a substantial part of its income for its purchase, hence the increase in affordability recorded. However, snail ( $\bar{x}=0.65$ ) and pork ( $\bar{x}=0.42$ ) ranked least as sources of meat that were affordable to the respondents. It was observed that these animals are expensive to raise and maintain. Snails are rare and the high nutritional value attached to snail (it does not have cholesterol) makes it expensive, leading to its low affordability. It is believed that the respondents will opt for other sources of protein that are relatively cheap, particularly when the number of household to be catered for is considered.

Table 4.16 reveals that in rural, banana ( $\bar{x}=1.62$ ), pineapple ( $\bar{x}=1.49$ ), citrus ( $\bar{x}=1.48$ ) and garden egg ( $\bar{x}=1.15$ ) ranked highest as food items that were affordable. It is noted that these fruits are produced by most inhabitants in the rural area either as small scale/backyard farming or on a commercial scale. When in season, these fruits are sold in bulk, often during specific market days at relatively cheap prices, hence they are affordable to the respondents. On the contrary, avocado pear ( $\bar{x}=0.48$ ), cherry ( $\bar{x}=0.57$ ) and cashew ( $\bar{x}=0.75$ ) ranked least of fruits that are affordable by respondents. It is plausible to state that the low affordability recorded for avocado pear is as a result of its low volume of production when in season. More so, transportation cost from production point to where it will be purchased contributed to its increase in price, hence, the low affordability recorded. From the foregoing, the consumption of this fruit item will be low compared to other fruits. According to Miller *et al* (2016), fruits and vegetable consumption decreases with affordability.

Banana ( $\bar{x}=1.45$ ), citrus ( $\bar{x}=1.54$ ), garden egg ( $\bar{x}=1.24$ ), cucumber ( $\bar{x}=1.17$ ) and pineapple ( $\bar{x}=1.02$ ) were the affordable fruits that ranked high among respondents in urban. It is noteworthy that owing to the appreciation of the role of fruits in boosting health conditions, respondents would have prioritized their purchase, leading to the observed affordability. It was observed that in urban centres, fruits are sold at affordable prices after value addition (placing them in disposable packs). This notion was supported by an FGD participant that varieties or mix of fruits are sold at relatively cheap prices, sometimes ₦200 to ₦100 per pack is paid for purchase, depending on the quantity that is affordable. There are times fruits are sliced into bits and sold for ₦50 to ensure that it is affordable. However, cherry ( $\bar{x}=0.67$ ), avocado pear ( $\bar{x}=0.71$ ) and cashew ( $\bar{x}=0.76$ ) ranked least of fruits affordable by respondents. It is believed that the non-commercial production of these fruits might have resulted to low quantity available for distribution when in season. The high demand of the fruits will lead to hike in price which will

culminate to the low affordability obtained. It was noted that these fruits are mostly found in the wild and most times in isolation.

Table 4.16 reveals that in rural areas, tomatoes ( $\bar{x}=2.66$ ), pepper ( $\bar{x}=2.61$ ), okro ( $\bar{x}=1.46$ ), water leaf ( $\bar{x}=1.43$ ) and amarathus( $\bar{x}=1.46$ ) ranked highest as vegetables mostly affordable. The affordability of these vegetables is as a result of their commercial production in the rural areas. Most rural households do not have to buy these vegetables, hence the observed cut in their prices and high level of affordability. It is worthy of note that, most households in the rural areas cultivate these vegetables in their home garden in a bid to provide food for the immediate family and argument the food items that are purchased by the households. However, it was revealed that lettuce ( $\bar{x}=0.63$ ), cabbage ( $\bar{x}=0.78$ ) and pumpkin ( $\bar{x}=0.78$ ) ranked least as vegetables that were affordable by the respondents in rural. This is attributed to the fact that these vegetables were not native to the study area where the agronomic demands of these crops are not prevailing. Thus, the vegetables are transferred from their centre of production to centre of demand which contributed to their increased prices and its low affordability. Vegetables like pumpkin is known to be native to Southeastern, Nigeria where its consumption is higher in comparison to some parts of the country.

For respondent in the urban area, affordability was highest for tomatoes ( $\bar{x}=2.43$ ), pepper ( $\bar{x}=2.43$ ), okro ( $\bar{x}=1.37$ ), waterleaf ( $\bar{x}=1.25$ ) and bitter leaf ( $\bar{x}=1.23$ ). The affordability of these vegetables might be as a result of easy accessibility to these vegetables in the market from their point of production. It was noted that with large volume of production and ease of transportation, the prices of these vegetables do not attract sharp price increase; hence, they are largely affordable. Also, appreciable as a reason for the affordability of these food items is the increase in home garden in the urban area. It is noteworthy that home gardening is encouraged among urban households. Some residents in urban center cultivate some vegetables in buckets and make-shift trays, with this only few items are purchased which are not too burdensome on the respondents with respect to their prices. On the contrary, lettuce ( $\bar{x}=0.78$ ), cabbage ( $\bar{x}=0.95$ ) and flinted pumpkin ( $\bar{x}=0.85$ ) ranked least as vegetables affordable to the respondents. The low affordability of these food items is partly due to its limited supply in the study area, this is because they are not produced in this agro-ecological zone. In view of this, the cost of transportation and other costs incurred in its value chain from point of production to point of demand is attributable for their high prices and low affordability recorded.

**Table 4.16a: Distribution of respondents based on their food affordability**

Food Items	Rural											Urban											Mean	R	Rank		
	Not at all		1-2 Times		3-4 Times		5-6 Times		7 or more Times		Mean	R	Not at all		1-2 Times		3-4 Times		5-6 Times		7 or more Times					Mean	R
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%			Fre	%	Fre	%	Fre	%	Fre	%	Fre	%					
<b>Cereals</b>																											
Maize	2417.9		4432.8		31	23.1	14	10.4	21	15.7	1.73	3	56	29.5	84	44.2	32	16.8	7	3.7	11	5.8	1.12	4			
Cowpea	64.5		2216.4		60	44.8	35	26.1	11	8.2	2.17	2	13	6.8	82	43.2	61	32.1	25	13.2	9	4.7	1.66	2			
G. Nut	3828.4		5944.0		20	14.9	10	7.5	7	5.2	1.17	4	37	19.5	80	42.1	47	24.7	16	8.4	10	5.3	1.38	3			
Rice	53.7		96.7		23	17.2	66	49.3	31	23.1	2.81	1	15	7.9	25	13.2	65	34.2	53	27.9	32	16.8	2.33	1			
Wheat	5641.6		5138.1		15	11.2	11	8.2	1	0.7	0.88	5	84	44.2	59	31.1	35	18.4	6	3.2	7	2.2	0.90	5			
<b>Root &amp; Tubers</b>																											
Yam	8	6.0	32	23.9	57	42.5	19	14.2	18	13.4	2.05	2	26	13.7	88	46.3	57	30.0	17	8.9	2	1.1	1.37	2			
Gari	11	8.2	13	9.7	42	31.3q	53	39.6	15	11.2	2.86	1	22	11.6	44	23.2	67	35.3	34	17.9	23	12.1	1.96	1			
Irish Potatoes	79	59.0	48	35.8	3	2.2	4	3.0	0	0.0	0.49	5	104	54.7	62	32.6	15	7.9	7	3.7	2	1.1	0.64	5			
Sweet Potatoes	38	28.4	55	41.0	36	26.9	4	3.0	1	0.7	1.07	3	72	37.9	82	43.2	30	15.8	5	2.6	1	0.5	0.85	3			
Cocoyam	41	30.6	69	51.5	19	14.2	5	3.7	4	2.1	0.91	4	99	52.1	60	31.6	19	10.0	8	4.2	4	2.1	0.73	4			
<b>Meat</b>																											
<b>Dairy and Fish Products</b>																											
Fish and Sea products	10	7.5	17	12.7	59	44.0	19	14.2	29	21.6	2.30	1	25	13.2	31	16.3	52	27.4	43	22.6	39	20.5	2.21	1			
Milk and Cheese	26	19.4	48	35.8	43	32.1	10	7.5	7	5.2	1.43	3	38	20.0	57	30.0	49	25.8	30	15.8	16	8.4	1.63	3			
Snail	67	50.0	53	39.6	8	6.0	4	3.0	2	1.5	0.66	5	101	53.2	64	33.7	17	8.9	7	3.7	1	0.5	0.65	5			
Pork	109	81.3	14	10.4	6	4.5	3	2.2	2	1.5	0.32	6	139	73.2	33	17.4	10	5.3	6	3.2	2	1.1	0.42	6			
Beef	9	6.7	29	21.6	52	38.8	16	11.9	28	20.9	2.19	2	41	21.6	48	25.3	43	22.6	31	16.3	27	14.2	1.76	2			
Poultry and Products	25	18.7	59	44.0	32	23.9	11	8.2	7	5.2	1.37	4	42	22.1	57	30.0	46	24.2	26	13.7	19	10.0	1.59	4			
<b>Fruits</b>																											
Garden																											
Egg	29	21.6	65	48.5	33	24.6	5	3.7	2	1.5	1.14	4	70	36.8	62	32.6	32	16.8	8	4.2	13	6.8	1.17	3			
Banana	14	10.4	43	32.1	62	46.3	10	7.5	5	3.7	1.62	1	30	15.8	83	43.7	52	27.4	12	6.3	13	6.8	1.45	1			
Citrus	28	20.9	45	33.6	38	28.4	15	11.2	8	6.0	1.48	3	33	17.4	65	34.2	60	31.6	21	11.1	8	6.0	1.54	2			
Cashew	64	47.8	44	32.8	23	17.2	2	1.5	1	0.7	0.75	7	102	53.7	53	27.9	18	9.5	13	6.8	4	2.1	0.76	7			
Cucumber	58	43.3	50	37.3	17	12.7	8	6.0	1	0.7	0.84	6	74	38.9	67	35.3	29	15.3	12	6.3	8	4.2	1.02	5			
Cherry	84	62.7	30	22.4	14	10.4	5	3.7	1	0.7	0.57	8	109	57.4	52	27.4	16	8.4	8	4.2	5	2.6	0.67	9			
Avocado	88	65.7	32	23.9	11	8.2	2	1.5	1	0.7	0.48	9	108	56.8	48	25.3	21	11.1	7	3.7	6	3.2	0.71	8			
Mango	40	29.9	51	38.1	33	24.6	7	5.2	3	2.2	1.12	5	72	37.9	74	38.9q	30	15.8	10	5.3	4	2.1	0.95	6			
Pineapple	21	15.7	51	38.1	44	32.8	11	8.2	7	5.2	1.49	2	43	22.6	82	43.2	47	24.7	12	6.3	6	3.2	1.24	4			

Fre=Frequency, %=Percentage, R=Rank

Source: Field survey, 2017

**Table 4.16b: Distribution of respondents based on their food affordability**

Food Items	Rural												Urban												Mean	R	Rank
	Not at all		1 -2 Times		3 - 4 Times		5 - 6 Times		7 or more Times		Mean		Not at all		1 -2 Times		3 - 4 Times		5 - 6 Times		7 or more Times		Mean				
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%	Mean	R	Fre	%	Fre	%	Freq	%	Freq	%	Freq	%	Mean				
<b>Leafy &amp; Fruit Vegetables</b>																											
Pepper	12	9.0	15	11.2	30	22.4	33	24.6	44	32.8	2.61	2	22	11.6	28	14.7	45	23.7	36	18.9	59	31.1	2.43	1			
Spinach	31	23.1	41	30.6	41	30.6	12	9.0	9	6.7	1.46	6	74	38.9	55	28.9	31	16.3	19	10.0	11	5.8	1.15	6			
Okro	20	14.9	31	23.1	66	49.3	13	9.7	4	3.0	1.63	3	41	21.6	76	40.0	45	23.7	18	9.5	10	5.3	1.37	3			
Cabbage	74	55.2	29	21.6	20	14.9	9	6.7	2	1.5	0.78	9	80	42.1	62	32.6	30	15.8	14	7.4	4	2.1	0.95	9			
Amaranths	22	16.4	55	41.0	36	26.9	16	11.9	5	3.7	1.46	4	71	37.4	65	34.2	29	15.3	18	9.5	7	3.7	1.08	7			
Fluted Pumpkin	59	44.0	50	37.3	19	14.2	5	3.7	1	0.7	0.80	8	91	47.9	61	32.1	21	11.1	10	5.3	7	3.7	0.85	8			
Bitter leaf	21	15.7	61	45.5	36	26.9	11	8.2	5	3.7	1.39	7	50	26.3	79	41.6	37	19.5	15	7.9	9	4.7	1.23	5			
Waterleaf	26	19.4	44	32.8	50	37.3	8	6.0	6	4.5	1.43	5	47	24.7	78	41.1	39	20.5	22	11.6	4	2.1	1.25	4			
Lettuce	81	60.4	27	20.1	21	15.7	4	3.0	1	0.7	0.63	10	101	53.2	49	25.8	24	12.6	13	6.8	3	1.6	0.78	10			
Tomatoes	9	6.7	18	13.4	30	22.4	20	22.4	47	35.1	2.66	1	24	12.6	22	11.6	46	24.2	44	23.2	54	28.4	2.43	1			

Fre=Frequency, %=Percentage, R=Rank

Source: Field survey, 2017

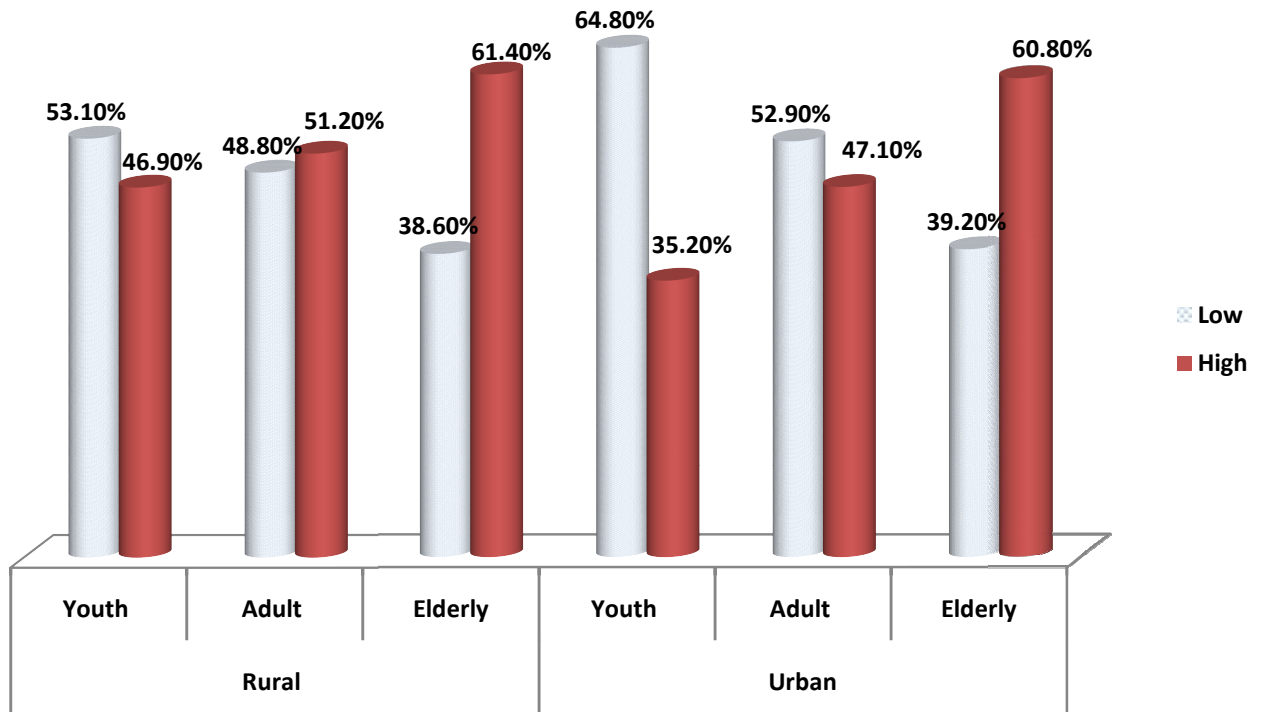
#### 4.6.6 Categorisation of food affordability according to generation

Figure 5 reveals that affordability was high for adults (51.2%) and the elderly (61.4%), while food affordability among youths was low (53.1%) with a mean affordability level of  $47.3 \pm 20.8$  in the rural areas. The high affordability recorded for adults depicts that they had access to livelihood assets which were directly or indirectly used for viable income generation activities, thus, boosting their ability to afford food items. Worthy of note is that most rural areas are into the production of most food crops that their agro climate support, leading to a notable reduction in the price of these food items at the rural level, thus, boosting their affordability. The high affordability of food credited to elderly may be as a result of their present state as dependents, sometimes elders had access to income from their children who are responsible or dependable and other care givers, thus, placing them on a better pedestal to afford food item. However, the low affordability level of food observed among youths in the rural area might be partly due to inability to make substantial income from their means of livelihood due to limited income generating activities available to them. The financial returns from income generating activities are sometimes not enough to meet youth needs. More so, it is plausible to state that some youths are not gainfully employed, some are underemployed, while others depend on their parents for the provision of some essential needs.

Furthermore, Figure 5 reveals that with a mean of  $47.3 \pm 20.8$  for the respondents in the urban area, only the elderly had high affordability of food items (60.8%), while adults (47.1%) and youths (35.2%) had low affordability of food items. The high affordability of food items recorded among the elderly might be partly due to the immense care given to the elderly by their children or other care givers. It is noteworthy that most elderly in the urban areas live with their children and are often financially buoyant, hence, they are able to get any food item they feel like taking. Also, most elderly are retirees and they have one form of severance package or pension they are enjoying. With the foregoing, they are able to financially keep up with their food demands. At this age, they are sometimes placed on special diets (therapeutic diets) owing to one health challenges they are nursing or the other, hence, most of them are financially capable to afford these diets. The low affordability recorded for adults in the study area might be as a result of the heavy financial demands placed on them. Most adults in the urban area have several dependents to cater for alongside other bills they caters for. It is plausible to state that because of those huge financial demands, there is pressure on their finances, hence impeding their ability to

comfortably afford most food items. This view supports that of Cohen and Garrett (2009) that the food security of urban households is dependent on the capability to meet their food demands amidst other needs.





**Figure 4.4: Categorisation of food affordability according to generation**  
**Source: Field survey, 2017**

#### **4.6.10 Level of food security in rural and urban**

Table 4.17 shows low level of food availability (52.2%) and food accessibility (57.5%) in rural. Conversely, food availability (52.2%) and food accessibility (57.5%) level was high in urban. It was found that affordability level of food was high in rural (53.3%), but low in urban (45.3%). Furthermore, the result in Table 5.17 shows that in rural, 51.0% of the youth were food secure, while more than half of the adults (56.1%) and the elderly (56.8%) were food insecure. Among urban respondents, 51.1% of the youth were food insecure, while majority of the adult (51.0%) and the elderly (62.7%) were food secure. Generally across the generation, 53.7% of the respondents in rural were food insecure, while 53.2% were food secure in urban. The food security status of some of the youth and adults maybe because of their diversification into other income generating activities (in farm and off farm) which the elderly will not be able to conveniently do as a result of their incapacitating state (ill health or weak body), and in cases when the elderly is engaged in farming, it will probably be on small scale. The food insecurity of the elderly in rural might be adduced to their interest in eating the same food at all times based on what is available. This corroborates Lacanian Psychoanalytical theory of repetition of food behaviors taken to be true since the individual will continue to take a particular food whether beneficial or harmful. Ifeoma and Agwu (2014) in their study suggest that a life course approach, which views food insecurity as an indicator of exposure to adversity over many years and even across the generation is centered to understanding food security. The food insecurity status of some of the respondents maybe as a result of the heavy financial burden placed on majority of the rural and urban inhabitants, and in trying to cope with this, individuals are unable to meet up with the nutritional needs of their households. Ojo and Adebayo (2012) opined that as there is transition, there is shift in financial burdens which may result in food insecurity.

**Table 4.17: Distribution of respondents based on their level of food security (N=134)**

Level of food security	Rural		Urban		Min	Max	Mean	SD
	Freq	%	Freq	%				
<b>Food availability</b>								
Low	70	52.2	78	41.1	0.00	70.00	40.92	11.84
High	64	47.8	112	58.9				
<b>Food accessibility</b>								
Low	77	57.5	94	49.5	0.00	37.00	15.79	5.44
High	57	42.5	96	50.5				
<b>Food affordability</b>								
Low	63	47.0	104	54.7	0.00	122.00	47.30	20.77
High	71	53.0	86	45.3				
<b>Food security</b>								
<b>Youth</b>								
Food Insecure	24	49.0	45	51.1	36.00	189.00	102.36	28.36
Food Secure	25	51.0	43	48.9				
<b>Adult</b>								
Food Insecure	23	56.1	25	49.0	26.00	156.00	103.29	25.99
Food Secure	18	43.9	26	51.0				
<b>Elderly</b>								
Food Insecure	25	56.8	19	37.3	0.00	193.00	107.07	30.53
Food Secure	19	43.2	32	62.7				
<b>Total</b>								
Food Insecure	72	53.7	89	46.8	0.00	193.00	104.01	28.36
Food Secure	62	46.3	101	53.2				

**Source: Field survey, 2017**

## 4.7 Hypotheses testing

### 4.7.1.1 Chi square analysis between selected socio-economic characteristics of the respondents and food security

The result on Table 4.18 reveals that gender ( $\chi^2=0.006$ ,  $p=0.936$ ), religion ( $\chi^2= 0.692$ ,  $p=0.708$ ), marital status ( $\chi^2=3.925$ ,  $p=0.416$ ) and educational qualification ( $\chi^2=5.853$ ,  $p =0.210$ ) were not significantly related with food security in rural area. This depicts that food security was not a function of gender, religion and the marital status of the individual or his/her educational qualifications. Also, established on Table 5.18 was that gender ( $\chi^2=0.359$ ,  $p=0.549$ ), religion ( $\chi^2=0.448$ ,  $p=0.799$ ), marital status ( $\chi^2=1.397$ ,  $p=0.845$ ) and educational qualification ( $X^2=2.141$ ,  $p=0.710$ ) in urban did not have significant relationship with food security implying that in the urban area, food security was not a function of gender, religion, respondents' marital status and the level of educational qualification possessed by the individual. The above finding is consistent with the position of earlier findings of Ifeoma and Agwu (2014) who found positive relationships between sex of households and food security status.

**Table 4.18 Chi-square analysis between selected socio-economic characteristics of the respondents and food security**

<b>Variables</b>	<b>Rural</b>				<b>Urban</b>			
	$\chi^2$	df	p-value	Decision	$\chi^2$	df	p-value	Decision
Gender	0.006	1	0.936	Not Sig.	0.359	1	0.549	Not Sig.
Religion	0.692	1	0.708	Not Sig.	0.448	2	0.799	Not Sig.
Marital status	3.925	4	0.416	Not Sig.	1.397	4	0.845	Not Sig.
Educational qualification	5.853	4	0.210	Not Sig.	2.141	4	0.710	Not Sig.

**Significant at 0.05%**

**Source: Field Survey 2017**

#### **4.7.1.2 Correlation analysis between selected socioeconomic characteristics of the respondents and food security**

Table 4.19 reveals that in the rural area there was significant relationship between age ( $r=0.267$ ,  $p=0.002$ ) and food security, while household size ( $r=0.041$ ,  $p=0.636$ ) and monthly income ( $r=0.165$ ,  $p=0.056$ ) did not have any significant relationship with food security. For respondents in urban, there was no significant relationship between respondents age ( $r=0.011$ ,  $p=0.876$ ), household size ( $r=0.037$ ,  $p=0.617$ ) and monthly income ( $r=0.097$ ,  $p=0.184$ ). The positive influence of age on food security observed in rural implies that as the age of the respondent increases, their food security status increase. Also, as they grow older (that is become elderly), they have support from their children and sometimes their investments enhances their food security status, more so, considering the fact that some of their children will have been independent and leaving only few people in the house to feed. The findings of this study is not consistent with Demeke *et al.* (2011) who found out that food security which is one part of livelihood security is mainly determined by household's resource endowment.

**Table 4.19: Pearson correlation analysis between selected socio-economic characteristics of the respondents and food security**

<b>Variables</b>	<b>Rural</b>			<b>Urban</b>		
	<b>r value</b>	<b>p value</b>	<b>Decision</b>	<b>r value</b>	<b>p value</b>	<b>Decision</b>
Age	0.267	0.002	Significant	0.011	0.876	Not Sig.
Household size	0.041	0.636	Not Sig.	0.037	0.617	Not Sig.
Monthly income	0.165	0.056	Not Sig.	0.097	0.184	Not Sig.

**Significant at 0.05%**

**Source: Field Survey 2017**

### 4.7.3 Test of relationship between knowledge of food nutrition and food security

Table 4.20 reveals that in the rural area there was significant relationship between knowledge of elderly ( $r=0.563$ ,  $p=0.00$ ), overall knowledge of respondents ( $r=0.282$ ,  $p=0.001$ ) and food security. The positive influence of elders' knowledge on food security observed in rural implies that as the knowledge of the elderly on food nutrition increases, their food security status increases. In essence, elderly food security status in rural was enhanced by their knowledge of the right food to eat. In urban, there was no significant relationship between each generational knowledge and food security. Also generally among respondents, knowledge was not significantly related with food security. This implies that at times, the knowledge of food nutrition might not necessarily translate to food security owing to factors that might be beyond individuals' control. Such factors might be food availability, financial constraints among others. This finding is not consistent with Wardle *et al.* (2004) who posited that knowledge is an important factor in explaining food choice which is important to food security, but consistent with the knowledge situation observed in rural.



**Table 4.20: Pearson correlation analysis between knowledge of food nutrition and food security**

Knowledge	Rural			Urban			Overall		
	r value	p value	decision	r value	p value	decision	r value	p value	decision
Youth	0.110	0.453	Not Sig.	-0.008	0.940	Not Sig.	0.034	0.690	Not Sig.
Adults	0.116	0.472	Not Sig.	0.075	0.602	Not Sig.	0.088	0.403	Not Sig.
Elderly	0.563**	0.000	Significant	-0.151	0.289	Not Sig.	0.171	0.098	Not Sig.
Total	0.282**	0.001	Significant	-0.031	0.667	Not Sig.	0.095	0.089	Not Sig.

**Significant at 0.05%**

**Source: Field Survey 2017**

#### **4.7.4 Test of relationship between food preference and food security**

Table 5.21 reveals that in the rural area, food preferences of youth ( $r=0.322$ ,  $p=0.024$ ), adults ( $r=0.548$ ,  $p=0.000$ ), elderly ( $r=0.590$ ,  $p=0.000$ ) and overall ( $r=0.463$ ,  $p=0.000$ ) food preferences significantly related with food security. For respondents in urban, there was significant relationship between adult ( $r=0.287$ ,  $p=0.042$ ) and overall ( $r=0.176$ ,  $p=0.015$ ) food preferences and their food security. Generally, food preferences of youth ( $r=0.189$ ,  $p=0.027$ ), adults ( $r=0.372$ ,  $p=0.000$ ), elderly ( $r=0.332$ ,  $p=0.001$ ) and overall ( $r=0.268$ ,  $p=0.000$ ) food preferences significantly related with food security. The positive influence of food preferences on food security observed in the result of this study implies that increase in the kinds of food preferred by respondents determines their food security status. This is in line with the findings of Monono and Mukete (2014) that consumers' food preference is significantly related to their food security. It could be deduced that the rural dwellers are more food secured because their preference is higher than that of their urban counterparts.

**Table 4.21: Pearson correlation analysis between food preference and food security**

<b>Food preference</b>	<b>Rural</b>			<b>Urban</b>			<b>Overall</b>		
	<b>r value</b>	<b>p value</b>	<b>Decision</b>	<b>r value</b>	<b>p value</b>	<b>Decision</b>	<b>r value</b>	<b>p value</b>	<b>Decision</b>
Youth	0.322*	0.024	Significant	0.130	0.226	Not Sig.	0.189*	0.027	Significant
Adults	0.548**	0.000	Significant	0.287*	0.042	Significant	0.372**	0.000	Significant
Elderly	0.590**	0.000	Significant	0.213	0.133	Not Sig.	0.332**	0.001	Significant
Total	0.463**	0.000	Significant	0.176*	0.015	Significant	0.268**	0.000	Significant

**Significant at 0.05%****Source: Field Survey 2017**

#### 4.7.5 Test of difference in food preferences between rural and urban

The result of the test of difference in rural and urban food preferences is presented on Table 4.22. There was a significant difference in the adult food preference ( $t=2.333$ ,  $p=0.022$ ) between rural and urban. The mean scores shows that adult food preference in urban ( $\bar{x}=140.74$ ) was higher relative to rural ( $\bar{x}=134.05$ ) with a mean difference of 6.69. The increased knowledge of adults in urban on food nutrition might have aided their food preferences coupled with enhanced financial status compared to adults in rural. However, food preference of youth, elderly and on the overall were not significantly different between rural and urban. While, in general there were no difference between rural and urban dwellers, this contradicts the findings of Kosakan *et al*(2018) who found that the food preference of rural and urban dwellers differs. They further explained that food preference of rural dwellers does not differ while the difference in urban dwellers is influenced by their socioeconomic status.

**Table 4.22: Independent sample t-test between rural and urban food preferences**

<b>Food preferences</b>	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Mean difference</b>	<b>t-value</b>	<b>p-value</b>	<b>Decision</b>
<b>Youth</b>	Rural	49	134.90	14.28				
	Urban	88	131.00	19.36	3.90	1.234	0.219	Not Sig.
<b>Adults</b>	Rural	41	134.05	13.59				
	Urban	51	140.74	13.76	6.69	2.333	0.022	Significant
<b>Elderly</b>	Rural	44	129.75	13.79				
	Urban	51	131.59	23.03	1.84	0.462	0.645	Not Sig.
<b>Overall</b>	Rural	134	132.95	13.99				
	Urban	190	133.77	19.52	0.82	0.042	0.675	Not Sig.

**Significant at 0.05%**

**Source: Field Survey 2017**

#### **4.7.6 Test of difference in food preferences of respondents across the three generations**

The result of analysis in Table 4.23 indicates that there was no significant difference in the level of food preference across the three generations in the rural areas ( $f=1.770$ ,  $p=0.174$ ). This implies that the level of food preference across the three generations is almost the same. This could be as a result of the fact that rural dwellers depend majorly on food items from their farms without much options or varieties. The result is also an indication of the homogeneity that exists among rural populations with respect to food crops cultivated. Furthermore, Table 4.23 indicates that there was significant difference in the level of food preference across the three generations in the urban areas ( $F=4.632$ ,  $p=0.011$ ). This implies that the food preference of the three categories of generation differs. This could be as a result of the fact that there are different preference options in the urban centres such as fast food joints and super markets which provides the people with different options. Result of analysis in Table 5.23 also indicates that there was significant difference in the level of food preference of respondents across the three generations ( $p=0.014$ ) on the overall. This implies that the food preference of the three categories differs. This could be due to the wide variation in the food preference of the respondents in urban areas. This is in agreement with the finding of Westenhoefer (2005) that pleasantness usually motivates the choice of food across generation, so food preference across generation differs. He further explains that elderly people have limited varieties of food they prefer compared to younger people. He concluded that the decrease of sensory-specific satiety in elderly may in part explain the limited variety of the diet sometimes seen in them.

**Table 4.23: ANOVA test of difference in food preferences of respondents across the three generations**

<b>Rural</b>	<b>Sum of square</b>	<b>df</b>	<b>Mean of square</b>	<b>F</b>	<b>p-value</b>	<b>decision</b>
Between Groups	685.99	2	343.00			
Within Groups	25348.64	131	193.50			
Total	26034.63	133		1.770	0.174	Not. Sig
<b>Urban</b>						
Between Groups	3399.23	2	1699.62			
Within Groups	68610.04	187	366.90			
Total	72009.27	189		4.632	0.011	Significant
<b>Overall</b>						
Between Groups	2561.63	2	1280.815			
Within Groups	95535.88	321	297.620			
Total	98097.51	323		4.304	0.014	Significant

**Significant at 0.05%**

**Source: Field Survey 2017**

#### 4.7.7 Results of Duncan multiple range of separation of mean

The result of analysis on Table 4.24 shows the difference in the food preference of respondents in the rural areas across the three generations using the mean score. The level of food preference of the youth was better ( $\bar{x}=135.90$ ), relative to adult ( $\bar{x}=134.05$ ) and the least was the elderly ( $\bar{x}=129.75$ ), though the difference in food preference between the three generations was not significant and it is at the same level as revealed in Table 5.24. It could also be deduced from the result that the level of food preference decrease with age. This could be caused by the interaction between the youth in rural and the youth in the urban areas which gives the youth more preference than the older folks. Also, the difference in the food preference of respondents in the urban areas across the three generations using the mean score is revealed in Table 4.24. Adult's food preference was the highest ( $\bar{x}=140.75$ ), which has an obvious margin compared to elderly ( $\bar{x}=131.58$ ) and the youth ( $\bar{x}=131.00$ ). On the overall, adult's food preference was the highest ( $\bar{x}=137.76$ ) with an obvious difference compared to youth ( $\bar{x}=132.39$ ) and the elderly ( $\bar{x}=130.74$ ). This implies that the adult had the best food preference. This could be due to the fact that adults decide what they eat, while youth and elderly in most cases depend on others (mostly adult) for what they eat. The worst food preference observed among the elderly could be due to the decrease in their sensory-specific satiety. This is in agreement with the finding of Westenhoefer, (2005) that decrease of sensory-specific satiety in elderly may in part explain the limited variety of the diet sometimes seen in them.



**Table 4.24: Results of Duncan multiple range of separation of mean**

<b>Rural</b>	<b>Subset for alpha = 0.05</b>	
	<b>1</b>	<b>2</b>
Youth	135.90	
Adult	134.05	
Elder	129.75	
<b>Urban</b>		
Youth	131.00	
Elder	131.58	
Adult		140.75
<b>Overall</b>		
Elder	130.74	
Youth	132.39	
Adult		137.76

**Source: Field Survey 2017**

#### **4.7.8 Test of difference in food security between rural and urban**

Table 4.25 reveals that rural and urban food security do not significantly differ for youth ( $t=0.417$ ,  $p=0.678$ ), adults ( $t=0.160$ ,  $p=0.873$ ), elderly ( $t=1.170$ ,  $p=0.245$ ) and on the overall ( $t=1.170$ ,  $p=0.245$ ). Hence, there was no significant difference in respondents' food security ( $t=2.246$ ,  $p=0.806$ ). This result implies that food security is not a function of where a person resides, whether rural or urban. This disagrees with the findings of Akanbiemu, Fatiregun and Adejugbagbe (2016) that there is significant difference in the food security of rural and urban households in southwestern Nigeria. They further explain that the urban households are more food secured than rural households.

**Table 4.25: Independent sample t-test between rural and urban food security**

<b>Food preferences</b>	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Mean difference</b>	<b>t-value</b>	<b>p-value</b>	<b>Decision</b>
<b>Youth</b>	Rural	49	103.71	30.36				
	Urban	88	101.60	27.33	2.11	0.417	0.678	Not Sig.
<b>Adults</b>	Rural	41	103.78	23.13				
	Urban	51	102.90	28.32	0.88	0.160	0.873	Not Sig.
<b>Elderly</b>	Rural	44	103.14	29.62				
	Urban	51	110.47	31.18	7.33	1.170	0.245	Not Sig.
<b>Overall</b>	Rural	134	103.54	27.88				
	Urban	190	104.33	28.77	0.79	0.246	0.806	Not Sig.

**Significant at 0.05%**

**Source: Field Survey 2017**

#### **4.7.9 Test of difference in the level of food security of respondents across the three generations**

Result of analysis in Table 4.26 indicates that there was no significant difference in the level of food security of respondents across the three generations in the rural areas ( $F=0.007$ ,  $p=0.993$ ). This implies that the level of food security of the three generations do not vary from each other. This could be as a result of the homogenous nature of the kind of food items available to rural respondents. There was no significant difference in the level of food security of respondents across the three generations in the urban areas ( $F=1.631$ ,  $p=0.198$ ) and on the overall ( $F=0.815$ ,  $p=0.443$ ). This implies that there is no variance in the level of food security of the three generations. This result could be attributed to the fact that most families in rural and urban areas eat from the same pot; the entire family eat the same thing despite the age differences. This is in the agreement with the findings of Ifeoma and Agwu (2014) that level of food security across generation does not differ.

**Table 4.26: ANOVA test of difference in the level of food security of respondents across the three generations**

<b>Rural</b>	<b>Sum of square</b>	<b>df</b>	<b>Mean of square</b>	<b>F</b>	<b>p-value</b>	<b>Decision</b>
Between Groups	11.025	2	5.513			
Within Groups	103378.21	131	789.15			
Total	103389.23	133		0.007	0.993	Not Sig.
<b>Urban</b>						
Between Groups	2681.815	2	1340.91			
Within Groups	153708.30	187	821.97			
Total	156390.11	189		1.631	0.198	Not Sig.
<b>Overall</b>						
Between Groups	1312.95	2	656.48			
Within Groups	258515.03	321	805.34			
Total	259827.99	323		0.815	0.443	Not Sig.

**Significant at 0.05%**

**Source: Field Survey 2017**

#### **4.7.10 Contribution of food preference components paired to food security**

Regression analysis on Table 4.27 that the F value of 7.961 for rural respondents was significant 1%, F value for urban respondents (1.405) was insignificant, while the F value obtained on the overall (0.340) was insignificant. The result in Table 5.27 shows that an  $R^2$  value of 0.198 obtained for rural respondents depicts that 19.8% variation in food security can be explained by their food preference. The  $R^2$  value obtained for urban respondents were 0.029, indicating that only 2.9% variation in food security can be explained by their food preference. This corroborates Julius *et al* (2015) who found that food patterns influences food security among rural households. This is because household food preference are affected by changes in season. On the overall, an  $R^2$  value of 0.004 obtained for all respondents connote that food preference can only explain 0.4% of the contribution to the dependent variable.

**Table 4.27: Model summary and ANOVA of the regression analysis of contribution of food preference components paired to food security**

<b>Groups</b>	<b>F</b>	<b>Sig.</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>Adjusted R<sup>2</sup></b>	<b>Std. Error of the estimate</b>
Rural	7.961	0.000	0.445	0.198	0.173	25.353
Urban	1.405	0.234	0.172	0.029	0.008	28.64
Total	0.340	0.851	0.065	0.004	-0.008	20.08529

**Significant at 0.05%**

**Source: Field survey, 2017**

#### **4.7.10 Contribution of food preference components paired to food security**

It was discovered in Table 5.28 that combinations of preferences for cereals/meat, dairy and fish ( $\beta=0.396$ ) increase food security by 39.6% in rural. Also, combinations of preferences for fruits/roots and tubers ( $\beta=0.366$ ) significantly contributed to food security among rural respondents, implying that fruits/roots and tubers preference aided loss reduction by 36.6% contribution. Also the result of this study implies that the contribution of urban households' food preference to food security was insignificant. This could be as result of the abundance of these food items in the rural areas than in the urban areas, as they are being produced in the rural areas. This agrees with Edeoghon and Idowu (2017) who emphasized the need for more fruit, vegetable and fish supplies in urban areas as these food items help to become more food secure. It is noteworthy that fruits are abundant in the rural areas at no cost, even if fruits were to be bought, it will be very cheap. Also, different types of root and tuber crops are cultivated by most rural households, hence, the percentage contribution to food security observed in this study.



**Table 4.28: Contribution of food preference components paired to food security**

Food Security	Rural			Urban			Total		
	B	t	p	B	t	p	B	T	p
(Constant)		-0.706	0.481		5.835	0.000		5.517	0.000
Cereals/Root and tubers	0.004	0.026	0.979	-0.136	-0.857	0.393	0.008	0.067	0.946
Cereals/Meat, Dairy and Fish	0.396	1.983	0.049	-0.110	-0.627	0.532	-0.027	-0.195	0.846
Roots/Meat, Dairy and Fish	-0.306	-1.390	0.167	0.220	1.217	0.225	-0.002	-0.015	0.988
Fruits/Root and tubers	0.366	2.617	0.010	0.149	1.031	0.304	0.078	0.727	0.468

**p=Significant at 0.05%**

**Source: Field survey, 2017**

On the overall, rural respondents' had an average age of 47.5 years, while urban respondents had mean age of 45.1 years. The average household size of the respondents in the rural area was 6.2 persons, while that of urban was 6.3 persons. Rural dwellers earn average of ₦49,776 on monthly basis, while urban dwellers earn ₦73,941 on the average monthly. It was also revealed that majority (75.4%) of the respondents in the rural area were married, while 53.2% of the respondents in the urban area are married. Some (35.1%) of the rural respondents had secondary education, while most (63.7%) of the urban respondents had tertiary education.

Prominent information sources in rural areas was radio ( $\bar{x}=1.50$ ), family and friends ( $\bar{x}=1.36$ ) and extension workers ( $\bar{x}=1.30$ ), while it was family members ( $\bar{x}=1.54$ ), social media ( $\bar{x}=1.49$ ) and colleagues ( $\bar{x}=1.48$ ) in urban. Knowledge of food nutrition was high among rural (74.6%) and urban (72.1%) respondents. Food preference was high in rural (53.7%) and urban (53.7%). Food availability ( $\bar{x}=1.82$ ) and cost of food ( $\bar{x}=1.55$ ) were major challenges to food preference of youth in rural, while it was food availability ( $\bar{x}=1.61$ ) and health status ( $\bar{x}=1.60$ ) in urban. Among adults in rural, food availability ( $\bar{x}=1.85$ ) and inadequate storage facilities ( $\bar{x}=1.63$ ) were prominent challenges, but adults in urban were constrained by food availability ( $\bar{x}=3.55$ ) and health status ( $\bar{x}=1.73$ ). Food availability ( $\bar{x}=1.78$ ) and accessibility of food ( $\bar{x}=1.50$ ) ranked high as major challenges to food preference among elders in rural, while food availability ( $\bar{x}=1.65$ ) and taste of food ( $\bar{x}=1.51$ ) were major concern of the elderly in urban.

Level of food availability (52.2%) and food accessibility (57.5%) was low for more than half of the rural respondents. Conversely, food availability (52.2%) and food accessibility (57.5%) level was high in urban. It was found that affordability level of food was high in rural (53.3%), but low in urban (45.3%). Fifty three point seven percent in rural were food insecure, while 53.2% were food secure in urban.

There was significant relationship between knowledge of elderly ( $r=0.563$ ,  $p=0.00$ ), overall knowledge of respondents ( $r=0.282$ ,  $p=0.001$ ) and food security in rural. In urban, there was no significant relationship between each generational knowledge and food security. Food preferences of youth ( $r=0.189$ ,  $p=0.027$ ), adults ( $r=0.372$ ,  $p=0.000$ ), elderly ( $r=0.332$ ,  $p=0.001$ ) and the overall ( $r=0.268$ ,  $p=0.000$ ) significantly related with food security. This is in line with the findings of Monono and Mukete, (2014) that consumers' food preference is significantly related to their food security.

There was a significant difference in the adult food preference ( $t=2.333$ ,  $p=0.022$ ) between rural and urban areas. Adult food preference in urban ( $\bar{x}=140.74$ ) was higher relative to rural ( $\bar{x}=134.05$ ) with a mean difference of 6.69. However, food preference of youth, elderly and the overall were not significantly different between rural and urban. There was no significant difference in the level of food preference across the three generations in the rural areas ( $F=1.770$ ,  $p=0.174$ ), while there was significant difference in the level of food preference across the three generations in the urban areas ( $F=4.632$ ,  $p=0.011$ ). Also, there was significant difference in the level of food preference of respondents across the three generations ( $p=0.014$ ) on the overall. Adult's food preference was the highest ( $\bar{x}=137.76$ ) with an obvious difference compared to youth ( $\bar{x}=132.39$ ) and the elderly ( $\bar{x}=130.74$ ). This is in agreement with the finding of Westenhoefer, (2005) that pleasantness usually motivates the choice of food across generation, so food preference across generation differs. He further explains that elderly people have limited varieties of food they prefer compare to younger people.

Result reveals that combinations of preferences for cereals/meat, dairy and fish ( $\beta=0.396$ ) increased food security by 39.6% in rural. Also, combinations of preferences for fruits/roots and tubers ( $\beta=0.366$ ) significantly contributed to food security among rural respondents, implying that fruits/roots and tubers preference aided loss reduction by 36.6% contribution.

## CHAPTER FIVE

### 5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

A summary of the preceding chapters and major findings are presented in this chapter. It further discusses the conclusions, suggested recommendations and contribution to knowledge based on the research findings. Food preference indicates the choice of one food product over another and also reflects the quality assessment of food product. It was observed that food preference has led to increase in nutritional related diseases like cardiovascular disease, type-2 diabetes, cancer, osteoporosis, anaemia, gingivitis, bulimia and anorexia nervosa which have been recognized as significant causes of disability and premature death in both developing and newly developed countries. Food preference is influenced by gender and generation as a result of physiological and anatomical composition of the individual. The human body has evolved over thousands of years to adapt the anatomy and physiology to a lifestyle (including food preference).

The study investigated the socio-economic characteristics, sources of information on food nutrition, level of knowledge on food nutrition, food preferences by generation, challenges of food preference and food security (food availability, accessibility and affordability) of the respondents across generations - youth, adult and the elderly, in the study area. The study was carried out in the South-western region of Nigeria which included six states; Ondo, Ekiti, Lagos, Ogun, Osun and Oyo. The population for the study included rural and urban households who were above 18 years of age in the study area.

Multi-stage sampling procedure was used to select the respondents for the study. The first stage involved purposive selection of 50% of the states in the study area which are Ondo, Lagos and Oyo States. The second stage involved stratification of the Local Government Areas (LGAs) in the 3 states into rural and urban LGAs. The third stage entails simple random selection of 15% of LGAs in each of the stratum. Therefore, for Oyo state, 4 and 1 LGAs was sampled in rural and urban stratum, respectively. In Ondo state, 1 and 2 in each of the respective stratum, while in Lagos state, 1 and 3 was sampled, respectively. The fourth stage involved the selection of 3 communities in each of the selected stratified local governments. The fifth stage was selection of households in each community through a systematic random sampling that purposively selected

elderly male, elderly female, adult male, adult female, male youths and female youths in the selected households. Data were analysed using descriptive statistics such as mean, frequency counts and percentages. Inferential statistics such as chi-square, Pearson Product Moment Correlation (PPMC), t-test, Analysis of Variance (ANOVA) and linear regression

The level of food availability and food accessibility was low for more than half of the rural respondents. Food availability and food accessibility level was high in urban while affordability level of food was high in rural communities. About half of the youth in rural communities were food secure, while more than half of the adults and the elderly were food insecure. More than half of respondents in rural household were food insecure. It was also revealed that there was significant relationship between knowledge of elderly and food security in rural communities sampled. Generally, food preferences of youth, adults and elderly was significantly related with food security.

There was significant difference in the level of food preference across the three generations in the urban areas. Also, there was significant difference in the level of food preference of respondents across the three generations on the overall. Food preferences of the youth was better compared to adult and the elderly in rural household. Adult's food preference was higher with an obvious margin compared to elderly and the youth in urban. On the overall, adult's food preference was the highest with an obvious difference compared to youth and the elderly. Also, combination of preferences for cereals/meat, dairy and fish increased food security in rural household.

## **5.2 Conclusion**

Rural dwellers' source of information on food preference was radio, family and friends and from extension workers, while information on food was sourced mostly from family members, social media and colleagues in the urban centres. Obviously from the study, respondents had knowledge of food nutrition in rural and urban. There was high preference for cereals and legumes over other food groups in rural and urban. This can be adduced to availability, accessibility and affordability of cereals such as rice and legumes such as cowpea. Thus, cereals and legumes constitute the main diet of rural and urban households. Food preference of rural and urban households was constrained by availability of food. In addition, while rural households' food preferences were constrained by cost of food, urban households'

food preferences were challenged by their health status. Food availability and food accessibility is more enhanced in urban compared to rural. However, affordability level of rural respondents was higher relative to urban. Notwithstanding, urban households were better off in their food security status compared to rural households. Knowledge influence food security in rural households, particularly for the elderly. In urban, knowledge of food nutrition do not necessarily translate to food security. The food security of rural and urban households was influenced by their food preferences. Combinations of respondents' preference for some food groups contributed to their food security.

### **5.3 Recommendations**

The following recommendations were inferred from the study:

1. Food availability constrained urban dwellers' food preference, hence, urban dwellers should be encouraged by private and public extension agents to cultivate the habit of backyard farming to ensure improvement in availability of food.
2. The challenge of poor storage facilities was common in rural and urban. Improvement in electricity can aid storage of food. Hence, there is the need for government and non governmental organisations to aid in the improvement of access to electricity so that some food items can be stored for future use. Improvement in storage facilities will help ensure that some food items are available during the off season.
3. High cost of food constrained food preference in rural. Rural dwellers could be enlightened by extension agents on other low cost food types that are close substitute to food items with high cost.
4. The knowledge of adequate nutrition of rural and urban households do not translate to food security. There is the need for government and non governmental organisations to assist in identifying the array of constraints militating against food security of rural and urban households so that appropriate solution can be proffered.

### **5.4 Contributions to knowledge**

1. The study established that rural and urban households had knowledge of adequate nutrition.
2. The study found that knowledge of adequate nutrition of rural and urban households do not translate to food security.
3. The study identified that food availability is a major challenge common in both rural and urban households.

4. The study established that food preferences of rural households significantly differed from urban households.
5. The study documents that preferences of food varieties combinations in rural households influence food security.
6. The study found that food preferences of urban households do not translate to food security.
7. The study established that significant difference do not exist between rural and urban households' food security.

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**APPENDIX I**

**UNIVERSITY OF IBADAN  
FACULTY OF AGRICULTURE AND FORESTRY  
DEPARTMENT OF AGRIC EXTENSION AND RURAL DEVELOPMENT**

I am a Ph.D student of the named department. I am conducting a research as part of the requirement of the award of Doctor of Philosophy. Please kindly respond to the questions appropriately as you deem fit. There is no right or wrong answer and your responses will be handled with optimum confidentiality.

**SECTION A: Socio-economic Characteristics**

1. Age: .....
2. Sex:     M ale ( )    Female ( )
3. Religion: Christianity ( )   Islam ( )   Traditional ( )
4. Marital status: Single ( )   Married ( )   Divorced ( )   Separated ( )   Widowed ( )
5. Educational qualification: Non formal ( )   Primary ( )   Secondary ( )   Tertiary   Vocational ( )
6. Primary livelihood activities.....
7. Secondary livelihood activities.....
8. Ethnicity: Yoruba ( )   Ibo ( )   Hausa ( )Others specify.....
9. Household size: Number of Aged       Adults       Youths       Children
10. Actual monthly income: .....

**SECTION B: Food Availability**

**How frequently do you have each of the following food items available?**

	<b>Food</b>	<b>Always available</b>	<b>Sometime available</b>	<b>Not available</b>
1	<b>Cereals/grains</b> Maize			
2	Beans			
3	Groundnut			
4	Rice			
5	Wheat			
	<b>Root and tuber</b>			
6	Yam			
7	Gari			
8	Irish potatoes			
9	Sweet potatoes			
10	Cocoyam			
	<b>Meat, dairy and fish products</b>			
11	Fish and sea products			
12	Milk and cheese			
13	Snail			
14	Pork and products			
15	Beef and products			

16	Poultry and products			
	<b>Fruits</b>			
17	Garden egg			
18	Banana			
19	Citrus (oranges)			
20	Cashew			
21	Cucumber			
22	Cherry			
23	Avocado pea			
24	Mango			
25	Pineapple			
	<b>Leafy and Fruit vegetables</b>			
26	Pepper			
27	Tomatoes			
28	Okro			
29	Cabbage			
30	Amaranths (tete)			
31	Fluted pumpkin (ugwu)			
32	Bitter leaf			
33	Water leaf			
34	Spinach (amunututu)			
35	Lettuce			

### SECTION C: Food Accessibility

The following statements measure how accessible food is to you as an individual. Indicate for each of the items how frequently each of the situations described below applies to you?

S/N	food Items within 30 days	Regularly	Occasionally	Not at all
1	I have enough of the kinds of food I want to eat			
2	I have enough but not always the kinds of food I wish to eat			
3	I rarely have time for shopping or cooking			
4	It is often difficult to get to the store or market			
5	I am unable to access food due to scarcity fuel for cooking			
6	My access to food is affected by my ill health			
7	I often do not have enough to eat			
8	Due to scarcity of some food items we eat the same kinds of food			
9	My lack of time for food preparation affect my access to food			
10	I hardly have time to settle down to eat.			
11	Lack of storage facilities hinders storage of food			
12	My inability to cook or eat because of tiredness affects my access to food			

13	My inability to hire a steward affects my access to food			
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**SECTION D. Food Affordability**

**How often do you consume each of the following food items per week? Kindly write the cost per meal for each of the indicated food items**

SN	Food	Frequency of consumption per week					Average Price per meal (N)
		Not at all	1-2 times	3-4 times	5-6 times	7 or more times	
1	<b>Cereals/grains</b> Maize						
2	Beans						
3	Groundnut						
4	Rice						
5	Wheat						
6	<b>Root and tuber</b> Yam						
7	Gari						
8	Irish potatoes						
9	Sweet potatoes						
10	Cocoyam						
11	<b>Meat, dairy and fish products</b> Fish and sea products						
12	Milk and cheese						
13	Snail						
14	Pork and products						
15	Beef and products						
16	Poultry and products						
17	<b>Fruits</b> Tomatoes						
18	Garden egg						
19	Banana						
20	Citrus (oranges)						
21	Cashew						
22	Cucumber						
23	Cherry						
24	Avocado pea						
25	Mango						
26	Pine apple						
27	<b>Leafy and Fruit vegetable</b> Pepper						
28	Tomatoes						
29	Spinach (Amunututu)						
30	Okro						
31	Cabbage						
32	Amaranths (Tete)						

33	Fluted pumpkin (ugwu)						
34	Bitter leaf						
35	Water leaf						
36	Lettuce						

**SECTION E: Sources of Information on food**

Indicate how often you get information from the following sources

S/N	Information sources	Regularly	Occasionally	Never
1	Radio			
2	Television			
3	Magazine			
4	Extension workers			
5	Health practitioners			
6	Family and friends			
7	Colleagues			
8	Newspapers			
9	Social Media			
10	Seminar			

**SECTION F: Knowledge on Food Adequacy**

Kindly indicate how often most appropriately for each of the following information on food adequacy

S/N	Information sources	Yes	No	I don't know
1	Excessive intake of meat is not good for adult.			
2	A source of protein is required in the diet every day.			
3	Less intake of energy giving food will not lead to overweight.			
4	Fruits and vegetables are dietary source of vitamin.			
5	The food one eats has no effect on the risk of developing cancer.			
6	Fruits and vegetables are major sources of micro nutrients.			
7	A serving of red meat is also a major source protein.			
8	Nutritional requirement for adult is also adequate for an infant			
9	Skimmed milk is better than whole milk for adult			
10	Vitamin D can be produced by the body from sunshine			
11	Vitamin C prevents the common cold			
12	A sick person should eat too much fatty food			
13	Heavy food is good for supper			

### G. Food Preference

Kindly indicate your level of preference or otherwise for each of the following food items

	Food	Dislike Extremely	Dislike Moderately	Neither Nor Dislike	Like	Like Moderately	Like Extremely
	<b>Cereals/grains</b>						
1	Maize						
2	Beans						
3	Groundnut						
4	Rice						
5	Wheat						
	<b>Root and tuber</b>						
6	Yam						
7	Gari						
8	Irish potatoes						
9	Sweet potatoes						
10	Cocoyam						
	<b>Meat, dairy and fish products</b>						
11	Fish and sea products						
12	Milk and cheese						
13	Snail						
14	Pork and products						
15	Beef and products						
16	Poultry and products						
	<b>Fruits</b>						
17	Tomatoes						
18	Garden egg						
19	Banana						
20	Citrus (oranges)						
21	Cashew						
22	Cucumber						
23	Cherry						
24	Avocado pea						
25	Mango						
26	Pine apple						
	<b>Leafy vegetable</b>						
27	Pepper						
28	Spinach (Amunututu)						
29	Okro						
30	Cabbage						
31	Amaranths (Tete)						
32	Pumpkin (elegede)						
33	Bitter leaf						
34	Water leaf						
35	Telfaria (ugwu)						
36	Lettuce						



## H. Challenging factors to food preference

How will you rate each of the following possible challenging factors to food preference as it applies to you?

S N	Challenges	Important	Moderately important	Not important
1	Food availability			
2	Nutritional education			
3	Insufficient income			
4	Unpredictable climatic conditions			
5	Locality			
6	Taste of food			
7	Time to prepare food			
8	Cost of food			
9	Season of food			
10	Culture			
11	Religion			
12	Health Status			
13	Food scarcity			
14	Availability of storage facility			
15	Accessibility of food			

**I b. (Questions 10-17 are asked only if the household included children age 0-18) adapted from Nord, Andrews, and Carlson (2004)**

SN	Question	Never	Sometimes	Often
10	In the past 30 days you relied on only a few kinds of low-cost food to feed children because there was no enough money to buy food.			
11	In the past 30 days you could not feed children on balanced meal because you could not afford it.			
12	In the past 30 days children did not eat enough food because you could not afford it.			
13	In the past 30 days you cut size of children meal because there wasn't enough money for food.			
14	In the past 30 days children were hungry for more food but you could not afford it.			
15	In the past 30 days children skipped meals because there was not enough money for food			
16	In the past 30 days children did not eat for a whole day because there wasn't enough money for food.			
17	In the past 30 days children lose weight because there was not enough food to eat.			

**APPENDIX II**

**UNIVERSITY OF IBADAN  
FACULTY OF AGRICULTURE  
DEPARTMENT OF AGRIC EXTENSION AND RURAL DEVELOPMENT**

**FOCUS GROUP DISCUSSION TOPIC GUIDE ON “influence of food preferences on rural and urban household’s food security in Southwestern Nigeria”**

State: \_\_\_\_\_ LocalGovt. Area: \_\_\_\_\_  
Community: \_\_\_\_\_ Date of interview: \_\_\_\_\_  
Name of Moderator: \_\_\_\_\_ Name of note taker: \_\_\_\_\_

***Provide descriptive characteristics of group***

\_\_\_\_\_ Youth only; \_\_\_\_\_ Adults only; \_\_\_\_\_ Elders only  
Number of participants: \_\_\_\_\_  
Other characteristics of the group (ethnic background, religion etc)

**Introduction**

I am a Ph.D student of the named Department. I am conducting a research as part of the requirement of the award of Doctor of Philosophy. Please kindly cooperate and respond promptly to the discussion. There is no right or wrong answer and your responses will be handled with optimum confidentiality.

**A. Characteristics of the group**

1. How would you describe the local population in this group in terms of:  
Religion: What are the major religions practiced by people in this group?
2. Socio-economic status: About what proportion of the group are poor?
  - a. Are there any particular groups likely to be poorer than others? Yes No
  - b. If yes describe those that are likely to be poorer
  - c. Are there some groups that are likely to be better-off? Yes No
  - d. If yes, describe those that are likely to be better -off
  - e. Ethnic groups: Major (largest) ethnic group: .....
  - f. Minor ethnic groups.....
3. What are the types of food you like to eat with soup?
4. Why do you like using maize?

5. How often do you eat cocoyam?
6. What type of meat does your people always like in making soup?
7. Why is pork meat not a popular meat for stew here?
8. How frequent do you use snail?
9. How often do you take fruits and serve the family members?
10. What are the common vegetables in the community?
11. How often do you cook vegetables in a week?
12. What are the major sources of information in this community?
13. What are the challenging factors preventing you from eating what you like?
14. Do you always have enough food to eat?