

**AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY  
DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND  
RESPONSES TO FOOD INSECURITY**

**BY**

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# ABSTRACT

## **Background**

Research in the Nsukka Local Government Area (NLGA) of Enugu State in Nigeria has revealed a high rate of poverty and malnutrition in households. These households are likely to face significant food security challenges, though information on how they could achieve food security is limited, and household experiences and coping strategies are unknown.

## **Aim**

This study aimed to investigate the level of food security and household dietary diversity, exploring household food insecurity experiences and coping strategies in the NLGA.

## **Method**

In phase one (quantitative), a random sample of 390 women representing their households from the 20 communities of NLGA was surveyed using the Household Food Insecurity Access Scale (HFIAS) and the Household Dietary Diversity Score (HDDS) plus demographic characteristics. In phase two (qualitative), two women representing their households were randomly selected from the five most food-insecure communities. A semi-structured interview topic guide containing twenty questions was piloted and adopted.

## **Findings**

Findings from phase one revealed a high level of food insecurity, with approximately 82.6% of households reporting various degrees of food insecurity. Approximately 53.6% of households were at or below the average mean of the HDDS. A significant negative correlation ( $r = -.35$ ,  $n = 390$ ,  $p < .05$ ) was found between HFIAS and HDDS. The factors associated with household food security included age, education, work status, and income. Phase two findings revealed that food sufficiency and affordability rather than nutrition

described household feeding. Most households rarely consume animal protein foods such as eggs, meat, fish, and milk. Safe food consumption was questionable due to food preservation practices. Coping strategies included food compromise, borrowing food and money, and food recycling.

### **Contribution to knowledge**

This research determined the household's food security and dietary diversity level in NLGA and established their experiences and responses to food insecurity. Combining the quantitative and the qualitative elements from phases one and two enabled the development of a food security SWOT analysis of Nsukka households and a draft roadmap for interventions and assistance programs toward achieving food security. These describe how the findings can be applied to address the challenges of food insecurity in NLGA and similar areas in Nigeria. Policy recommendations to the government include those designed to achieve food security in NLGA through public-private partnerships, nutrition orientation, and food intervention programs.

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## **ABBREVIATIONS**

<b>Acronym</b>	<b>Full definition</b>
HFIAS	Household Food Insecurity Access Scale
HDDS	Household Dietary Diversity Score
NLGA	Nsukka Local Government Area
FAO	Food Agricultural Organisation
PRISMA	Preferred Reporting Items for Systematic Reviews and meta-Analysis
FNS	Food and Nutrition Security
LGA	Local Government Area
FGN	Federal Government of Nigeria
UBE	Universal Basic Education

# CHAPTER ONE

## INTRODUCTION

### 1.0 Background of study

Food security is pivotal to sustainable development and human advancement but has remained a significant concern globally. A sustainable food supply to secure the future and combat hunger remains a global challenge (Mc Carthy et al., 2018). Food and Agriculture Organisation (1996) defines food security as “*when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.*” The four dimensions of food security concept include: accessibility, availability, utilisation, and sustainability (Gibson, 2012; Oni & Fashogbon, 2014).

The struggle over food insecurity persists, worsened by climate change, rising global population, increasing food prices, economic recession, and insecurity of lives (Rowley & Veillette, 2016a). However, the United Nations Sustainable Development Goals (SDG) adopted by world leaders in September 2015 addresses poverty first and second to attain zero hunger, achieve food security and improve nutrition (Food Agriculture Organisation, 2018). These goals transited from the Millennium Development Goals (Global Strategic Framework, 2017), which were not achieved by the stipulated target of 2015. The Global Hunger Index (2020) has revealed that “*the World is not yet on track to achieve zero hunger by 2030*”. According to the United Nations (2018) and World Bank (2019) reports on Sustainable Developmental Goals and Poverty, 783 million people live in extreme poverty globally, earning \$1.90 per day or less, mostly in developing regions of Asia and Africa. About 42% of Sub-Saharan Africans still live below the poverty line. Poverty is disproportionately affecting

more women than men. Among women aged 25 to 34, 122 live in extreme poverty compared to every 100 men of similar age globally (United Nations, 2018; World Bank, 2019). A report from the Food and Agriculture Organisation (2019) shows that 2,013.8 million people worldwide are moderately or severely food insecure; this is an increase from 1,801.9 million people in 2016 and 1,929.6 million people in 2017. The food security situation is worse in some regions of Africa and Asia (Manap & Ismail, 2013).

In Africa, 277 million people were severely food insecure in 2019, and about 67.2 million people in West Africa (Food and Agriculture Organisation, 2019), and issues of food emergencies occur yearly, especially during the food scarcity periods like the planting season. Several factors were contributors, such as urbanisation, low food production, and regional cooperation (Food and Agricultural Organisation, 2018). Other stressors that have worked against the progress of food security in the region are terrorism, economic recession or economic instability, climate change, poor governance, inequality, and corruption. All stakeholders, such as the government, policymakers, and food supply chains, must be proactive to achieve the SDG target.

The decline in the standard of living of Nigerians is evident in the lack of socio-economic development, the collapse of social amenities and infrastructural development, poor health, nutrition, and food security status (Nzeagwu & Aleke, 2016; Ali & Agbiogwu, 2014). Though Nigeria had one of the largest economies in Africa in 2014, today, she is facing an alarming rate of food insecurity (Omorogiuwa et al., 2014; Matemilola & Elegbede, 2017). Food insecurity is prevalent in rural areas and among low-income households in urban areas, living below \$1 per day (Akerele et al., 2017; Matemilola & Elegbede, 2017). In 2019, the World Bank (2020) estimated the poverty and inequality level at 40% of the total population. According to The Food Agricultural Organisation (2018), Nigeria has 12.9 million people malnourished between 2014 and 2016. Noko (2016) has emphasised poverty and food

insecurity as part of the aftermath of the economic recession the country witnessed between April and June 2016, showing a contraction in the economy by 2.06%. The issue remains, how the country will achieve zero hunger by 2030 as part of her SDG mandate.

A few researchers have investigated food (in)security in some Nsukka communities. However, the prevalence of food insecurity in the bigger picture within the Nsukka Local Government Area (NLGA), household experiences, and coping strategies are unknown. Research in the NLGA of Enugu State in Nigeria has revealed a high rate of poverty and malnutrition in households. Studying a town (Obukpa) within the NLGA, Nzeagwu & Aleke (2016) discovered that 93.5% of the households were food insecure at varying levels, and 6.5% were food secure. In addition, 87.4% of the children were malnourished, 61% were wasted, and 45.9% were stunted. These thought-provoking figures point toward food insecurity and urgent assistance in the area. Households could face difficulties attaining their food and nutrition requirements in economically challenging times; securing enough food to meet these needs and individual preferences could be highly arduous, though information on how households could achieve this is limited. This research investigates household food security (access) status, dietary diversity, and food insecurity response and coping strategies during difficult economic times in NLGA.

## **1.2 Thesis structure**

This section explains the layout of this thesis. The thesis structure in figure 1 presents a visual layout of the thesis content, detailing the connectivity of the chapters. The thesis contains six chapters, followed by a reference section and appendices. Chapter one introduced the research, stating the aim and objectives, the research questions, the problem statement, the scope, significance, and the delimitation of the study. These set the background for the study. Chapter two began with literature review's concept and purpose, highlighting how the present research reviewed the literature using the PRISMA model and the sources of



academic materials used. It reviewed existing concepts of food (in)security, dietary diversity, and related theories and gave insight into how the research variables interact through a conceptual framework. Chapter three is divided into three sections. The first section introduced the philosophical stance of this study, explaining the methodological perspective. The second section detailed the research method for the quantitative study, while the third section detailed the qualitative research method. Furthermore, the result presentation was split between chapter four – which presents the quantitative findings, and chapter five - presenting the qualitative findings. Chapter six has three sections. The first section discussed the findings and implications of the quantitative and the qualitative studies in perspective with the objectives. The second section presented the development of a draft roadmap towards achieving food security, using a food security SWOT analysis and Stetler’s model of research utilisation. The third section is the recommendations, and conclusion followed by the references and appendices.

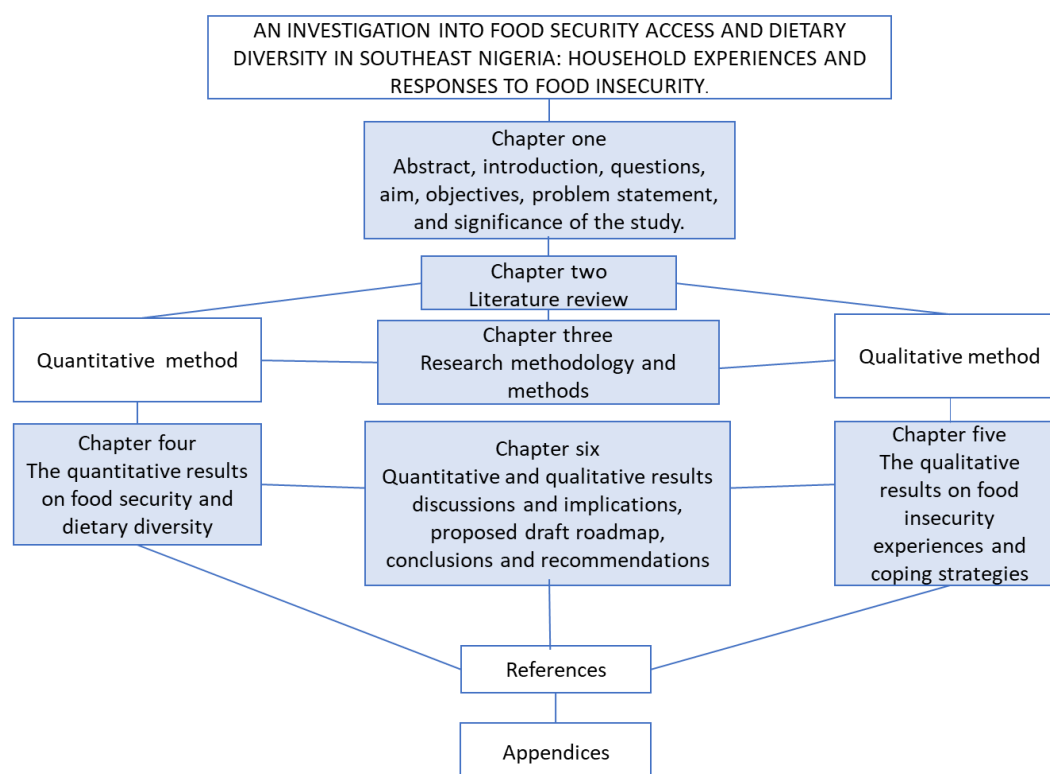


FIGURE 1: THESIS STRUCTURE

### **1.3 Research problem statement**

Nigeria is the most populous country in West Africa, well endowed by nature with vast land and crop varieties, thriving well in different ecological zones with optimal yield, oil wells, and increasing population. Nevertheless, she is yet to harness these resources to be food sufficient (Oriola, 2009). Nigeria scored 29.2 on the 2020 Global Hunger Index, indicating severe hunger and ranking 98<sup>th</sup> most hungry out of the 132 countries assessed for hunger level. To worsen the situation, the COVID-19 Pandemic, climate extremes, conflict, bad governance, and corruption are exacerbating nutrition and food insecurity (Global Hunger Index, 2020). However, the 2022 Global Hunger Index recorded a lower score of 27.3, ranking 103<sup>rd</sup> out of 121 countries, but the country has remained in the “serious” category of the hunger index (Global Hunger Index, 2022). Since independence in 1960, several government initiatives have been to end hunger and poverty and achieve food security, but regardless of all efforts, these could not achieve their set objectives (Oriola, 2009). Eboh (2011) has acknowledged that the significant growth in the Nigerian agricultural sector has not impacted food security substantially. As such, the effect of food insecurity has a significant impact on individuals, households, communities, regions, and the entire country. For instance, in NLGA, there is high household poverty. The poverty level was estimated at 69.2% with low socio-economic development (Ali & Agbiogwu, 2014), and 70% of the residents live below the poverty line of \$1.25 per day (Ataguba et al., 2011).

Onunka et al. (2018) observed that fundamental to and expectation of the Nigerian development policies should be prioritising food security. However, in practice, it still needs to be determined, the level of attention given to the prioritisation of food security policies despite its consequences. Irohibe and Agwu (2014) noted that food insecurity creates unpleasant situations with consequences detrimental to wellbeing, health, and productivity. The consequences of food insecurity have more significant effect at the household level, as

the household is the smallest unit of society and the fundamental basis for children's upbringing impacting their future. Ehebhemmen et al. (2017) and Farzana et al. (2017) agreed that households might adopt multiple coping strategies to meet their nutritional requirements when faced with food insecurity. Onunka et al. (2018) opined that different coping strategies employed by households to mitigate food insecurity and increase food access vary depending on the geographical, cultural, and social-economic factors that prevail with a positive or negative effect (Ezeama et al., 2015).

This research addresses the following research questions. (1) What is the level of food security in the NLGA? (2) What factors are associated with food security in Nsukka households? (3) What is the household dietary diversity level in the NLGA? (4) What are households' experiences and coping strategies for food insecurity during economic challenges? (5) Were their experiences and coping behaviours different during the COVID-19 lockdown? (6) What is the way forward toward food security in NLGA?

#### **1.4 Aim and Objectives**

The aim of this research is to investigate household food security status and dietary diversity in NLGA. It explored the challenges and solutions to achieving household food security in a difficult economic period. Furthermore, it proposed a draft roadmap for adaptation for potential intervention and assistance programs toward achieving food security in NLGA. The following objectives achieved this aim.

- i. To measure the level of food security in NLGA using an identified instrument.
- ii. To examine factors associated with household food insecurity.
- iii. To explore household dietary diversity.
- iv. To examine the experiences of households on food insecurity.
- v. To explore household coping strategies during food and financial scarcity.
- vi. To provide a draft road map toward achieving household food security.

## **1.5 Significance of the study**

This research is timely and relevant to Nigeria's food insecurity and food crises as UNICEF (2023) has reported that 25 million Nigerians are at an increased risk of food insecurity. It gives insight into the food security level, diet diversity, food insecurity experiences, and coping strategies of households in NLGA in an economically challenging time. This research is relevant to the government, policymakers, non-governmental organisations, humanitarian agencies, and the community. It will serve as a reference point for researchers and add to the literature. It could also be a basis for possible interventions to alleviate food insecurity in the study area and other similar rural areas in Nigeria. The draft road map developed could be relevant for planning interventions or support at the local and national levels.

## **1.6 Delimitation and scope**

This research investigated food security access and dietary diversity in South-Eastern Nigeria (see figure 2). It is limited to household food security access in NLGA of Enugu State, Nigeria. The responses are limited to women who represented and gave information about their households.

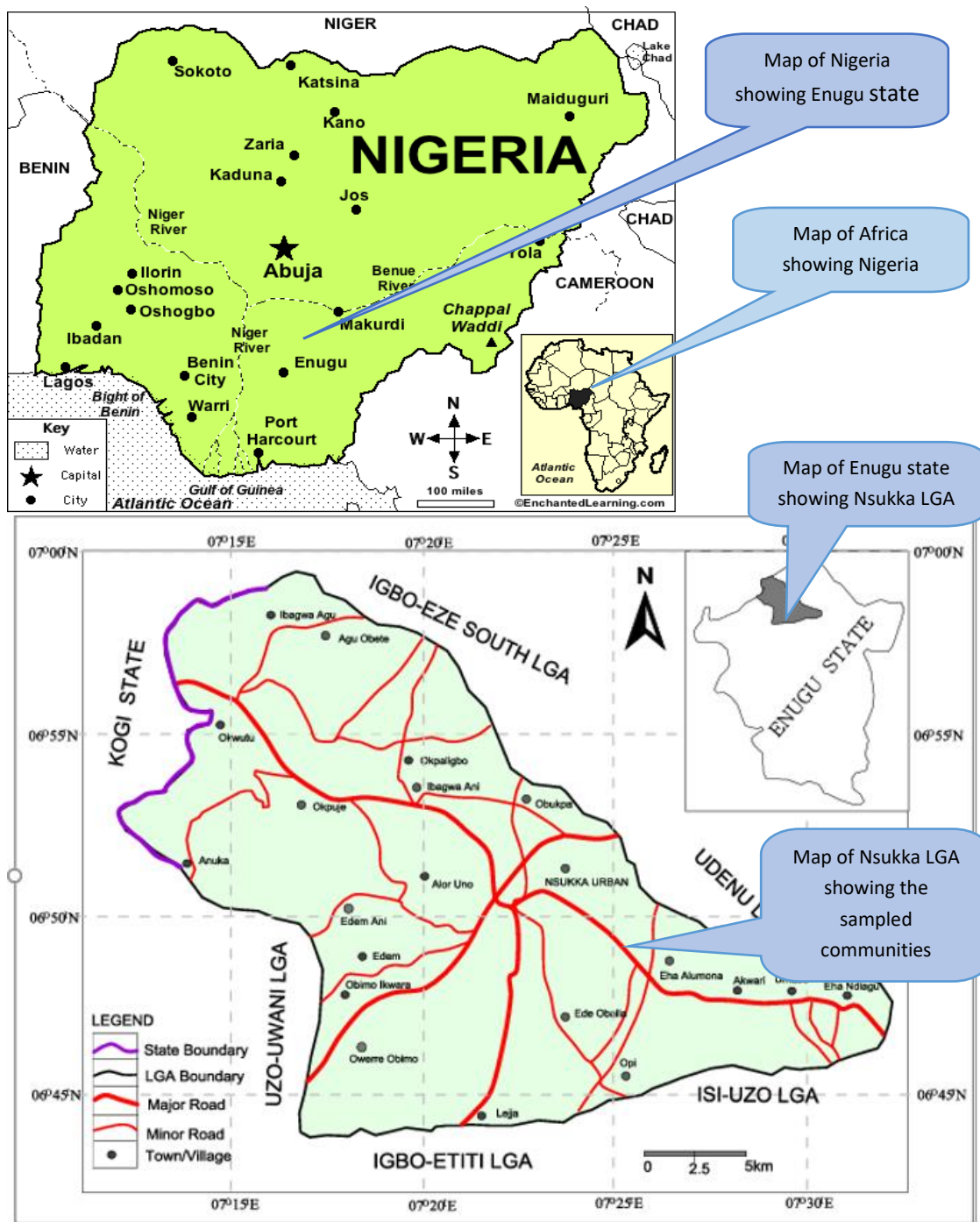


FIGURE 2: MAP OF AFRICA, NIGERIA AND NSUKKA LOCAL GOVERNMENT AREA (ALI AND AGBAIOGWU, 2014)

# **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.0 Introduction**

The previous chapter presented this study's background, rationale, aim, and objectives. This chapter explores current literature and theories on food security, dietary diversity, and household food insecurity coping strategies to provide an overview of the current situation and arguments - globally, regionally, and more specifically, in Nigeria, and NLGA. The following paragraph presents the strategy for retrieving relevant literature for this study.

### **2.1 The process of writing the literature review**

Hart (2018) defined a literature search as the process involved in selecting accredited academic resources, both on paper and electronically, that are relevant to a study. It is essential in this process to consider the chosen research topic, locate literature sources, analyse, and evaluate them. Also, to identify the most relevant literature, organise and synthesise to build an argument, develop a writer's voice, follow writing conventions, write, edit, and refine the review (Efron & Ravid, 2019; Pautasso, 2013). Efron and Ravid refer to this process as the "*CLAS-WE*" approach to the literature review process. It was adapted by the present study as a guide to the layout of the research literature review process, as described in figure 3 and explored in the subsequent paragraphs.

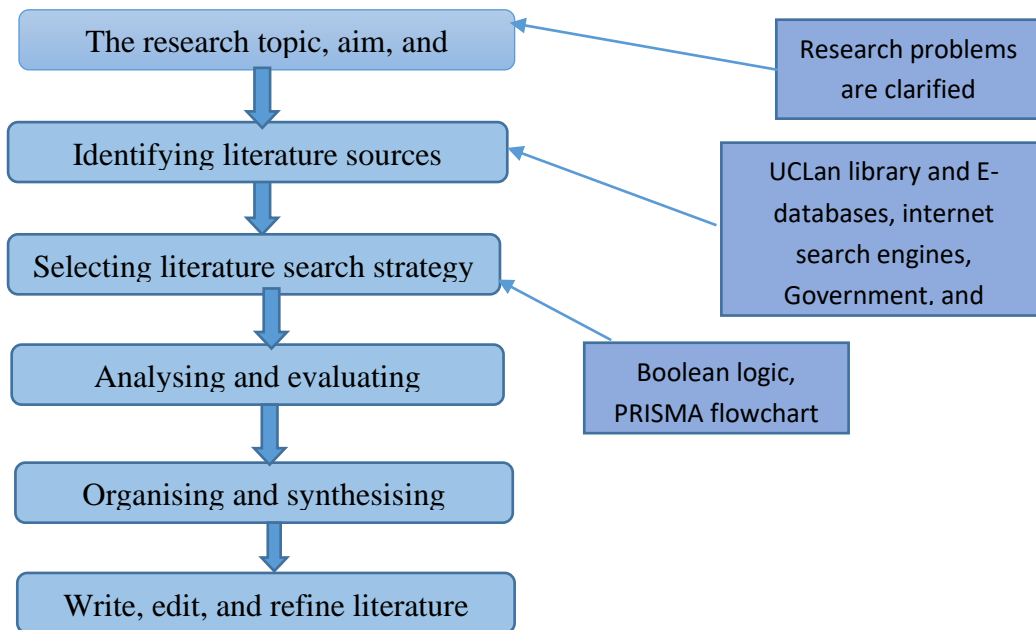


FIGURE 3: FLOW CHART OF LITERATURE REVIEW PROCESS ADAPTED FROM (EFRON &RAVID, 2019)

### 2.1.1 The research topic, aim, and questions

Writing a literature review starts with identifying a research problem, refining it into a research topic, and raising research questions that investigate the problem (Machi & McEvoy, 2016). Considering the research topic was fundamental to identifying the literature sources that were included in this research. Keywords and phrases in the research topic, aim, and questions formed part of the search terms. Before selecting an appropriate search strategy, locating, and identifying appropriate literature databases and sources that provide information and knowledge on the research topic was imperative.

### 2.1.2 Identifying literature sources

Ridley (2012) recognised the importance of sourcing literature from a wide range of sources to have rich data, a broader opinion, and to be conversant with current issues within the discipline. Relevant literature sources were identified in several ways:

1. The UCLan library catalogue was used. It provides access to research materials on library.
2. Quality research materials were traced in the references/bibliography of research papers, reviews, and books.
3. Internet search engines such as google scholar and open-access databases were explored. Government and professional organisations' websites, newspapers, and unpublished materials like Doctoral dissertations (Ethos) were considered.
4. Supervisors recommended essential articles and materials.

A literature search strategy was planned to follow the identification of literature sources.

### **2.1.3 Literature search strategy**

Machi and McEvoy (2016) referred to literature search as determining the information needed in a literature review. This process involves filtering the identified literature to those that present more robust evidence to support the research argument. Ridley (2012) explained that literature search is the foundation of reading and writing a literature review. It remains an ongoing process throughout the research period to ensure important literature are included and to keep abreast with new publications.

The “Boolean logic” (Ridley, 2012) was used to maximise each literature search results. The three logic operations adopted were, first, using “OR” in-between keywords or phrases yielded articles that have either of the keywords or the phrases. Secondly, using “AND” in-between two search keywords yielded articles that contain both keywords. Thirdly, using “wildcards” symbols like an asterisk yielded articles containing keyword in several forms (e.g., diet, dieting, dietary) or keywords spelled in different ways. Furthermore, it was vital to use a framework in the literature search to break up the process into phases enabling the researcher to search, refine and filter search results using criteria that will allow the inclusion



of relevant and quality literature and keep the search and selected literature organised. The search terms focused on articles related to household food security/insecurity, household dietary diversity, household nutrition, recycling food, measuring food security, coping strategies, and COVID-19. The next step was to use the search terms to identify articles that address the research problem. Relevant articles were identified from five major databases— Science Direct, Emerald Insight, Scopus (from Elsevier), EBSCOhost, and google scholar. These databases were selected because food security journal publications are indexed there. Other sources were explored, such as government and organisation’s websites, newspapers, and blogs. Machi and McEvoy (2016) highlighted that consideration of the year of publication is vital to identifying the current literature in a field of study. A range of publications within the last 17 years was applied to capture current articles published between 2005 – 2023. However, some important articles published before this date were also reviewed and cited. Such articles postulated relevant theories, models, and methodology or have convincing arguments and contributions to the subject matter.

Following a search for a literature search framework, the PRISMA flowchart (Moher et al., 2015) was adopted because it is widely used for systematic reviews, organisation, and documentation. Randolph (2009) has recognised using the PRISMA flowchart and the matrix method as becoming almost standard for most literature reviews because its design is efficient and innovative. The PRISMA presents a flow chart of information on the literature search procedure, as presented in figure 4.

From the identified literature sources, the initial search from the selected databases yielded 728 articles; Science direct yielded 157 articles; Emerald insight 142 articles; Scopus 241 articles; EBSCOhost 68 articles and google scholar 120 articles. It was important to screen the articles by removing duplicates and streamlining the search criteria to have the most relevant articles. A decision was made on the inclusion and exclusion criteria. Snyder (2019)

noted that the research questions should guide the decision to include or exclude articles in a review, and these decisions form an important phase in writing a review. The inclusion criteria were limited to keywords and phrases constructed from the research questions, such as household food security/insecurity, dietary diversity, and household food insecurity coping strategies. The year of publication and the research area were considered. The exclusion criteria presented in table 1 were keywords or phrases that might yield articles not related to the present study, such as articles on individual or community food security/insecurity, articles published in journals other than the selected ones, and publications in other languages other than English. With the exclusion criteria, a total of 130 articles were included in the synthesis. Also, 28 articles identified through other sources were manually added, given a total of 158 articles included in this study synthesis.

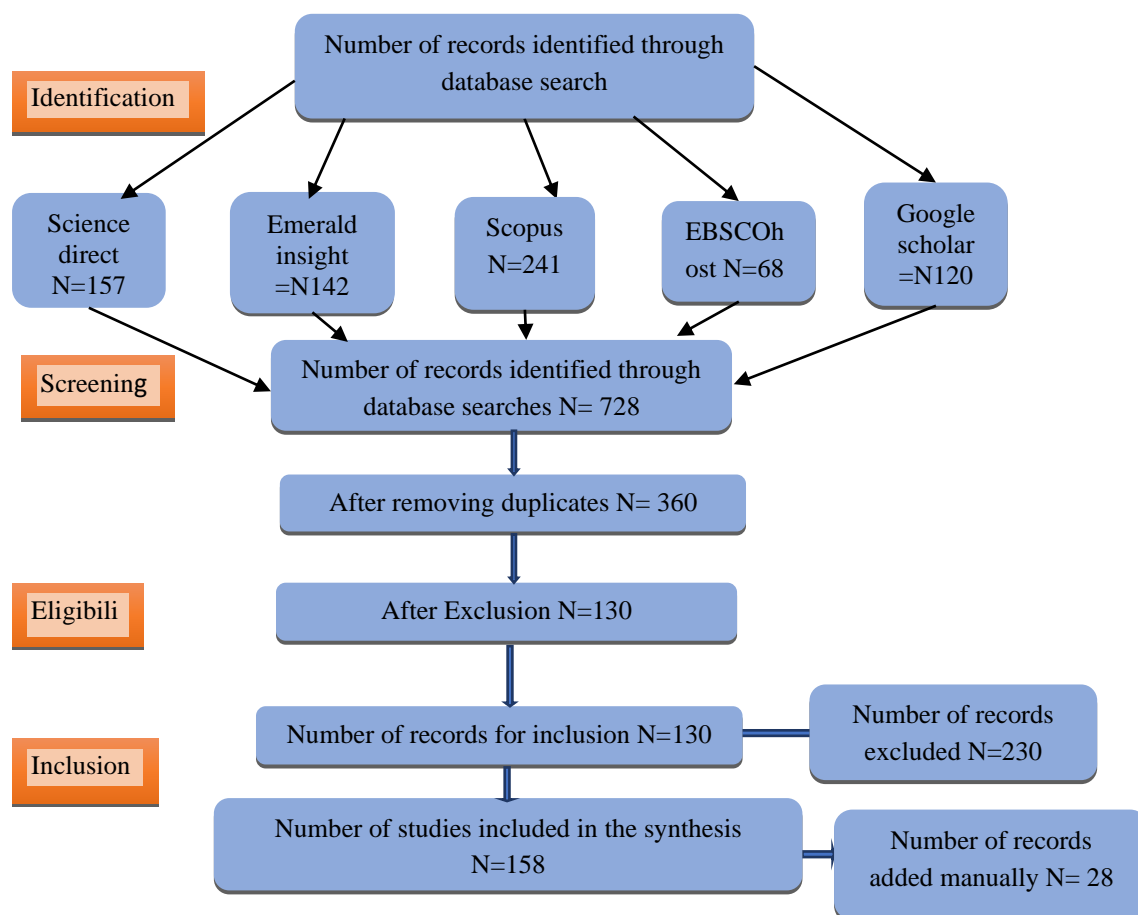


FIGURE 4: A FLOW CHART SHOWING PHASES OF THE LITERATURE SEARCH, ADAPTED FROM PRISMA (MOHER ET AL., 2015)

**TABLE 1: INCLUSION AND EXCLUSION CRITERIA**

Inclusion criteria	Exclusion criteria
Qualitative and quantitative studies on household food security/insecurity, household dietary diversity in Nigeria, Enugu state and Nsukka LGA, global, and regional food security/insecurity, and COVID-19 in Nigeria	Studies on individual, community, and district food security/insecurity
Selected studies that meet the year of publication criteria.	Studies focused on other aspects of food security such as irrigation, deforestation transportation, crop, and animal production etc.
Articles from the selected journals	Articles from other journals
Articles published in English language	Articles published in other languages than English

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#### **2.1.4 Analysing and evaluating literature**

Reading selected research materials and evaluating their ideas, thought, and arguments are important aspects of literary analysis and evaluation. Efron and Ravid (2019); Hart (2018). Snyder (2019) asserts that by reading and evaluating research material, a researcher can ascertain the material's relevance that supports the present researcher's argument. Each material identified was explored first by reading the abstract or executive summary (for reports); if identified to be relevant, the article was read fully. Snyder (2019) observed that the intended research questions must be answered while analysing and evaluating the literature. Endnote desktop and the web version were used to manage the references of the included articles.

### **2.1.5 Organising and synthesising literature**

Developing unique ideas, thoughts, and arguments into “*a well-structured, persuasive and wholistic narrative*” allows a beginner or an early researcher to develop a writer’s voice (Efron & Ravid, 2019). This stage was not reflected in this study as it was merged with the write, edit, and refine step. Moreover, both steps are similar and reflect how the researcher produces an original work with the understanding and knowledge from existing literature on the subject matter.

### **2.1.6 Write, edit, and refine the literature review**

According to Efron and Ravid (2019), an author writes a literature review by demonstrating the ability to integrate research and theories to show excellent understanding of current issues and knowledge in the chosen research area. There must be coherence and flow of writing to relay the argument and enhance the reader’s understanding. Furthermore, it is important to edit and refine the written review. Findings, arguments, opinions, and ideas from the selected articles are compared, contrasted, criticised, or supported.

## **2.2 Conceptual framework**

A conceptual framework is a part of research that presents all the constructs that make up a study showing the relationship among and between the variables that inform the overall study. It also facilitates understanding these relationships (Ivey, 2015; Walden University, 2020). According to Camp (2001), it is a structure researchers use to explain the progression of the research phenomenon. Walden University (2020) opines that conceptual framework is more common in qualitative research, just as theoretical frameworks are used more in quantitative research. However, the latter could be applied in qualitative research. The literature suggests that conceptual and theoretical frameworks could be used interchangeably

(Imenda, 2014). On the contrary, Adom et al. (2018) believes both frameworks are mandatory concepts for a thesis and dissertation. They suggest that a conceptual framework should direct the pathway of research, give more meaning to the findings, and provide the basis on which its credibility is established. In contrast, a theoretical framework or model should unveil the research focus, be connected to the research problem, and inform on the selected research design and analytic approach. Similarly, Imenda (2014) and Green (2014) share the same view and advocate for a distinction between both frameworks. They called for further clarification between the two terminologies to a layman's understanding. Imenda (2014) noted that the absence of a theoretical framework in research portrays a wrong direction in literature search and scholarly views. A theoretical framework describes research with existing theories and ideas from scholarly views.

Grant and Osanloo (2015) suggest that ideas are arranged logically to aid visual understanding or create a picture of how the variables are related. Miles and Huberman (1994) conclude that conceptual framework could be presented in a narrative form or graphically. Fisher (2007) concurred that a good graphical conceptual framework should be explained narratively. Furthermore, Adom et al. (2018) emphasised that diagrams could be more effective for a clear definition of variables and constructs, and arrows could be used to indicate their relationship. The following paragraph presents the narrative and visual presentation of the conceptual framework of this study. The theoretical framework underpinning this research is presented in later paragraphs.

Figure 5 is a graphical presentation of the conceptual framework for this research; it shows the relationship between the research variables. Food security has four pillars – availability, accessibility, utilisation, and sustainability. These are major dimensions of food security (Gibson, 2012; Oni & Fashogbon, 2014). Household food security is when every household member has enough food of their choice that meets their dietary requirement (Ajao et al.

(2010). A household becomes food insecure if any of the dimensions is lacking and food secure when all the determinants are present. Therefore, Food security is classified into four levels: food secure, mildly food insecure, moderately food insecure, and severely food insecure (Coates et al., 2007). When households are food insecure, they resolve to food coping strategies such as food quality and quantity compromise, borrowing food or money (Farzana et al., 2017; Onunka et al., 2018), which may positively impact their food security level. Other related conditions, such as malnutrition, poverty, and hunger, are associated with food insecurity and poor dietary diversity (citation). They could be a result or cause of food insecurity and poor dietary diversity. Additionally, factors challenging household food security, such as income, household population, marital status, education level, and the gender of the household head, could either negatively or positively affect food security, malnutrition, poverty, and hunger. Similarly, these challenges could positively or negatively impact household dietary diversity.

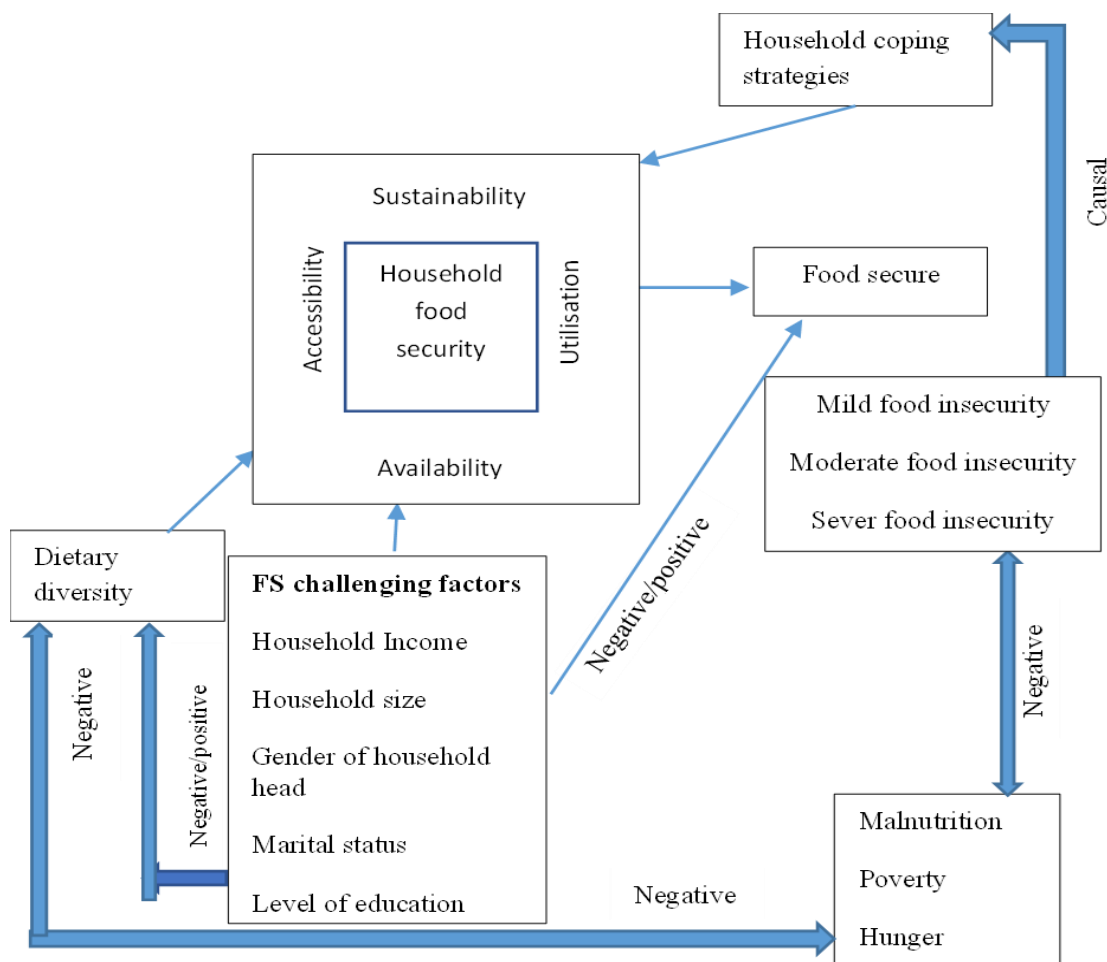


FIGURE 5: THE CONCEPTUAL FRAMEWORK

### 2.3 The concept of food security

Food is a basic need for survival and a healthy life. Health and life, in general, are threatened by the lack or shortage of food. Therefore, understanding the concept of food security at the individual, household, national, regional, and global levels is imperative.

Food security is a fundamental human right as declared by the United Nations (1948) in article 25 of the Universal Human Right declaration 1948 “*Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing, medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control*”. Thus, food security has become a

global concern since this declaration in 1948. Despite this declaration, strategies, and institutions set up to tackle food insecurity, many regions of the world struggle with this menace. Everyone must have access to good and healthy food because it is the right of every citizenry.

Food security is a broad concept that cuts across several fields of knowledge. It is a multidimensional discipline and phenomenon (Norhasmah et al., 2010). It relates to animal and crop production, nutrition, urbanisation, and the ecosystem. It involves farming, food safety and preservation, nutrition and diet, technology, food affordability, and sustainability (Havas & Salman, 2011; Sastry et al., 2011). Jones et al. (2013) observed a wider interpretation and use of this concept by several disciplines as they tried to construe the concept of food security from different viewpoints of knowledge, such as agriculture, nutrition, sociology, anthropology, economics, and food technology. It is an interdisciplinary concept with social-economic and political considerations (Scanlan, 2003). Wayne (2015) opined that food security sums up many aspects of human life. Regardless of the perspective, a common ground is evident in all the definitions of food security as it evolved.

### **2.3.1 The evolution of food security definition and related terminologies**

Scholars highly debate the definition of food security and what constitutes food security and food insecurity. Different schools of thought, researchers, and organisations have attempted to define food security (see table 2). Many others have criticised some opinions, and some have suggested changes in basic assumptions in the definition. For instance, Tansey (2013) advocated that food security should not be a topic or occurrence, but a role food plays in satisfying human needs. He argued that thinking about feeding a nation or the world in the concept of food security definition is not feasible, but what is needed is a paradigm shift in definition. There exist about 200 food security definitions (Norhasmah et al., 2010). However, no one definition is encompassing because the concept of food security is evolving



with time (Jones et al., 2013). Pinstrup-Andersen (2009) described food security as a term initially used to describe a country's access to enough food to meet energy and dietary requirement. He noted a standard reference to National food security to mean self-sufficiency, indicating the ability of a nation to produce adequate food for its population. As researchers make discoveries and improvements in research, more aspects of food security that require attention are revealed and included in its definition and theory. Nonetheless, all the definitions of food security have a common purpose, "*having enough food for everyone always.*" Following are some definitions of food security and how they have changed to embrace more concepts.

Soon after World War II, the issue of hunger, starvation, and famine drew international attention to the problem of food; then, food security was referred to as "*the incidence of famine,*" and lack of food was identified as the root cause (Molteldo et al., 2014). Up to the 1970s and after the food crisis, global concern for strategic insight into the concept of food security grew (Bala et al., 2014).

In the 1970s, the definition of food security focused on food availability which dealt more with food supply. The idea was that the availability of enough food will end hunger and checkmate fluctuation in food prices. Hence, food security was defined as: "*Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices*" (United Nation, 1974). The above definition recognised the supply aspect of food security more considerably than the demand and factors that affect food supply. There was no assurance that consumers could access the supplied food, as Pinstrup-Andersen (2009) noted that food availability does not guarantee access. Similarly, Molteldo et al. (2014) observed inequality in the supply of food, where some may receive in excess due to opportunities life avails to them, and others will have an inadequate supply. Furthermore, they noted that this definition considered basic

foodstuffs and quantity of food supply but needed to consider the nutritional quality. The quantity of food one consumes may not be commensurable to the quality and will not guarantee food security. Therefore, food security could be viewed as an issue recognised by the quality of life and food security attributes that consumers benefit from, not quantity (Wayne, 2015). Obviously, food availability will only partially ensure access and equitable distribution of food internationally, nationally, and intra-households (Molteldo et al., 2014; Simelane & Worth, 2020; Yaro, 2004). Therefore, in 1983, food security was re-defined by the Food and Agricultural Organisation (FAO) to reflect the need for physical and economic access to food. *“To ensure that all people at all times have both physical and economic access to the basic food they need”* (Food Agricultural Organisation, 1983). This definition recognised economic resources as important for food accessibility. However, it lacks completeness; it does not consider nutrition and the stable supply necessary for achieving food security.

In the 1990s, the definition of food security shifted attention from calorie intake to include nutritional balance. Availability and access to food were inadequate to express the definition of food security as it does not reflect the nutritional aspect of food intake. Improving micronutrient intakes such as vitamins, iron, and iodine is an important focus in nutritional matters (Jones et al., 2016), and a deficiency could result in hidden hunger (micronutrient deficiency) (Gerard et al., 2014), implying that a household may have access to food but remain food insecure due to hidden hunger. Hence, the 1996 definition of food security by the FAO involved the element of food utilisation. Food security is *“achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”* (Food and Agriculture Organisation, 2016). This definition appears more comprehensive as it considers sustainable physical and economic accessibility of food, sufficiency, dietary intake, and choice.

Pinstrup-Andersen (2009) has argued what “enough” or “sufficient food” could mean in the definition, whether it refers to meeting economic demand, which will ask the question of price, or it refers to meeting nutrition and energy demand. “Safe and nutritious food,” which emphasises food safety and nutrition, is another important aspect featured in the 1996 definition (Pinstrup-Andersen, 2009), because, regardless of food availability, accessibility, and nutrition, unsafe food consumption keeps the consumer food insecure. Furthermore, he argued that the term “preference” in the definition would be acceptable if interpreted as having food that is acceptable and consistent with social, religious, ethical, and cultural values but not limited to a myopic interpretation to mean preference between two similar foods. The 1996 definition of food security was adopted by several organisations and committees, such as African Research Bulletin (2018); Food and Agricultural Organisation (2018, 2019); International food Policy Research Institute (2014); The United Nation’s Committee on world food security (2012) and by many scholars such as Ehebmen et al. (2017); Jones et al. (2013); Kobe et al. (2020); Matemilola & Elegbede (2017); Mc Carthy et al. (2018); Moltedo et al. (2014); Nzeagwu & Aleke (2016); Pinstrup-Andersen (2009); Rowley & Veillette (2016b).

The economic perspective of the food security definition by the 1996 World Food Summit, as noted by Jones et al. (2013), is a point of emphasis. It defined food security as existing when everyone has economic access to enough nutritious food that meets their choices. It implies that people may be food secure when they have enough income and resources to obtain the food of their choice that meets their health requirements. Although, Pinstrup-Andersen (2009) called for caution when defining food security from the economic perspective as it raises the question of price. Therefore, households are more likely to be food insecure during financial scarcity. In economic difficulties, households have less financial power and resources to access food; an increase in food prices worsens the situation (Martin-Prevel et

al., 2012), which characterises recession periods. Households may have access to staple foods which abound in their regions, but access to a choice of balanced diets may be far from achieved in several regions of the world, like in Sub-Sahara Africa (Hanjra & Qureshi, 2010; Porter et al., 2014). Research has recognised that access to most staple foods that are rich in calories does not ensure food and nutrition security, such foods are energy dense and lack essential micronutrients with an effect of hidden hunger (Bresnayan, 2017; Gödecke et al., 2019; International Food Policy Research Institute, 2014; World Bank, 2016). In difficult economic periods, families resolve to several coping strategies to obtain enough food, some of which may jeopardise their nutritional requirements, satisfaction, health, and family wellbeing. The definition of food security has advanced and could be defined with regard to individual food security or groups of people such as households, teenagers, the elderly, and the community. For instance, Ajao et al. (2010) defined household food security as a household's ability to access sufficient food for every member. It involves secured food production and purchases, which require adequate economic resources.

**TABLE 2: THE EVOLUTION OF FOOD SECURITY DEFINITIONS**

<b>Food security scope</b>	<b>Definition or statements on food security</b>	<b>References</b>
the Universal Human Right declaration in 1948 (macro level)	<i>“Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing, medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control”</i>	(United Nations, 1948)
Food availability	<i>“Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices”</i>	(United Nation, 1974)
Accessibility – Physical and economic access to food	<i>“To ensure that all people at all times have both physical and economic access to the basic food they need”</i>	(Food Agricultural Organisation, 1983)
Food access sustainability and utilisation	<i>“Food security is achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”</i>	Food and Agricultural Organisation (1996)
Community food security (meso level)	<i>Community food security (CFS) is defined as a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice</i>	Hamm and Bellows (2003)
Food access	<i>“Access by all people to enough food to live a healthy and productive life.”</i>	Pinstrup-Andersen (2009)
Household food security (micro level)	<i>“Food security exists when a household can reliably gain access to food in sufficient quantity and quality for all household members to enjoy a healthy and active life”</i>	Ajao et al. (2010)
Hunger, famine, and starvation	<i>The term food security was referred to as “incidence of famine”</i>	Molteldo et al. (2014)
Food and nutrition security	<i>“When all people have, when needed, physical, social, and economic access to adequate, safe (free of contaminants), and nutritious food to satisfy their dietary needs and choices for an active and healthy life”</i>	Simelane and Worth (2020)

Another significant dimension to the definition of food security considered nutrition security alongside food security. Pinstrup-Andersen (2009) has maintained that food security does not translate to nutritional security. He argued that individual body metabolism differs, likewise, health conditions; therefore, access to sufficient food may not guarantee nutrition security. He further elucidated other factors that affect food security and good nutrition, such as quality water, sanitation, and access to health care. In addition, other factors like food processing, cooking, and preservation process could impact nutrition security by improving or depleting food quality (Fabbri & Crosby, 2016; Zheng & Xiao, 2022).

Simelane and Worth (2020) reviewed the concept of food and nutrition security and found that both concepts (nutrition security and food security) must be addressed when considering food security. They suggest it will create a balance, especially in implementing food policies and approaches, and holistically address food security. Therefore, they defined Food and Nutrition Security (FNS) to exist “*when all people have, when needed, physical, social, and economic access to adequate, safe (free of contaminants), and nutritious food to satisfy their dietary needs and choices for an active and healthy life.*” Additionally, they observed a four-dimensional approach to the FNS concept (see figure 6), which includes a categorical dimension (availability, accessibility, utilisation, and sustainability); socio-organisational dimension (macro, meso, and micro social levels); managerial dimension (assessment, analysis, and action) and situational-related dimension (survival aid, integrated food and nutritional security programs, and technical corporation programs). This definition does not only consider the original four pillars of food security but recognises the socio-organisational levels at which food security could occur, i.e., global, regional, national, community, district, or town. It considered the managerial dimension that highlighted the issue of food security governance, scrutiny, and evaluation; additionally, the situational-related dimension deals with food programs and their technicalities. This present research suggests more emphasis on

nutrition in defining and analysing FNS by including the nutrition security dimensions. The above dimensions of FNS could be criticised for not considering nutrition security in detail, for instance, the health condition of consumers and access to health care, as argued by Pinstrup-Andersen (2009). An improved statement of FNS analysis would include a dimension that considers the consumer's health conditions, availability, and access to health care to deliver effective and efficient food and nutrition support programs.

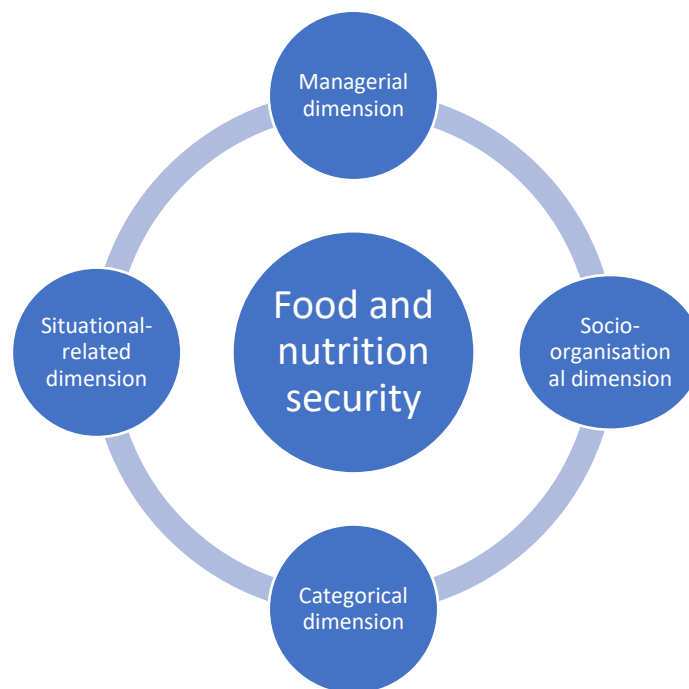


FIGURE 6: FNS DIMENSION MODEL, ADAPTED FROM (SIMELANE & WORTH, 2020)

On the other hand, food insecurity implies a lack of regular access to sufficient nutritious and safe food for a healthy and active life (Food and Agricultural Organisation, 2021). Coates et al. (2007) categorised food insecurity (figure 7) as mildly food insecure – characterised people who worry about obtaining food; it could be due to financial, physical, or psychological inability. Moderate food insecure – those who compromise food quality and quantity and start skipping meals to meet daily food needs. Severe food insecurity - indicates

a more complex level of food insecurity where an individual or household experiences hunger. It may include going a whole day without food or sleeping at night hungry.

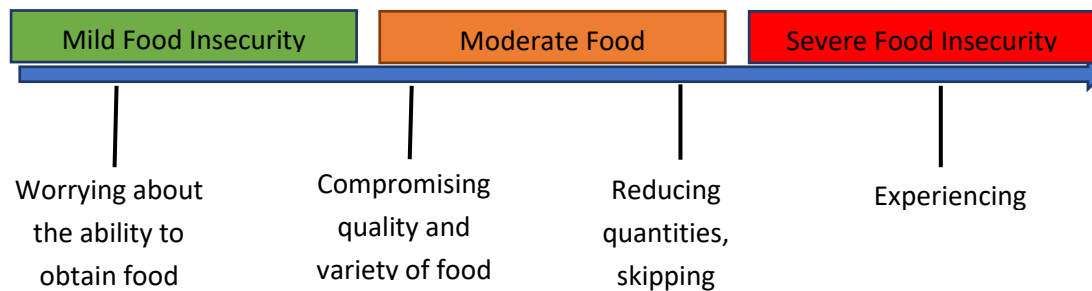


FIGURE 7: CATEGORIES OF FOOD INSECURITY BY COATES ET AL., 2007

The following section considered terms associated with food (in)security, including but not limited to poverty, malnutrition, and hunger.

### 2.3.2 Poverty

In 2017, the global poverty rate was estimated at 9.2%, approximating those living below the poverty line of \$1.90 a day, as shown in figure 8. One hundred and twenty million people (120 million) were added to the numbers due to the COVID-19 Pandemic. The rate rose from 8.4% in 2019 to 9.5% in 2020 (World bank, 2021b; United Nation, 2022). Poverty is a multidimensional phenomenon that has no singular definition. United Nations Education Scientific and Cultural Organisation (2017) has recognised that despite poverty being an issue of international concern, nevertheless, there is no singular agreed guideline for its measurement. It is because poverty can be defined from different perspectives, such as economic, social, household, and individual. For instance, they defined income poverty as the failure of a household's income to meet a national threshold, and which will vary in different countries. Oriola (2009) defined poverty as a lack or poor access to basic amenities and infrastructures such as health services, education, food, housing, good road, and electricity. etc. However, Ali and Agbiogwu (2014) perceived poverty as a multifaceted phenomenon characterised by low income, high mortality rate, malnutrition, unemployment, and low socio-economic development. They classified it as absolute or relative poverty. Absolute



poverty is a concept that measures poverty in; monetary ability to meet the basic needs of life (food, shelter, and clothing), it does not consider social or cultural needs. Relative poverty measures poverty in terms of the economic status of other people in society. Akintola (2010) argued that poverty is more than inadequate income to meet basic needs, instead, it combines several forms of human deprivations that hinders actualisation of talents, dreams, and capabilities. People may not maximise their potential when they experience deprivation, such as food deprivation. Ataguba et al. (2011) assert that poverty can be determined by, but not limited to, employment status, level of education, household size, income, and marital status. They emphasised that low education, sanitation, low income, and low employment quality are some indicators of poverty that negatively impact household wellbeing and productivity. However, Goulden and D'Arcy (2014) viewed poverty not only from the perspective of basic needs but also from social participation. They argued that if a good standard of living includes participation in social norms, then exclusion from social participation could indicate poverty. Okuneye (2001) noted that food insecurity is an indicator of poverty. Due to the intrinsic relationship between poverty and food insecurity, the poor lack resources to access food and the essentials of life (Hjelm et al., 2016). Poverty could cause food insecurity, which could mean a household is poor. This relationship is complex and not adequately understood. The unresolved question is: to what extent does food insecurity indicate poverty since food insecurity is in varying degrees?

Food poverty is a term used interchangeably with food security and has been identified as a dimension of poverty; it is defined by NHS Health Scotland (2018) as the inability or uncertainty to acquire or consume adequate food in an acceptable social manner. Securing a sufficient and nutritious diet may seem difficult.

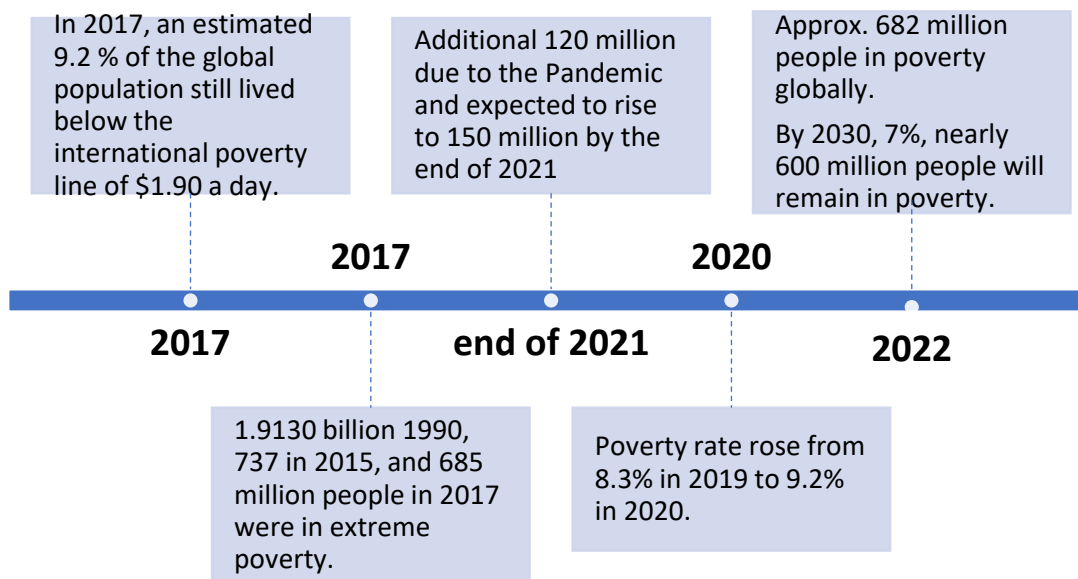


FIGURE 8: GLOBAL FACTS ON POVERTY (UNITED NATIONS ORGANISATION, 2022; WORLD BANK, 2021B)

### 2.3.3 Malnutrition and hunger

Another closely related term to food insecurity is malnutrition. (World Health Organisation, 2020b) has defined malnutrition as “*the deficiencies, excesses, or imbalance in a person’s intake of energy and/or other nutrients.*” National Health Service UK (2020) put malnutrition as “*a serious condition that happens when the body does not contain the right amount of nutrients.*” John Hopkins Medicine (2021) defined it as “*a condition that develops when the body is deprived of vitamins, minerals and other nutrients it needs to maintain healthy tissues and organ function*”. Malnutrition has been identified to cover two broad conditions undernutrition (stunting, wasting, and underweight), including micronutrient deficiencies (lack of vital vitamins and minerals), and overnutrition (obesity, overweight), which also includes micronutrient deficiency (World Health Organisation, 2020b). The burden of malnutrition in all its forms remains a global challenge (Food and Agriculture Organization et al., 2020).

Food and Agricultural Organisation (2019) has reported a reverted rise in global hunger since 2015 after a trend of steady decline. As of 2018, more than 820 million people were hungry globally. In 2019 an additional 10 million people were hungry, bringing the world most severe hungry population to an estimated 8.9% of the global population (Food and Agriculture Organization et al., 2020), and an additional 83 million – 132 million people that experienced chronic hunger at the end of 2020 due to the COVID-19 Pandemic (Nguyen, 2020).

Several signs of a rise in global hunger indicate that eradicating hunger by 2030 (SDG 2) is not yet feasible. Food and Agriculture Organization et al. (2020) revealed a growing rate in the world population affected by hunger, undernourishment, and chronic food deprivation over some years (appendix 1). The number of undernourished people globally was estimated in 2019 at 687 million people an upsurge from 678 million people in 2018. It is projected to reach 841 million people by 2030 if the food situation does not change. Therefore, in every nine persons, one is undernourished. South America and Africa are the most affected areas. It also revealed a recent significant slowdown in the decreasing trend of undernourishment that characterises Asia. Definite workable and achievable solutions are needed if the second target of the global SDG will be achieved. Malnutrition among children is another global concern. Sharma et al. (2016) agreed that approximately 162 million children under five years were chronically malnourished. Approximately 99 million children were underweight, and about 55 million were wasted. According to the Food and Agriculture Organization et al. (2020) estimates, in 2019, 21% representing 144 million children below five years were stunted, 6.7% representing 27 million, and 5.6% representing 38.3 million children, were wasting and overweight, respectively. Therefore, achieving the global nutrition target by 2030, including ending overweight in adults and children, child wasting, and stunting, is yet to be feasible. The impact of COVID-19 and the global recession raises a flag of warning of worsened

situations. Also, the vulnerable are likely to experience further deterioration in nutritional status due to COVID-19's impact on health and socio-economy.

According to Webb et al. (2018), today, the world is characterised by agricultural bounty and widespread malnutrition and hunger. While some regions experience food abundance, other parts experience food shortages and insufficiency (Yaro, 2004). Webb et al. (2018) argued that an adequate food supply important to eradicating hunger. However, they recognised that increased production of staple starchy foods is inadequate; good nutrition and an appropriate diet are necessary to end hunger and malnutrition. It implies that food availability and access may not end malnutrition and hunger, but food availability and access to appropriate nutrition are key. Considering these statistics, the need for urgent action and radical response by governments and international organisations to fight hunger cannot be overemphasised. The widespread hunger, economic crisis, and extreme instability in food prices have exposed the fragility of the universal mechanism for food security and nutrition. The Global Strategic Framework (2017) recommended sound global, regional, and particularly national governance as essential for headway in the fight against malnutrition and hunger. They emphasised that national governments must prioritise policies, strategies, programmes, and funding to tackle malnutrition and hunger. International organisations could align with each country's priority to offer meaningful support through development or humanitarian assistance.

While efforts and strategies are made to combat malnutrition and hunger, the “masked type of hunger” - “hidden hunger” poses a serious challenge to food security. It is also referred to as micronutrient deficiency (Gödecke et al., 2019). The International Food Policy Research Institute (2014) defined hidden hunger as an undernutrition condition due to a lack of or low intake and absorption of micronutrients such as minerals (iron, iodine, and zinc) and vitamins. They reported that over 2 billion people globally are affected by hidden hunger

which, doubles the number affected by calorie deficiency (805 million), especially children, mainly affecting sub-Saharan Africa and South-East Asia. In agreement, Sharma et al. (2016) reported that approximately 2 billion people face micronutrient deficiency. Gerard et al. (2014) recognised hidden hunger as a silent form of malnutrition ravaging some parts of Africa. They identified the cause as low diets, poor research, insufficient seedling, and weak purchasing power. He criticised the low research efforts and projects geared towards propagating the consumption of vegetables rich in micronutrients to combat hidden hunger and improve the consumption of micronutrients in developing countries. He advocates for more food security research and projects in this direction. However, they did not address the challenges developing countries face in terms of research and projects. Lenaerts and Demont (2021) found that hidden hunger is more prevalent than chronic hunger and recommended increased consumption of cereals, vegetables, and fruits. They further suggested that policymakers should prioritise the improvement of micronutrient dense cereal, diversify production systems and develop a food value chain that is focused and sensitive to nutrition. Similarly, Bresnayan (2017) supported food fortification as a simple, relative, socially acceptable, and economical approach to curb hidden hunger which does not require many changes in food habits. For instance, milk fortified with Vitamins A and D was introduced to fight hidden hunger in India. Bread flour is fortified with Vitamin D and folic acid in the UK and Europe (Lockyer, White, & Buttriss, 2018). Hidden hunger or micronutrient deficiency remains a public health concern in Nigeria (Akerele et al., 2017; Just et al., 2022; Okwuonu et al., 2021), especially in Children and adolescents (Ejoh et al., 2021; Ekweagwu et al., 2008; Ibeanu et al., 2020). It is common situation in most developing countries (Lockyer, White, & Buttriss, 2018). While diet diversification, biofortification, and supplementation are important (International Food Policy Research Institute, 2014), people's affordability of the finished product could still be a matter of concern (Senbanjo et al., 2022). Ibeanu et al. (2020)

found that intervention strategies that improve and promote nutrition knowledge and healthy food choices are imperative in increasing micronutrient intake and reducing hidden hunger in Nigeria. This finding was congruent with Lockyer, White, Walton, et al. (2018) from the UK's perspective.

## **2.4 The Dimensions of food security**

Food security is a concept that was initially built on three pillars, it became four as its definition evolved. The Food and Agricultural Organisation (2019) referred to these pillars as Availability, Accessibility, Utilisation, and Sustainability or stability, as used in some literature. Timmer (2012), in his three behavioural dimensions of food security, outlined availability, accessibility, and utilization and noted that instability of prices could negatively impair these dimensions. Ogot (2021), in the parameters of the food security matrix (figure 9), portrayed political, environmental, and sociocultural factors as impacting or determining the food security dimensions. The impacts of these factors on the food security matrices (availability, accessibility, and utilisation) manifest as physical, economic, cultural, and nutritional indicators such as physical and economic access to food, affordability, safe food consumption, food cultural acceptability and allocation, and individual nutrition status. However, stability is expected across all the matrices. Oni and Fashogbon (2014) explained that accessibility suggests that people have the ability and opportunity to get the required quantity of food. Availability implies the physical presence of enough quantity of food such that there is enough for everyone. Sustainability refers to the continuous supply of food for every generation, and utilization is the process applied by the body to utilise food. Noko (2016) noted that economic challenges reduce consumer's spending power and cause low productivity. An economic downturn may hinder the availability, accessibility, and utilization of food and make sustainability uncertain and consequently impair food security.

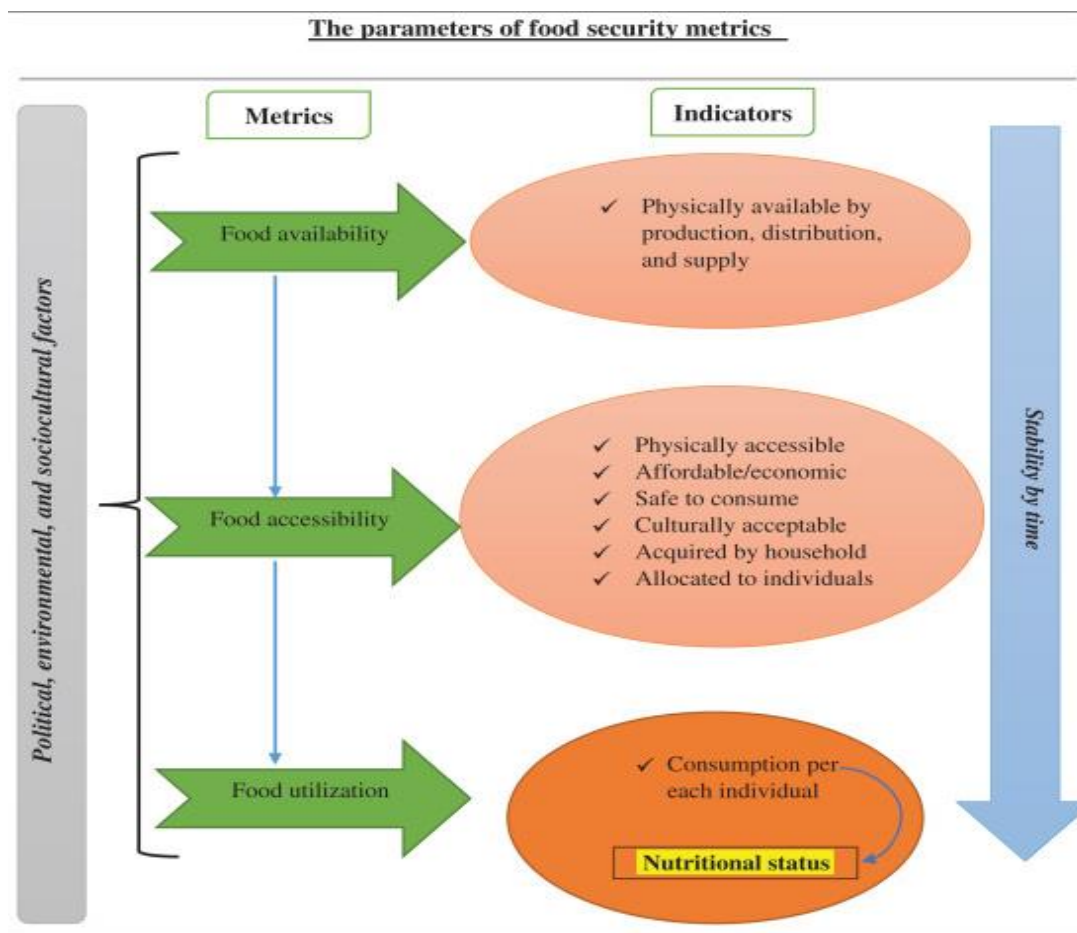


FIGURE 9: PARAMETERS OF FOOD SECURITY MATRIX (OGOT, 2021).

### 2.4.1 Food availability

Food availability was the initial focus of food security as found in the United Nation’s 1974 food security definition, The focal point was agriculture, trade, marketing policies, and the transport system. The essence was to ensure enough quantity of food for everyone. Both local and international policies focused on channels to make food available through domestic and international platforms. However, food availability was insufficient to ensure food security (Saweda et al., 2011), but it is irrefutably the basis of food security on which other dimensions exist. Food needs to be available for it to be accessed and utilised. The concept of food availability always implies enough food within the reach of everyone, but, whether this is achievable in our society today and that people can always have access to the food of their

choice is questionable, especially in developing countries. Also, how Governments mobilise to ensure food availability at the individual, household, and community levels in these countries may require investigation. Gibson (2012) observed that food availability includes the physical presence of food at farms and in the markets. Matemilola and Elegbede (2017) argued that food availability does not only consider local food production but also imported foods, stock levels, and the net trade of all food items. Food availability can be measured at regional, national, community, family, and individual levels. It can be predicted by a good road network connection, functional markets, adequate storage facilities, and technologies for food production and processing (Riely et al., 1999). The existence of infrastructures and technology necessary to sustain food availability in most developing countries remains challenging. Availability of these facilities will enhance food accessibility as food availability alone cannot guarantee food security (Ojo & Adebayo, 2012; Simelane & Worth, 2020).

#### **2.4.2 Food accessibility**

Food accessibility is the ability of individuals or households to obtain food (Gibson, 2012). It may be contextualised in two ways - physical access and economic access. Physical access refers to how individuals get the available food; these include access to markets, farms, storehouses, warehouses and food aid, interventions, and soup kitchens. Economic access is the means and resources available to obtain food, such as income, savings, farm produce, and land (Global Strategic Framework, 2017). Similarly, Gibson (2012) elucidates means to access food to include farm produce, income earnings, by exchange or barter, and indirect means through social arrangements at the community level, traditional, state, or national welfare systems, and emergency food aids. Saweda et al (2011) have argued that food availability and accessibility are strongly linked in many developing countries. These concepts they maintained are connected through food prices. Availability reflects the supply side, while accessibility reflects the demand side of food security. Both the availability and



accessibility of food do not satisfy the state of food security. If the available and the accessed food does not meet the dietary requirement, an individual may be malnourished and food insecure (Simelane & Worth, 2020). How the body utilises the food we consume is vital to food security because it determines what nutrient is effective in the body. Food accessibility could be linked to food utilisation; Stephen (2003) noted that people who struggle to access food due to factors like poverty or discrimination would likely face imbalance and inadequate nutrition resulting in health challenges. Therefore, access to food may not translate to food utilisation because the relationship between food accessibility and food utilisation is intricate due to the question of adequate nutrition related to food production, food safety, and health condition.

### **2.4.3 Food Utilisation**

The need for proper absorption and effective use of the food consumed by an individual for regular body function gave rise to food utilisation (Leroy et al., 2015). It is determined by the class, quantity, and quality of food an individual consumes and how the body utilises it. It is reflected in the person's nutritional status. As Gibson (2012) noted, food utilisation is an essential determinant of health status. Lack of access to a good diet, poor feeding practices, poor infant care, and low-quality health services can affect a person's food utilisation level and indirectly impact their potential for economic activities (Riely et al., 1999). Similarly, Jones (2013) observed that the differences in intra-household food distribution, the quality of food eaten, and the variation in an individual's absorption and metabolism level reflects the person's level of food utilisation. Matemilola and Elegbede (2017); Saad (2013) observed that food utilisation includes employing acceptable methods of food procurement, processing, production, preservation, and feeding pattern; these processes determine the actual quality of the food we consume. Simelane and Worth (2020) observed that it constitutes food insecurity when food is available, accessible, and utilised but not sustainable.

#### **2.4.4 Food Sustainability**

Gibson (2012) affirmed that food security could be gained or lost. He noted that regarding the unpredictability that could exist in food security, the idea of risk management within the concept is gaining popularity. It sustains gained food security and measures against hunger, food insecurity, and malnutrition. Risk assessment and management of the vulnerable could go a long way to maintaining stability in food security. Leroy et al. (2015) clarified that sustainability refers to the stability of all food security dimensions. It could be described as having adequate measures to ensure continuity in the availability, accessibility, and utilisation of food always by all people. Also, stability eliminates seasonal food insecurity. Saad (2013) referred to a sustainable food system as one that should satisfy present basic human nutrition needs and not compromise the food needs of future generations. Sustainable food systems should translate to sustainable food security. Sustainable food security ensures that individuals are constantly food secure through sustainable maintenance and usage of natural resources like water, soil, forest, and general biodiversity. With the impact of climate change and receding natural resources, World Bank (2016) promotes sustainable food systems through climate-smart agriculture to secure greater resilience, increased productivity, and reduce environmental footprint. For instance, they lately launched climate-smart agricultural projects in Niger, hoping to establish similar projects in other African countries. Sustainable food availability, accessibility, and utilisation will ensure sustainable food security.

#### **2.5 Food security theories: The Food Availability Decline (FAD), the Food Entitlement Model (FEM), and the livelihood failure**

This study uses some food security theories to buttress the concept of food security. Yaro (2004) categorised food security theories as food availability decline, entitlement failure, and livelihood failure. The central claim of the FAD (the food deficit model) theoretical approach to food security is that for famine to occur, there must be an acute shortage in the food

supply. Therefore, an adequate supply of food guarantees food security. This approach considered achieving food security through increased food supply only; it supports the availability dimension of food security. It postulated that food insecurity results from food shortage and that famine or food shortage is the leading cause of the decline in food availability (Clément, 2011; Devereux, 2001; Yaro, 2004). Thus, to achieve food security, the focus should be on factors that affect food supply, such as climatic conditions, land resources, market opportunities, and prices (Yaro, 2004). However, food availability cannot ensure food accessibility or food consumption. Also, some conditions could manifest signs of lack of food and nutrition but are not caused by food shortage, such as diseases, unequal access to and distribution of resources, and lack of purchasing power. During enough food supply, hunger could exist. Therefore, the FAD model was declined, leading to the postulation of the entitlement model.

The entitlement model explains that hunger is not mainly because of food shortage or a decline in food availability but rather due to food inaccessibility. Therefore, an individual's food sufficiency will depend on the entitlement they can access. These entitlements are resources available to an individual and the possibility of converting them to the needed commodities to meet the person's food needs (Clément, 2011). This approach was derived from the accessibility dimension of food security. By implication, households without access to resources are most likely to remain food insecure despite food availability. Ojo and Adebayo (2012) put it that household food insecurity is the failure of a household's entitlements to guarantee access to enough food. Household resources include land, financial, personal, and communal belongings.

Several other food security theories from the sociological perspective, such as the Neo-Malthusian perception, theorised that food security is achievable only if the society is sustainable by meeting its population needs without compromising that of future generations.

His perception is related to the sustainable dimension of food security (Scanlan, 2003). The techno-ecology theory - Berry and Cline (1979); Simon (1998) believes food security would be achieved through intensified technological-driven agriculture. This theory is linked with the food availability dimension. Its central idea is to use improved agricultural methods to increase food production. An example of this idea is the “green revolution” and the improvement in agricultural engineering (Scanlan, 2003). Related to the accessibility dimension is the social stratification model. Its fundamental ideology is that social class, racial, and gender inequality form barriers to the accessibility and distribution of food. Equitable food access is possible without these social barriers.

These theories suggest that food availability, the basis for the 1972 food security definition, does not satisfy the conditions for food security. When the focus was on food accessibility, it was clear that food needs to be available and necessary that individuals can access it without barriers. A continuous supply, access, and good health guarantee sustainable food security (Leroy et al., 2015).

## **2.6 Global food security**

Globally, the aggregate number of people facing severe and moderate food insecurity in 2019, as reported by the Food and Agriculture Organization et al. (2020) was estimated at 25.4%. In 2020 and 2021, FAO IFAD UNICEF WFP and WHO (2022) estimated these figures at 29.5% - 2297.8 million and 29.3% - 2308.5 million people, respectively (see appendix 2), especially in low and medium-income countries, as shown in Figure 10. This figure indicates that most developing countries have between 25%-100% of the population experiencing food insecurity. FAO noted that “*the world is not on track to achieve Zero Hunger by 2030 with the recent trends*”. The 2030 agenda of Sustainable Developmental Goals (SDG) has food security as one of its targets “*Ensuring access to safe, nutritious and*

*sufficient food for all (Target 2.1) and eliminating all forms of malnutrition (Target 2.2)”* (Food Agricultural Organisation, 2018). To challenge and see to the end of hunger and malnutrition globally is one of the aims set out in this agenda. In this light, the FAO (2017) report contained a framework and innovative ways of re-thinking food security and nutrition toward achieving the 2030 agenda. It includes the introduction of a new food insecurity indicator based on the Food Insecurity Experience Scale (FIES) to estimate the population proportion challenged with severe food insufficiency. It is an experience-based scale for measuring food insecurity alongside the Household Hunger scale (HHS) and Household Food Insecurity Access Scale (HFIAS) (INDDEX Project, 2018). The FIES measures individual and household food security (Food and Agriculture Organisation, 2018). It contains eight questions (Cafiero et al., 2018), like the HFIAS questions. However, the HFIAS measures household food insecurity regarding the food access domain of food security.

Healthy diets are expensive and unaffordable to many low-income countries and vulnerable populations. According to FAO IFAD UNICEF WFP and WHO (2022), recent evidence suggests that in 2022, about 3.1 billion people struggled to afford a healthy diet, an increase of 112 million. The Food and Agriculture Organization et al. (2020) noted that the situation was worsened by the impact of COVID-19 in the form of disruptions in the food supply, lack of income, loss of remittances, and livelihood. While it is important to measure or estimate the severity level of food insecurity, the needed solutions to food insecurity and actions to be taken at all levels to curb the menace are yet to be impactful toward achieving the 2030 target.

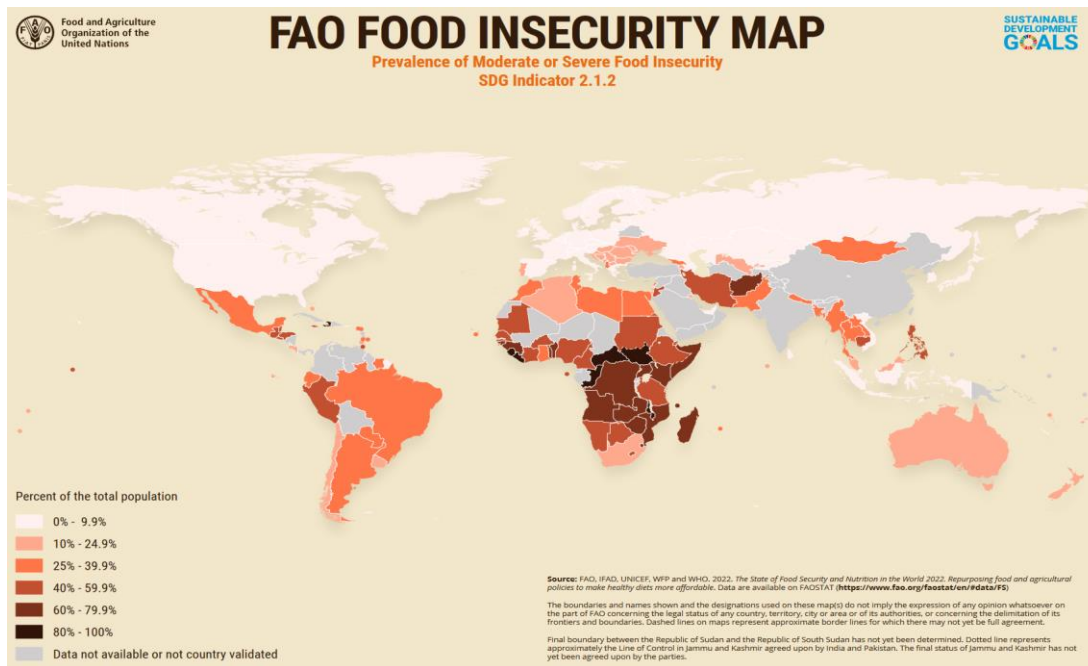


FIGURE 10: FAO FOOD INSECURITY MAP  
(Food and Agriculture organisation, 2022)

Extreme (drought, storm, and flood) and variable (rainfall and temperature) climatic conditions threatens the milestones achieved in global food security, and presently the world is on a retrogressive path to the state of food insecurity similar to a decade ago. (Food and Agriculture Organisation, & ECA, 2018). According to the FAO report of 2018, these menaces are a major driver of the current rise in global hunger and severe food crises. Its negative effect on the dimensions of food security is felt in the regions of the world, as well as the reinforcement it avails to the principal causes of malnutrition, food, and nutritional instability. In some regions, means of livelihood and assets such as lands and water are exposed and susceptible to climatic conditions and extremes. It is a fact that hunger is significantly high in counties with severe drought and overly sensitive variability in rainfall and temperature, adversely affecting the agricultural systems (Food and Agriculture Organisation, 2018). Reports have also shown that 80% of major global reported disasters are caused by climatic conditions and extremes (Centre for Research on the Epidemiology of Disasters, 2015). Usually, if food production is adversely affected by a natural disaster, the

prices of agricultural produce increase and impact food security negatively. Many challenges facing several regions of the world have contributed to their inability to attain national food security. These major challenges include conflict causing political, social, and religious instability, hostile climatic changes, and economic recession (Food Agricultural Organisation, 2018).

## **2.7 Food security in Nigeria**

Nigeria is endowed with abundant natural resources (Ojo & Adebayo, 2012), the largest oil exporter and natural gas reserve in Africa, with a population of over 200 million people and a good population workforce, and one of the world's most significant youth populace. It is a multicultural and ethnically diverse nation with diverse vegetation and vast land (Omorogiuwa et al., 2014). Yet, 83 million Nigerians (40%) live below the poverty line, with another 25 million (25%) vulnerable to poverty. With COVID-19, the country was exposed to economic disruption experienced globally. The population is projected to be outpacing economic growth, and with the COVID-19 Pandemic, about 7 million Nigerians were likely to live in poverty (World Bank, 2020b).

Evaluating food security in Nigeria, Ojo and Adebayo (2012) observed that the issue of food insecurity in the country started with the discovery and exploitation of oil in the 1950s. Gradually, the focus on agriculture waned. What they described as “a *holiday for hoes and the machetes.*” Before this period, Nigeria was self-sufficient, food secure, and a major exporter of agricultural produce. Every region exported several foods, for example, groundnuts from the North, cocoa from the West, Palm oil and kernels from the East, and rubber from the Mid-west. Later, the country depended heavily on oil as its major contributor to the Gross Domestic Product, and agriculture that once fed the Nation was relegated (Matemilola & Elegbede 2017; Oriola, 2009). With the fall in oil prices, the consequence of single revenue earning was felt, such as a rise in food prices, especially staple foods. Famine

Early Warning Network (2020) reported that with the fall in global oil prices, worsened by the COVID-19 Pandemic; the Nigerian foreign reserve has dipped considerably, causing a fall in the value of the Naira (Nigerian currency) in the official market. Other factors, such as COVID-19 restrictions, border closure, and increased food demand, impacted household food.

Several agricultural policies by different governments to invigorate the agricultural sector and improve food security remained unachieved. These policies were tremendous and promising on paper and in the media but failed in practice and actualisation. After the civil war in 1970, agricultural policies failed to deliver food security, such as “operation feed the nation” in 1970 by General Olusegun Obasanjo’s Government, “the green revolution” in 1979 by President Shehu Shagari, the “Directorate of Food, Roads and Rural Infrastructure” (DFRRI) by General Ibrahim Babangida in 1985. Within this period, other agricultural initiatives by the government include FADAMA Development Project, Community-based agricultural and rural development schemes, the Special Programme for Food Security (SPFS), and a ban on importing some agricultural produce, for example, rice (Ojo & Adebayo, 2012).

There are several interventions from international bodies like the Food Agricultural Organisation, World Bank, United States Agency for International Development, and International Fund for Agricultural Development to ameliorate the problem of food security in Nigeria. The blight of these policies and interventions is the gap between the proposed or intent and genuine practice or achievement (Ojo & Adebayo, 2012). This gap, Ojo and Adebayo (2012) attributed to the lack of succession of policies by successive governments, the image of agriculture in the country (as a vocation for the poor and unemployed), misuse of the agriculture loan and credit scheme, gender inequality, lack of infrastructure to maintain and increase agricultural capacity, and corruption. The current state of civil insecurity in the



nation creates a more susceptible condition to food insecurity. These are internal threats apart from global food security threats, which also affect the country.

Education is a basic tool for development and increased opportunity to a gainful employment besides information (Kuwornu, Suleyman, & Amegashie 2013). It is an asset to knowledge application and increased productivity (Irohibe & Agwu, 2014). Research has established a significant relationship between education and household food security (Mutisya et al., 2016). Mutisya et al found that, for every unit of increase in the average years of schooling of a household, food insecurity level decreases by 0.019. They suggested educational programs that could reduce food insecurity and improve household livelihood in Kenya. Nigeria is one of the countries that believe in the power of education in reducing food insecurity. The Universal Basic Education (UBE) was launched by the Federal Government of Nigeria (FGN) on 30th September 1999 to salvage the foundation of education in Nigeria. The UBE was launched to ensure every Nigerian child gets free, universal, and compulsory education up to the junior secondary school (Etor, Mbon, & Ekanem, 2013). This program brought a rise in the number of school children registered for the primary education in Nigeria. However, Okon and Israel (2016) has observed poor quality and effectiveness as challenges to the system. Some of these challenges include unpreparedness to meet the demand of increased enrolment due to the free education system. With the provision of the free UBE, about 10.5 million children aged 5-14 years are out of school and 61% aged 6-11 years are regular attendees at the primary level (UNICEF, 2013). UNICEF has listed the challenges of education in Nigeria to include economic, socio-cultural, and religious barriers. According to United Nations Education Scientific and Cultural Organisation (2017), poverty will be more than halved if all adults completed a secondary education, and those without formal education are poorer (Ataguba et al., 2011). However, a quality primary education lays the foundation for a qualitative higher education (Etor, Mbon, & Ekanem, 2013).

## **2.8 Food security in Nsukka Local Government Area**

There are limited research studies that investigated food security in NLGA in Nigeria. Ali and Agbiogwu (2014) investigated poverty and socio-economic development in NLGA and found a high poverty level and low social, economic, and infrastructural development. They found a significant relationship between socio-economic development and poverty. Examining the determinant of food security among households in Nsukka Metropolis, Arene and Anyaeji (2010) found that about 60% of households were food insecure. Furthermore, they revealed that the household head's income and the household head's age were important determinants of food security in the area. Ibeanu et al. (2010) discovered that 60% of households in two rural communities in Nsukka were seasonally food secure based on preserved food from post-harvest surpluses.

## **2.9 Challenges of food security in Nigeria**

There are several reasons why Nigeria is yet to overcome the menace of food insecurity. The following paragraphs explore the challenges of food security in Nigeria and afterward discuss the way forward toward food security in Nigeria.

### **2.9.1 Insufficient food production**

About 70% of Nigerians are employed in the agricultural sector (Ministry of Budget and National Planning, 2016), yet, hunger and food insecurity remain significant national concerns. Although World bank data shows a constant decline in the number of Nigerians involved in agriculture (World Bank, 2021a), Matemilola & Elegbede (2017) acknowledged insufficient food production as a causative factor of food insecurity. They attributed it to the undeveloped agricultural sector, over-dependency on primary agriculture, unfavourable weather conditions, Low soil fertility, loss of crops, and poor storage and preservation facilities. Only 40% of the 75% of agricultural land is cultivated in Nigeria, most utilised by

subsistent local farmers (Omorogiwa et al., 2014). Ukpe et al. (2016) noted that Poor budget allocation to the agricultural sector is underfunding and against the Maputo declaration on food security and agriculture; it cannot boost activities in the sector. For instance, in 2013, 2014, and 2015 a meager 1.7%, 1.47%, and 0.89% of the year's budget were allocated to agriculture. In the 1940s and 50s, Nigeria was food self-sufficient, specialised in producing and exporting cash crops such as grains, cocoa, and rubber. The Nation exported food crops also to other parts of the World. However, the oil boom affected the agricultural system negatively, and food production declined. Food importation became the alternative way of meeting the Nation's food needs. Consequently, the agricultural sector grew weaker, food prices sky-rocketed, and local produce decreased (Matemilola & Elegbede, 2017).

### **2.9.2 Inadequate technology**

Another factor in food insecurity in Nigeria is the lack of access to facilities and technology for the optimum production, processing, and preservation of food. Ilaboya et al. (2012) agreed that a lack of storage, preservation, and food processing facilities leads to food wastage and shortage, resulting in hunger. This opinion is consistent with Matemilola & Elegbede (2017), who equally observed the country's backwardness in the use of modern technology in the agricultural sector. Braun (2010) in a review noted that agriculture offers many opportunities for further development through technological innovations relating to rural development and agriculture. Such examples he noted are biofortification – a breed of various staple crops enriched with micronutrients like iron, vitamin A, and zinc which reduces malnutrition and promotes a healthy society, especially in rural areas. The use of nanotechnology allows food consumption without the absorption of harmful allergens (Sastry et al., 2011). Ibeanu et al. (2010) found that households in Nsukka attributed food spoilage to a lack of modern preservation technology, locally preserved foods were damaged by rodents and insects. Food wastage is a typical experience for Nigerian households, farmers, and food

retailers. Food dumpsites are common sites, especially in the urban area (Abimbola, 2023; Ikenwa, 2023).

### **2.9.3 Poverty**

The first guiding principle of the Nigeria national Policy on Food and Nutrition of 2016 is to “*Prioritizations of poverty reduction and safety nets for the poor in government budgetary allocations,*” yet, up to 2022, approximately 43% of Nigerians live below the poverty line (Ifedilichukwu, 2022). According to Suleiman and Aminul (2015), the existing and widening social and economic gaps in the Nigerian social strata are caused by a lack of basic needs. As a result, poverty, unemployment, illiteracy, and violence have persisted. Nigeria has remained poor amidst abundant natural and human resources endowments. Ministry of Budget and National Planning (2016) recognises that the root of Nigeria's food and nutrition problem is poverty ingrained in the drivers of the economy, which are institutions and the system of governance. Weakness in these institutions and gaps in governance has continued to undermine policies and their implementations to lift the country out of poverty. World Bank (2021b) concluded that rapid population growth, oil dependency, and limited employment have kept the country struggling to invigorate a wide-based growth significant to tackle poverty.

### **2.9.4 Bad governance and corruption**

Igbinedion and Aihie (2015) acknowledged that good governance in all its dimensions is essential for sustainable food security and eradicating poverty and hunger. They observe political and socio-economic stability as essential to achieving food security and development. Likewise, bad governance results in widespread corruption, injustice, and poverty, lack of transparency and accountability. From the Transparency International (2020) report on the global poverty level, Nigeria ranks 149 out of 180 countries on the global corruption index.

Agricultural/food policies that need adequate implementation, monitoring, and evaluation policies may hardly succeed. Poor agricultural policies can certainly not deliver food security. When food policies lack successful implementation or are jeopardised by corruption, food insecurity becomes the consequence. Ilaboya (2012) noted that Nigerian food policies are poorly formed and lack institutions and structures for implementation. Moreover, they are not inclusive and tend to exempt vulnerable groups. Matemilola & Elegbede (2017) observed that the Nigerian food policies are insufficient and always fail due to poor administration and initiative, lack of public interest, and bad governance (Igbinedion & Aihie, 2015). Furthermore, the lack of continuity of food policies by succeeding governments has impacted negatively on Nigeria's food security. In the event of a new regime, policies, and National projects by preceding governments are abandoned, and new ones are introduced; these are not executed to the latter and are mostly a times worse-off. The government uses the opportunity for financial manipulations. It becomes a political weapon for the succeeding government, which capitalises on these failures to deceive the electorates and be voted into power. Bad governance becomes a vicious circle even when reasonable efforts are made, success remains a mirage due to corruption (Matemilola & Elegbede, 2017; Suleiman & Aminul, 2015). *“Until and unless the leaders recognize crude oil as a secondary source of revenue and revitalize other existing sources of income, social and economic justice and a sustainable economy in Nigeria will in all probability continue to be dwarfed by corruption.”* (Matemilola & Elegbede, 2017).

### **2.9.5 Insecurity and civil unrest**

The frustration-aggression theory postulated by Dollard et al. (1939) states that *“the occurrence of aggressive behaviour always pre-supposes the existence of frustration and, contrariwise, that the existence of frustration always leads to some form of aggression.”* It explains that aggression is preceded by frustration, and failure to challenge the root cause of

frustration leads to an outburst of aggression toward things or people. It is typical of the Nigerian situation. The failure of several regimes of government to provide food and basic amenities for its population has remained one of the root causes of insecurity and socio-ethnic differences in Nigeria today. The vulnerable masses bear the frustrations and aggressions of extremists, social, or religious groups (Adelaja et al., 2018).

World Bank (2016) recognised that food security is strongly linked to peace and unity; in other words, food insecurity could be linked to conflicts and wars. Food insecurity is a major underlining cause of conflicts and victim displacements in most world conflict areas. The saying that “*a hungry man is an angry man*” becomes real. Where hunger is prevalent, people go to extreme lengths to express their dissatisfaction and can be vulnerable to being used by others with ulterior motives. Insecurity and civil unrest have worsened the food situation in Nigeria (George et al., 2019). Ethnic and religious conflict and terrorism have indelibly impacted Nigeria’s food systems. Adeagbo (2012) acknowledged that civil unrest disrupts food systems, increases food insecurity, displaces people, and makes them refugees (Matemilola & Elegbede, 2017). For instance, Kah (2017); Suleiman and Aminul (2015) noted that civil conflict associated with Boko Haram has existed in Nigeria for more than a decade. The height of their atrocities destroyed many lives, devastated many livelihoods, and significantly decreased household food security (Famine Early Warning Network System, 2020). The Boko Haram insurgence has become severe that the government has acknowledged it to be worse than during the civil war (Oarhe, 2013). Since people fled their homes and lands for safety in refugee camps, vast lands in the Northeast have for years been left uncultivated while the locals depended on food aid in the internally displaced person camps (Kah, 2017).

A recent trend of insecurity in Nigeria poses a worrying condition of food insecurity. The increased rate of the assassination of farmers in their farmlands by the Hausa Fulani herders

has made it exceedingly difficult for farmers to attend to their farms in several parts of the country. Okoro (2018) investigated the “*herdsmen and farmers conflict and its effects on socio-economic development in Nigeria*” and found that the conflict has become dangerous as herders take up weapons and sophisticated ammunition with which they kill, maim people, and destroy villages. They concluded that conflicts between herders and farmers have negatively impacted food security and employment in Nigeria. African Research Bulletin (2018) maintained that from all indications, Nigeria will continue to face severe food shortages and hiked food prices if the herders-farmers conflict is not abated.

### **2.9.6 Increase in the population**

The population of Nigeria is currently estimated at 218,541,212, with an increase of 2.5% from 2020, a growth rate that has been reported since the 1980s (World Bank, 2022). Reducing population growth and increasing local food productivity is one of the central issues to food security, especially in developing countries (Bala et al., 2014). Igbinedion and Aihie (2015) criticise the worrisome state of food insecurity in Nigeria due to the rapid growth in her population that puts pressure on her food systems, increasing the food deficit gap and food imports. To worsen the situation, the food systems and the economy continue to dwindle as the population grows. An Increase in population requires an increase in food availability and accessibility. Food insecurity in Nigeria has multiple causal factors and may require multiple solutions in the economic, social, environmental, and political situations. Adeagbo (2012) has noted that the increase in the Nigerian population has negative environmental impacts on food security through land degradation and poor agricultural yields. One of the impacts is rural-urban migration in search of a greener pasture; it has increased environmental degradation and reduced agricultural activities in urban areas. Arene and Anyaeji (2010) have decried the high rate of urbanisation as constituting part of the nation’s food security problems. They explained that the population growth of metropolitan

cities increases the demand for food and nutrition and the vulnerability of poor metropolitan households to food insecurity. Therefore, households will remain more food insecure without commensurate growth in the provision of food and nutrition. Also, the movement of resources from rural-urban areas will continue to impoverish rural households and areas (Igbinedion & Aihie, 2015). However, it is also significant to note that if an increase in population is commensurate with an increase in job opportunities, enterprises, vocational training, skill acquisition, and other socio-economic activities, then population increase will translate to a vibrant economy. Although, this is yet to be achieved in Nigeria.

### **2.9.7 Anthropogenetic and natural factors**

Natural and human factors such as climate change, air pollution, deforestation, erosion, and desertification are global risks against food security (Adeagbo, 2012). For instance, The International Crisis Group (2018) noted that Nigerian herders are seeking grazing pasture for their animals further down southern Nigeria due to desertification in the North. Again, is further exacerbating insecurity in the country, where Southerners feel unsafe with the presence of the Fulani herders within their vicinity. In the South, soil erosion, flood, and land degradation, including deforestation, bush burning, and urbanisation have continued to undermine agricultural activities (Olorunfemi et al., 2020).

### **2.9.8 COVID-19 Pandemic**

As of 23<sup>rd</sup> March 2021, the Nigeria Centre for Disease Control (2021) (NCDC) reported a 161, 868 confirmed COVID-19 cases in Nigeria. Active cases stood at 11, 713; discharged cases were 148, 125; resulting death cases stood at 2, 030. Since the second spike of COVID-19 between 12<sup>th</sup> January and 1<sup>st</sup> February 2021, Nigeria has witnessed a drastic downturn in the rate of infection and its severity. During the second wave of COVID-19, Nigeria recorded about 2,464 new cases in a day and 30 deaths within its 36 states and the Federal Capital



Territory. However, as of 23<sup>rd</sup> March 2021, NCDC reported only 86 new confirmed cases and no death recorded see figure 11. Although, the country needed to catch up with contact tracing. Unfortunately, Nigeria still needs to measure up to standard in preventing and responding to public health risks. According to World Health Organisation as reported by Dixit et al. (2020), Nigeria scored 1.9 and 1.5 on a scale of 5 in prevention and response to public health issues, respectively. It suggests that the country was not prepared to handle COVID-19 if it had gone out of control. They also observed inadequacy in the testing capacity, only about 2,500 Nigerians were being tested in a day in a country of over 200 million people.

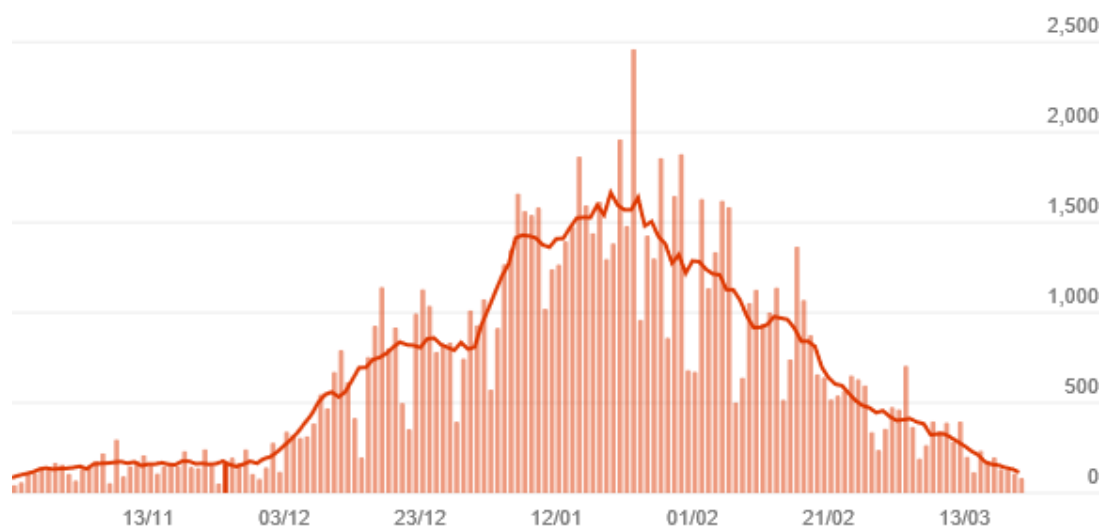


FIGURE 11: CASES OF COVID-19 IN NIGERIA AS AT MARCH 2021  
(Nigeria Centre for Disease Control, 2021)

There is no doubt that COVID-19 had substantial negative impact on food security in Nigeria. The lockdown and restrictions exacerbated the existing food insecurity menace in the country. It was observed by Nnorom and Ekwujuru (2020) that the intra-state and inter-state travel restrictions hampered the activities of farmers who could not access their farmlands, food whole-sellers, retailers, and all stakeholders in the food sector. While the nation experienced food insecurity, food waste was inevitable during the COVID-19

lockdown. There was a labour shortage for agricultural activities (Ilesanmi et al., 2021). Furthermore, Kobe et al. (2020) emphasised that because many Nigerian households rely on daily earnings to feed, lockdown and movement restrictions adversely affected the household income and food status.

Research conducted by Ibukun and Adebayo (2020) on household food security and the COVID Pandemic in Nigeria revealed that about 79% (above three-quarters) of households in Nigeria witnessed a decline in their household income. Only 5% witnessed increased income. Also, they found that severe food insecurity was experienced by more than half of Nigerian households (58%), regardless of their regions. About 5% were mildly food insecure, and 24% were moderately food insecure. Only 12% of the households were food secure. It was attributed to the social, economic, and physical restrictions in place to curb the Pandemic (Nnorom & Ekwujuru, 2020). Ibukun and Adebayo (2021) observed that the rate of food insecurity reported by the same households before the Pandemic was remarkably lower than the rate reported during the Pandemic. Similar empirical evidence of COVID-19 increasing the rate of food insecurity was reported by Dixit et al. (2020); Niles et al. (2020); Nnorom and Ekwujuru (2020); Shupler et al. (2020) & Wolfson and Leung (2020). During the Pandemic, food prices surged, seriously threatening the already weak national food security. For instance, inflation on food commodities increased from 14.7% in December 2019 to 15% in April 2020 (Nnorom & Ekwujuru, 2020).

In response to COVID-19-triggered food insecurity and to alleviate hunger, the Nigerian Government responded in several ways. The insufficiency, lack of coordination, and corrupt practices associated with their responses made Nigerians voice their dissatisfaction in several ways. The most notable of the government's response is food assistance to vulnerable households. Dixit et al. (2020) reported that President Buhari's administration, through the Federal Ministry of Humanitarian Affairs, Disaster Management, and Social Development,

declared the provision of food palliatives to cushion the effect of COVID-19. However, this effort was undermined by a lack of accountability, transparency, and corruption. Similarly, Eranga (2020) observed that the palliative rolled out by the government to alleviate food insecurity during the COVID-19 Pandemic was not received by the targeted vulnerable groups. Masses have lamented that the process of palliative distribution was corrupt and politicized. They noted the lack of transparency and inability on the government's part to define who the vulnerable were and the criteria for identifying them (Ufua et al., 2021). Another stimulus package was the loan support provided by the Central Bank of Nigeria to the so-called vulnerable households and small-scale businesses. This package was up to 3,000,000 million Naira. However, Eranga (2020) has described it as an offer to people experiencing poverty but was inaccessible due to its requirements, such as collateral, interest, and the repayment period. Likewise, a cash transfer of 20, 000 Naira equivalent to (\$52) was promised to only families registered on National Social Register, with 2.6 million households. However, about 86 million Nigerians lived on \$1.90 or less before the Pandemic. From all indications, the Federal government's COVID-19 palliative did not have much effect on the Nigerian population; households still felt the scourge of food insecurity during the Pandemic. Kalu (2020) has acknowledged the immense support by several private bodies, non-governmental organisation, and religious organisations to some communities, especially in Lagos, one of the worst affected areas.

### **2.9.9 The way forward for food security in Nigeria**

Going forward towards food security in Nigeria, Igbiniedion and Aihie (2015) emphasised that revamping, stimulating, and investing in the agricultural sector through government-private participation, empowering small-scale famers and rebranding the image of the sector is a means to achieving food security, socio-economic development, poverty reduction, and employment in the country. Ojo and Adebayo (2012) supported a national food policy that

is wider and more inclusive than the agricultural policy. While agricultural policy targets food production and availability, food policy is more inclusive. Food policy focuses on food security, including diet and nutrition, hygiene, food preference, wellbeing, and health. Otekunrin et al. (2019) acknowledged the Food and Nutrition Policy launched by the Nigerian government as one of her main steps toward achieving Sustainable Development Goal 2 (zero hunger). They have called on all stakeholders to de-emphasize and reframe from politicising intervention programs or actions that may jeopardise the implementation of Food Nutrition Security (FNS) policies. To achieve this goal, adequate funding of FNS-related programmes, full policy implementation, transparency, accountability, and evaluation are essential. Contextualising Food and Agriculture Organization et al. (2020) recommendations on combating food insecurity, malnutrition, child wasting, and stunting by making healthy diets accessible and affordable to the populace will set the pathway toward transforming the food systems and trigger off resilience and development towards sustainable food security.

Also, revamping the Nigerian food system is crucial in tackling food security in Nigeria. Nnorom and Ekwujuru (2020) reported that some food security and agriculture experts have called for a review of the structures and systems of the national food security to check the imminent food crisis that looms from the effect of COVID-19 impact on the food sector, which could deepen the nation's food insecurity. Furthermore, Adeagbo (2012) recommended that Nigeria should build on existing coping strategies to improve food security and alleviate poverty. It implies assessing strategies that have worked in the past and improving on them, such as empowering the skilled and talented, diversifying the economy, and repositioning agriculture in the economy as it was in the 1940s and 50s rather than depending heavily on oil.

Strong strategic moves toward reducing poverty and significant improvement in socio-economic development will considerably increase food security. Developing infrastructural

facilities and social amenities such as the provision of sustainable electricity and water supply, good roads and a structured transport system will improve food security by revamping socio-economic activities, creating jobs, and triggering development (Ali & Agbiogwu, 2014). Strong support for research activities that trace, and update food security conditions, records, and progress is important for good policy. However, Frayne and McCordic (2015) observed that the inability of the Government to provide regular household food security information has been a concern to policymakers.

Other necessary steps to improve food security in Nigeria include an intense war against corruption, terrorism, and conflict resolution. Implementation of policies that would reduce poverty and unemployment, and improve food security, youth empowerment, the standard of living, and socio-economic development, reducing urban-rural migration, bridging the income disparity among the rich and the poor, equity in development to check rural-urban migration, and aggressive rural development will significantly improve the overall national food security (Arene & Anyaeji, 2010; Otekunrin et al., 2019). Sanitising the Nigerian polity could help government assess and prioritise the needs of the people.

## **2.10 Household food security and coping strategies**

Household food security was defined by Pinstруп-Andersen (2009) as the ability of a household to acquire enough food needed by its members to be food secure. He argued that household food security might not translate to the food security of all its members. And further explained that the resources to obtain sufficient food might not necessarily be used for food acquisition as households may not prioritise acquiring food over other household needs such as housing, clothing, and school fees. In addition, he acknowledged that intra-household food allocation might not meet the dietary requirement of individuals within the household. It is important to recognise that individual health conditions should be considered, such as

obesity and diabetes, deficiencies, and how individual food intake converts to good nutrition varies. Furthermore, Danso-Abbeam et al. (2022) found a relationship between household food security status and household demographics, policy-driven factors, and asset accumulation. Implying that households with many assets and those involved in non-farm income activities used fewer coping strategies when compared to households with many children in school.

Murendo et al. (2021) have acknowledged a growing body of literature addressing dietary diversity and food coping strategies in food deficit times. They found that food insecure households adopted food insecurity coping strategies than food secure households. Household food coping strategies are the household's effort to mitigate the impact of a lack of food (Junaidi et al., 2022). The level of household poverty and food security determines the nature or type of coping strategy adopted by the household (Dhanaraj, 2016). Households can adopt several strategies to reduce their level of food insecurity. Maxwell et al. (2000) have observed some economic strategies that are common among households struggling with food insecurity, for instance, buying cheaper food, asking, and receiving financial or material assistance from others, borrowing or buying food on credit, skipping, or delaying mealtime, going a whole day or night without food, and compromising meal quantity or quality. Similarly, Danso-Abbeam et al. (2021) found that the primary food coping strategies in Northern Ghana include eating fewer preferred meals, portion size reduction, and reducing the number of meals per day. Likewise, in a district of South Africa, Drysdale et al. (2019) found that the major food insecurity coping strategies were buying less preferred food, intra-household food distribution to favour non-working household members, sending children to eat somewhere else, and purchasing food on credit. Also, Militao et al. (2022) reported that the household food insecurity coping strategies in Mozambique includes skipping meals, eating low-quality and unsafe foods, eating less preferred and monotonous food, and taking

up extra jobs. Maniriho et al. (2022) found that in Rwanda, major coping strategies were consuming inexpensive or less preferred food and reducing food quantity by adults for the children to have enough. In Northern and Central Nigeria, Agada and Igbokwe (2014) found consumption of less preferred food and food quantity compromise as household's most used coping strategies. From the preceding, there are some similarities in the coping strategies adopted by households to manage food insecurity in some African countries, this is an indication of similar household food insecurity experiences. The Coping Strategy Index (CSI) is a tool used in measuring household food insecurity coping strategies; (Drysdale et al., 2019; Junaidi et al., 2022; Shakeel & Shazli, 2021).

## **2.11 Household dietary diversity**

Research has shown poor nutrition is closely associated with low dietary diversity (Haddad et al., 2015; Olabisi et al., 2021). Low dietary diversity is common in low-income countries. It has broadly been related to inadequate dietary quality and nutrition, and recently, household dietary diversity has been used as a nutrition index (Agada & Igbokwe, 2014).

Research findings from Usman and Haile (2022) suggest that growing more diverse food offers households a more diverse quality diet. Nevertheless, the interaction between agriculture, food security, and dietary diversity seems complex with bidirectional impact. They found that higher proximity to markets increases households' food security and dietary diversity in Tanzania and Ethiopia. Therefore, they concluded that improving market accessibility, infrastructure, and development is necessary for improved household dietary diversity and support for rural farmers. However, the economic status of households is a strong determinant of their food security (Nour & Abdalla, 2021a) and dietary diversity despite market proximity. Therefore, increased food security and diet diversity due to market proximity could still be a function of household income and affordability. Although Olabisi et

al. (2021) found that in Nigeria, especially among rural dwellers, households that access markets were more food diverse than households that depend on their food production. A similar finding was reported by Matita et al. (2021) in Malawi. Zanello et al. (2019) discovered that in Afghanistan, increased crop production diversity is associated with increased dietary diversity only in the agricultural bounty period and not the lean period. Kabir et al. (2022) found a significant association between personally owned various agricultural products and household dietary diversity in rural Bangladeshi, concluding that increased production diversification increases household dietary diversity. The preceding arguments suggest that diverse home agricultural production and market proximity positively influence household dietary diversity (Mehraban & Ickowitz, 2021) but could be subject to the season in some regions. A strong relationship has also been reported between family income, dietary knowledge, and household dietary diversity. Hou et al. (2021) found that the family decision-maker's increased dietary knowledge and income significantly influenced household dietary diversity. Implying that both factors are determinants of household dietary diversity; large farmlands and level of education, household food production, access and use of information, and agriculture and nutrition knowledge were equally reported as dietary diversity determinants (Julius Chegere & Sebastian Kauky, 2022; Minja et al., 2021; Nabuuma et al., 2021).

Household dietary diversity has been expressed through the variety of food households consume. Minja et al. (2021) found that in South-eastern Tanzania, households consumed mainly cereals, fats, and oils; instead of meat, fish was the most consumed animal protein.

In summary, this chapter considered the conceptual framework of this research showing the relationship and connection between the main variables of the research. Food security theories and modules were considered. Global food security, the Nigeria and Nsukka context



were explored. Furthermore, literature on household coping strategies and dietary diversity gave more insight into food security.

## **2.12 Summary of chapter two – literature review**

Chapter two presented the literature search strategy using the PRISMA model. The conceptual framework which detailed all the constructs and their relationship within the study. It explored theories, concepts, and arguments on household food security, dietary diversity, and food insecurity coping strategies.

# CHAPTER THREE

## RESEARCH METHODOLOGY AND METHODS

### 3.1 Introduction

This chapter presents two sections of the research paradigm underpinning this study and the methods adopted in designing and conducting the research. First, the philosophical assumptions supporting the framework of the research method, and the second section detailed the research methods and the justifications for the chosen methods.

### 3.2 The research paradigm - philosophical assumptions

Creating certain assumptions about reality and knowledge simplifies the selection of appropriate methods and research questions. Philosophical assumptions are theoretical frameworks researchers use to collect, analyse, and interpret data. It creates a background for making conclusions and decisions (Bryman & Bell, 2007). According to Lopes (2015), a research paradigm refers to beliefs about what needs to be studied, how research should be carried out, and the method of interpreting the result. The three major constituents of the research paradigm are ontology (what is believed to be the reality), epistemology (how the researcher relates with the object/subject of research to gain knowledge), and methodology (the research process and approach to answering the research questions) (Antwi & Hamza, 2015). The following paragraph clarifies this research's ontology, epistemology, and methodology approach to buttress the rationale for the chosen research methods.

#### 3.2.1 The Ontology

Veal (2011) defines ontology as “*the nature of reality assumed by the researcher.*” This philosophical position argues about the objectivity of realities of life, whether they are subjective (personal to an individual) or objective (external to an individual). Ontological

stances can be constructionism/constructivism, objectivism/positivism or post-positivism (Al-Ababneh, 2020; Antwi & Hamza, 2015). Bryman & Bell (2007) have opined that positivism/objectivism are social phenomena and external realities, independent and beyond human influence. Hence, the researcher should view the phenomenon studied from an external perspective. From this perspective, the result could be interpreted based on the objective data collected; hypotheses, theories, and models are usually employed (Veal, 2011). Contrarily, the constructivist assumes reality as the object/subject of study interprets it (Bryman & Bell, 2007). This present research assumes the positivist way of seeing the real world. Food insecurity is an unpleasant reality that exists. This research uses research questions, theories, and models, to investigate food security, and dietary diversity, in Southeast Nigeria (quantitative method). Survey-questionnaire was used to collect data that could be analysed quantitatively using statistical tool. Furthermore, the research instrument was an adopted, pre-existing, tested, and validated questionnaire for measuring and reporting food security globally.

### **3.2.2 The Epistemology**

Epistemology is the study of knowledge or the concept of knowledge; it explains how we gain knowledge (Al-Ababneh, 2020; Bryman & Bell, 2007). This concept recognises that knowledge can be gained in diverse ways. Epistemology in the context of research refers to “*the relationship between the researcher and the phenomenon being studied*” to gain knowledge (Veal, 2011). The main argument is whether the relationship between the researcher and the subject/object of study should be subjective/interpretive (adopting the qualitative approach) or objective and post-positivism (adopting the quantitative approach). Interpretivism believes that to gain knowledge of the real world, the researcher should engage with the object of research subjectively to explore experiences, opinions, and behaviours, while the positivist will seek to gain knowledge objectively from a distant position (Al-

Ababneh, 2020; Evangelista et al., 2012; Ruben & Babbie, 2013). This present research seeks to gain knowledge about the household food insecurity experience and coping strategy from the interpretive or subjective position of epistemology using interviews (qualitative method).

### **3.2.3 Research methodology**

According to Berryman (2019), methodology asks the question of “how” and “what is the process” and guides through the plan of how a phenomenon or a research question should be studied in congruence with the ontological and epistemological stance, which is determined by the type of research questions. Al-Ababneh (2020) maintains that methodology is the plan, strategy, design, or process fundamental to the choice of a particular research method. Research methods can include experimental research, phenomenological research, survey research, grounded theory, and ethnography to address a particular research question.

From the positivist’s perspective, research questions are structured to establish a relationship between research variables through comparison or a search for cause and effect. It is achieved using quantitative methods to answer research questions, which usually take the form of an experiment or close-ended questions. Quantitative methodologies are used to test hypotheses, theories and seek explanations to questions. It is characterised using identifiable and quantifiable constructs, numeric data, standard validity, and reliable methods (Berryman, 2019; Brown, 2017). However, the interpretive studies a problem in context by engaging and understanding the subject/object of research (participants). It uses qualitative methodologies like phenomenology, ethnography, and grounded theory to seek insight into how the subject/object of the study makes meaning of the research problems. It is characterised by open-ended questions; data are collected in words and phrases, and contextual analysis is applied. Credibility, confirmability, and dependability of data often prove the validation process. Researchers assume a more subjective position in data collection; they maintain an

open and closer relationship with their subject/object of research in seeking solutions to the research problem (Al-Ababneh, 2020; Berryman, 2019).

### **3.2.4 Quantitative versus Qualitative methodology**

The use of the quantitative versus qualitative approach has been a long-standing argument (Abusabha & Woelfel, 2003) in defence of which of them is the most appropriate. Qualitative researchers argue in favour of interacting with the subject/object of research in their natural context and being engrossed in the interaction. Their argument opposes the quantification of human behaviour or experience and its manipulation through a set of questions and figures to be measured; instead, as the subject is explored, questions and responses should emerge and modify. Qualitative researchers recommend flexibility and openness rather than limiting responses to a fixed set of answers or outcomes. This method which stems from the subjective stance has been criticized for being unscientific, soft, lacking generalization, and repeatability, guided by preconceptions, beliefs, and views of the researcher and the subject/object of research, also for being pluralistic and not connecting to a bigger picture in the situation (Abusabha & Woelfel, 2003). On the other hand, quantitative research is based on the objective stance and investigates a sampled population through statistical techniques. Quantitative researchers have claimed their approach is unbiased and the subject/object of study is investigated objectively from an external position. The quantitative method has been criticised for rigidity, lack of validity, and artificially investigating a limited aspect of reality. However, pragmatism supports using both qualitative and quantitative methods of investigation. Appendix 3 Outlines the assumptions underlying the quantitative and the qualitative research paradigm.

### **3.2.5 Pragmatism - Mixed method research**

Pragmatism is one of the philosophical paradigms that propagates mixed research methods (Onwuegbuzie et al., 2009). The mixed research method or pragmatism combines quantitative and qualitative research methods in a single study (Al-Ababneh, 2020; Onwuegbuzie et al., 2009). This method promotes the existence of reality and supports the objective way of studying nature. Since individualism influences our perception of the world, it supports the subjective way of studying realities. Hence pragmatism applies the objective and subjective, that is, the positivist and the interpretive methodology (quantitative and qualitative). Abusabha and Woelfel (2003) suggest using both methods for complementarity for three important reasons. First, data can be objective or subjective since numbers can be assigned to qualitative data, for instance, in an open-ended question. Second, using the two methods overcomes weaknesses from both sides. Third, applying both methods could allow for cross-validation of results. This present research adopted the pragmatic method of research to investigate food security.

### **3.2.6: Data analysis framework**

Onwuegbuzie et al. (2009) conceptualised a three-dimensional framework for data analysis as case-oriented, variable-oriented, and process/experience-oriented analysis. A case-oriented analysis framework is more suitable for identifying patterns within a small sample and is most suitable for qualitative research. Variable-orientated in-contrast seeks to identify relationships among variables, usually probabilistic analysis that tends to arrive at a conceptual or theory centred-result apt for external generalisation, with increased practicality in quantitative studies. The process/experience-oriented (variable and cases) analysis combines the case and variable-oriented framework. This present research adapts the process/experience-orientated analysis frameworks to analyse data obtained from

investigating households' food security status and dietary diversity, household experiences of food insecurity, and coping strategies. Having collected multitype data (quantitative and qualitative) separately, it also assumes the parallel mixed method of data analysis, implying that quantitative and qualitative data were collected and analysed separately (Onwuegbuzie et al., 2009). It is further discussed in the data analysis sections – 3.4.9 and 3.5.11.

### **3.3 Research study area**

This research was conducted in NLGA in Enugu State, Nigeria. See figure 2 in chapter one for the map of Nsukka showing the sampled communities and the map of Enugu State indicating the location of NLGA. According to Ali and Agbaogwu (2014), the Local Government Area (LGA) lies within longitudes 7°23'E and 7°45'E of the Greenwich Meridian and latitudes 6°51'N and 7°00'N of the Equator. It sits on a total land mass of about 407.50 km<sup>2</sup> on a plateau, between 365m – 420m above sea level. The LGA has a tropical rainforest climate with thick forests and high rainfall, recording an average minimum and maximum daily temperature of approximately 23°C and 27°C, respectively, having a total population estimated at 309,633. It is a monolingual ethnic society with Igbo as the indigenous language (Odoh et al., 2018). Nsukka indigenes are predominantly farmers having a small proportion in the civil service. It is known as the agricultural-trade hub for staple crops like yam, palm oil, palm kernels, corn, cassava, pigeon peas, and traditional hand weaving as the local craft. Nsukka hosts one of the first Universities established after independence in 1960. However, the LGA is classified as relatively undeveloped in human and infrastructural development with a high level of poverty (Ataguba et al., 2013; Odoh et al., 2018).

### **3.4 Research Methods and design**

The pragmatic research method was chosen because it offers a holistic approach (Al-Ababneh, 2020; Antwi & Hamza, 2015) to understanding food security. The quantitative method allows data to be numerically collected and analysed, leading to a generalisable result, while the qualitative data investigates and observes in depth the practices, experiences, feelings, and opinions of the participants. The quantitative research (survey) investigated food security and dietary diversity level. The result obtained was further investigated using qualitative research (interview) to understand household food insecurity experiences and coping strategies. The following sections describe and justify the quantitative and qualitative research process presented in separate sections.

#### **3.4.1 Quantitative research design**

This research adopted a quantitative survey method to explore the prevalence of food security and dietary diversity in the Southeast Nigeria, precisely in the 20 districts of NLGA, Enugu State.

#### **3.4.2 Research instruments**

This research utilised the household food insecurity access scale and household dietary diversity score to collect household quantitative data. The following paragraphs further explained them.

##### **i. Household Food Insecurity Access Scale (HFIAS) and Household Food Insecurity Access Prevalence (HFIAP) Indicator**

It is worth mentioning that both the HFIAS and the HFIAP are the same instrument that yields two different types of results. When the result is calculated in scores, it gives continuous data (HFIAS); when categorised, it gives categorical data (HFIAP). For



simplicity, the term HFIAS will refer to the instrument in this research. HFIAS is an experience-based scale survey that measures household food insecurity in the food accessibility domain developed by the “*USAID- funded Food and Nutrition Technical Assistance II project (FANTA) in collaboration with Tuft and Cornell Universities between 2001-2006*” (INDDEX Project, 2018). The HFIAS contains nine food insecurity questions and nine occurrence questions. It investigates the four domains of food insecurity access (worrying about obtaining food, compromising quality and variety of food, reducing food quantities, skipping meals, and experiencing hunger). It involves a thirty-days recall of the household’s access to food. Food security is classified into four categories: food secure, mildly food insecure, moderately food insecure, and severely food insecure. HFIAS can be used to measure the prevalence of household food insecurity (access) and to track changes in household food insecurity conditions over a period within a given population. It has been used in several countries across different cultures (INDDEX Project, 2018; Swindale & Bilinsky, 2009) and applies in contexts like urban and rural settings (Knueppel et al., 2010). It is distinctive in identifying areas of household food insecurity from reduced access to enough quantity and quality of food, uncertainty to food access, and anxiety manifestation (Ballard et al., 2013); More so, it is concise and can be an additional component to a household survey (INDDEX Project, 2018). However, the questions do not satisfy stringent psychometric criteria for cultural consistency, so it is unsuitable for a cross socio-cultural comparison (Deitchler et al., 2010). Similar instruments, such as the Food Consumption Score, measure food insecurity through household’s dietary diversity. The Household Hunger Scale measures household hunger status within a food insecure area. (Jones et al., 2013; Tuholske et al., 2018). However, the HFIAS directly measures household food insecurity and considers the frequency of occurrence.

## **ii. Household Dietary Diversity Score (HDDS)**

The HDDS is a tool designed by the FANTA III Project in 2006 to measure household dietary diversity which can be considered a proxy for the nutritional quality of a household diet. The variety of food groups consumed is assessed rather than the variety consumed by a household within 24 hours; the quality of the diet rather than the quantity could be ascertained. HDDS is a validated tool (Vellema et al., 2016) that can serve as a dietary indicator and a monitor of food access seasonal fluctuation; it evaluates the effect of a project and can be a component in a household based-survey tool (Swindale & Bilinsky, 2006).

The HDDS measures the household dietary diversity using twelve food groups. It involves twenty-four hours of recall of what the household consumed. According to Murendo et al. (2021), there are no universally acceptable cut-offs when categorising households by their dietary diversity score.

Both the HFIAS and HDDS were adopted because evidence from the literature shows they are reliable and valid tools for measuring household food insecurity access and diet diversity. In addition, they have enabled rapid data collection with established methods for data analysis in several countries (Deitchler et al., 2010; Ene-Obong et al., 2017; Food and Agriculture Organisation, 2008; Frayne & McCordic, 2015; Gebreyesus et al., 2015; Gucciardi et al., 2014; Holland, 2011; Hussein et al., 2018; INDDEX Project, 2018; Jones et al., 2013; Knueppel et al., 2010; Mohammadi et al., 2012; Murendo et al., 2021; Nour & Abdalla, 2021b; Raihan et al., 2018; Swindale & Bilinsky, 2009; Tuholske et al., 2018; Vellema et al., 2016). Food Agricultural Organisation (2008) observed that HFIAS and HDDS tools provide contextual information on food access and complete information when used together. Also, Hussein et al. (2018) found that both instruments are reliable for explaining dietary intake and valid for measuring nutritional status of food.

### **3.4.3 Questionnaire**

The questionnaire had three sections. The first section investigated household food security using the HFIAS, and the second section investigated household dietary diversity using the HDDS; the third section collected household demographic information from the respondents. The HFIAS survey (appendix 4) consists of nine (9) food insecurity questions that probed “anxiety, reduced food quantity, reduced food quality, meal skipping, and experiencing hunger.” The response options were Yes/No, “0” to mean “No,” and “1” to mean “Yes.” Nine (9) other sub-questions probed the frequency of occurrence with “1, 2, 3” to mean “rarely, sometimes, and often” respectively, with a possible total score of 27. “Rarely” implies that the condition occurred once or twice in the past four weeks. “Sometimes” means it happened three to ten times in the past four weeks. “Often” implies that the condition was experienced more than ten times in the past four weeks. Respondents selected the option that best represented their household food situation within the last 30 days. The HDDS survey consists of twelve food groups: cereal, roots and tubers, milk, fish, meat, eggs, vegetables, fruits, legumes and nuts, fats and oils, sweets, and beverages. Respondents were asked to indicate whether their household members consumed any of the food groups within the last 24 hours of the investigation. The responses were coded “1 and 0,” meaning “Yes and No,” respectively. The demographic data consist of household income and size, educational level of household head, and marital status of the household head among other demographics.

### **3.4.4: Reliability of the research instruments**

In addition to the reliability of the HFIAS and the HDDS described above, the scale’s internal consistency was measured using the Cronbach alpha coefficient, which should be reliable at 0.7 and above (Pallent, 2001). The research instruments have high internal consistency and

therefore are reliable scales. The Cronbach alpha coefficient for HFIAS was 0.87, for HDDS was 0.74, and for the household information and demographic was 0.72 (see appendix 4b).

#### **3.4.5 Research instrument pre-test**

A pilot test was conducted prior to the actual survey in April 2019. Ten female participants were randomly selected from Nsukka Metropolis. The research information and consent were verbally communicated. The participants were asked to fill out the surveys and a feedback questionnaire (appendix 5) and comment on areas of ambiguity, understandability, clarity, question structure relevance, and to give suggestions for any omissions. Also, the participants were asked to rate the questionnaire from excellent (10) to very poor (1). Ten questionnaires were distributed, correctly filled out, and returned. The responses show that the questionnaires were simple, and understandable, with clear instructions and options. The questions were unambiguous, well-structured, inoffensive, and relevant. All the respondents rated the questions as excellent. The positive response from the pilot test supports evidence from the literature, indicating that the research instruments have been validated and used globally (Food and Agricultural Organization, 2008).

#### **3.4.6 Research target population**

The research population consists of women representing their households within NLGA. Household in this study refers to a group of people living in the same house and sharing the same food. Women were chosen because, in Nigeria, they are vulnerable to poverty and food insecurity. However, they play substantial roles in rural economic activities, yet, they have less access to training, economic empowerment to start businesses, education, and political positions, with lower social status (Nigeria Millennium Developmental Goal, 2016). In addition, culturally, women are responsible for food preparation and service. The National

Population Commission Nigeria (2010) estimated the population of women in Nsukka LGA at 160, 030; this forms this study target population.

### 3.4.7 Sample and sampling technique

A simplified formula for calculating the sample size as provided by Yamane (1967) and Glenn (1992) was adopted.

This equation calculates the sample size for any population  $\geq 100,000$  at  $\pm 5\%$  precision level ( $p = 0.05$ ).

$$n \equiv \frac{N}{1 + N(e)^2}$$

Where  $n$  represents the sample size and  $N$  is the population size, while  $e$  is the level of precision. Therefore,

$$n = \frac{160,030}{1 + 160,030 (.05)(.05)} = 400$$

The formula indicates that a sample of 400 women is appropriate for a survey population of more than or equal to 100, 000 people. Four hundred women were the target sample size for this study. A high return rate was assumed since the questionnaires were filled and handed back immediately.

The questionnaire was translated into the local language (Igbo) by a language expert from the University of Nigeria Nsukka for women unable to read English or who may prefer the Igbo version (appendix 6). It was crosschecked and re-translated to English by the researcher for accuracy purposes.

The sampling was done within the women's district meetings for easy identification and access to the respondents. Simple random sampling (Fraenkel & Wallen, 2000; Gravetter & Wallnau, 2013) was used to select the study population. Attendance was taken at the meeting, and every second person on the attendance list was selected until twenty-five women were

recruited in each community. A replacement was made from the list, if anyone declined, as shown in figure 12.

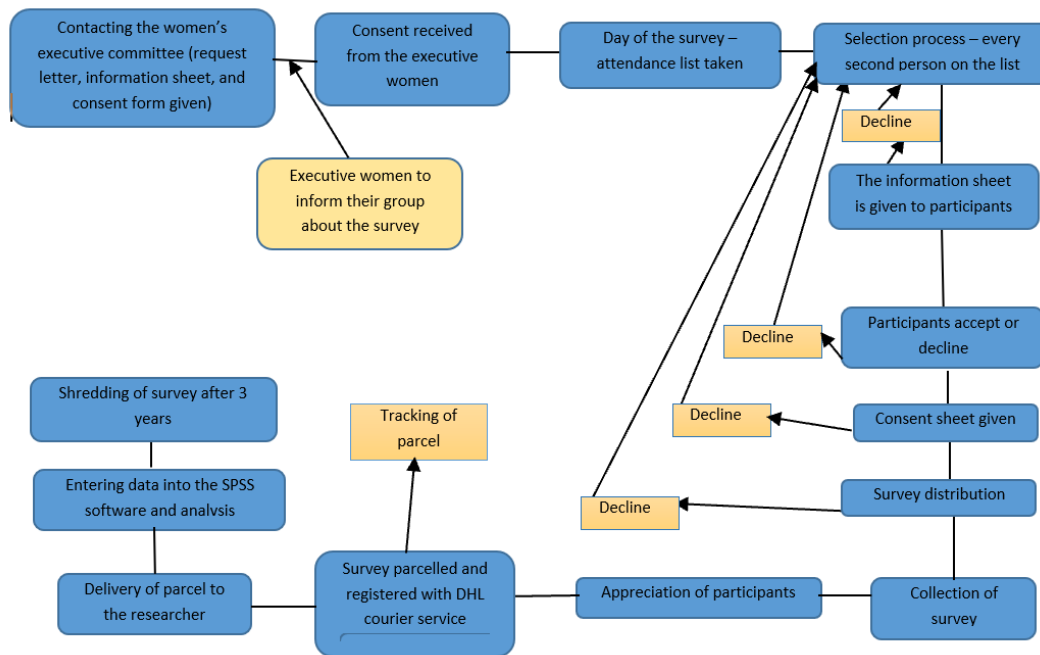


FIGURE 12: A FLOW CHART OF THE DATA COLLECTION PROCEDURE

### 3.4.8 Quantitative data collection process

Data collection was carried out between June and August 2019 during the meeting of the district women's group in each district, with the consent of the executive members of the groups. The quantitative survey was conducted by three research assistants who were trained volunteers and staff of the university of Nigeria Nsukka. The various district women executive committees were approached with a survey request letter, an information sheet, and a consent form (appendix 7, 8, and 9, respectively) requesting to recruit their members for the survey. With their consent, they were requested to pre-inform their members of the survey exercise ahead of time. Each district women's group was approached in their meeting place on an agreed date. Random sampling was used to select the participants for this study, as described in figure 12. The participants were given the information sheets (appendix 10) and were allowed 15 minutes to read through and consider participating. Their consent was

sought (appendix 11), and their right to withdraw at any point during the exercise up to when the questionnaires were retrieved was emphasised; the questionnaires were anonymous; therefore, the completed questionnaire could not be linked to an individual after they had been collected. With their interest indicated, they read and signed the consent form. The participants completed the questionnaires individually as hard copies, which took about 15 minutes.

### **3.4.9 Data organisation and analysis**

After sorting and organising the questionnaires, 390 were completed and correctly filled out. The questionnaires were numbered for easy identification of responses, and the data were entered into the Statistical Package for Social Science (SPSS) software (Bailey, 2008; Pallent, 2001) version 21. The measure of central tendency and dispersion, percentages, frequency distributions, figures, and tables were applied to present descriptive statistics, while the Chi-square and Analysis of Variance (ANOVA) were used for inferential analysis.

To achieve the first objective on household food security level, descriptive analysis - the measure of central tendency and dispersion, standard deviation, percentages, and tables were applied using the categorisation of the HFIAS as presented in table 3 and 4. They described how scores from the occurrence questions were assigned to each food security category. Based on the responses, each household was categorised into “food secure, mildly food insecure, moderately food insecure, and severely food insecure”. The percentage of households in each category of food security level was calculated and presented. Furthermore, the food insecurity access-related domains were determined; it includes anxiety and uncertainty, insufficient food quality, and insufficient food intake and its physical consequences (Coates et al., 2007).

**TABLE 3: CONSTITUTES OF HOUSEHOLD FOOD SECURITY (ACCESS) CATEGORIES**

Household food security (access) categories	Conditions experienced by household
<b>Food secure</b>	Experiences none of the food insecurity (access) conditions and worry over food, but just rarely
<b>Mildly food insecure</b>	Worries about not having enough food sometimes or often and /or is unable to eat preferred foods, and/or eats a more monotonous diet and/or some food considered undesirable, but only rarely. But it does not cut back on quality nor experience any of three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating).
<b>Moderately food insecure</b>	Sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quality by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions.
<b>Severely food insecure</b>	Cuts back on meal size or number of meals often, and/or experiences any of the three most severe conditions, even as infrequently as rarely.

Source: (Coates et al., 2007)

**TABLE 4: CATEGORISATION OF HOUSEHOLD FOOD SECURITY USING THE HFIA INDICATORS**

HFIA categories	Calculating the Household Food Insecurity Access category for each household.
1 = Food Secure,	<b>HFIA category = 1</b> if [(Q1a=0 or Q1a=1) and Q2=0 and Q3=0 and Q4=0 and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]
2=Mildly Food Insecure Access,	<b>HFIA category = 2</b> if [(Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1) and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]
3=Moderately Food Insecure Access,	<b>HFIA category = 3</b> if [(Q3a=2 or Q3a=3 or Q4a=2 or Q4a=3 or Q5a=1 or Q5a=2 or Q6a=1 or Q6a=2) and Q7=0 and Q8=0 and Q9=0]
4=Severely Food Insecure Access	<b>HFIA category = 4</b> if [Q5a=3 or Q6a=3 or Q7a=1 or Q7a=2 or Q7a=3 or Q8a=1 or Q8a=2 or Q8a=3 or Q9a=1 or Q9a=2 or Q9a=3]

Source: (Coates et al., 2007)



To gain detailed insight into the household food security situation in Nsukka, more analyses were performed using ANOVA at a significance level of 0.05, to compare some demographic data, such as the age of women who represented their households and the gender of household heads, The household food security score was the dependent variable, and the age of the women and the gender of household head, were the independent variables.

The second objective was to determine the factors challenging food security and the relationship between food security and age, and gender. Chi-square, and descriptive statistics (Veal, 2011) were applied, to achieve this, and the results presented in tables.

The HDDS indicator guide was used to achieve the third research objective to determine household dietary diversity. The indicator guide (Swindale & Bilinsky, 2006) assigned “1 or 0” to a selection of 12 food groups to give a total of 12 scores. Households that consume any of the listed food groups scored “1” for each group, otherwise 0. The higher the score, the more diverse the household diet and the lower the score the less diverse their diet (Coates et al., 2007). Descriptive analysis was applied, and the result was presented in a chart.

#### **3.4.10 Response rate**

Table 5 presents the response rate of this study. Four hundred respondents were targeted, five hundred questionnaires were distributed, four-hundred and forty-eight-questionnaires (89.6%) were received back from the respondents. Thirteen percent were invalid because they were not properly completed, 87% of the questionnaires were valid.

**TABLE 5: RESPONSE RATE**

Items (questionnaire)	Frequency	Percentage (%)
Number distributed	500	100
Number returned	448	89.6
Number returned but invalid	58	13
Number returned and valid	390	87

### **3.5 Qualitative research design**

The qualitative study was conducted to further investigate the findings from the quantitative study further. It gathered in-depth information on household food insecurity (Lund, 2012), seeking evidence of experiences, coping strategies, and solutions when food and finance are scarce and explanations for household practices regarding food and its management. The impact of COVID-19 on households' food security was investigated.

#### **3.5.1 Qualitative research instrument**

Qualitative data was collected with a semi-structured interview topic guide (Lund, 2012) containing twenty questions (appendix 12). The questions were structured in four parts to explore the three qualitative research objectives designed to investigate household food insecurity experience, household food coping strategies, and demographic information, as presented in table 6. The COVID-19 experience was added as a section since the pandemic occurred during the research before the qualitative data were collected.

**TABLE 6: INTERVIEW FRAMEWORK**

S/N	Interview topic question	Areas investigated
1	Food security/insecurity experiences	Household mealtime, sources of household food, feeding pattern, causes of lack of food, feeling of anxiety due to lack of food and its effect.
2	Household food insecurity coping strategies	Strategies taken towards insufficient food, steps taken towards the provision of food for household, ways of rationing limited food, external support to household food, belong to association or group that support food or financial savings towards food security, and plans to improve household food. Cooking purposely to have leftover foods, type of food that are normally leftovers, how left-over food are stored and reused, and the acceptability of leftover foods by household members,
3	Socio-demographic	Head of household, gender of household head, household size, income size, ownership and usage and farmland.
4.	COVID-19	Household food experiences during the COVID-19 pandemic.

### 3.5.6: Qualitative instrument pre-test

The semi-structured interview guide was pilot tested with three women. After the pilot interview, the interviewees were requested to complete a feedback questionnaire (appendix 13) which investigated the questions clarity, simplicity, comprehensibility, and acceptance. Two participants raised the issue of clarity with topic 2, question 7. Other questions were rated very good. One participant gave suggestions on investigating household plans to achieve food security. The interview topic questions were revised, taking into consideration the observations raised.

### 3.5.7: Qualitative research target population

Households within the twenty communities of NLGA constitute the qualitative research target population. Women representing their households constituted the target participants.

The justification for women participants remains as described in section 3.4.6 of this research.

### **3.5.8: Qualitative sample and sampling technique**

From the quantitative analysis, the five communities most affected by food insecurity were purposively selected for further investigation into household food insecurity experience and their coping strategies. The district women's meeting executives were approached with a request letter, information sheet, and consent form (appendix 14, 15, and 16, respectively); they were requested to identify households most affected by food insecurity within the community. In each district, a list of five women from households that met the selection criteria was given, from which two women were randomly selected to give a total of ten (10) households.

### **3.5.9: Qualitative data collection procedure**

The two randomly selected women representing their households were informed, and their consent to be interviewed was taken (appendix 17 and 18). Any woman who declined was replaced by another from the list. They were notified of their right to withdraw at any point in time. They were interviewed separately and were allowed a brief view of the questions beforehand. The face-to-face interviews lasting an average of twenty-five (25) minutes, were conducted in July-August 2021 with the recruited participants by two research assistants from the University of Nsukka. Some food materials were offered to the participants after the interview as appreciation. The interviews were recorded and uploaded to the UCLAN MS Teams folder, which was accessible by the researcher and the supervisors. After checking and confirming of the data, the research assistants deleted the recordings; after transcribing and checking, the researcher deleted the recordings from Teams.

### **3.5.10: Qualitative response rate**

Ten women responded to the qualitative interview. The expected number of responses was achieved as ten women, two from each of the selected communities representing their households, were interviewed.

### **3.5.11: Qualitative data management and analysis framework**

Recordings of the qualitative data were uploaded into the UCLAN Microsoft Teams software and transcribed. Each respondent was coded with “1 or 2” along with the first two letters of her community’s name for easy management of data; for instance, respondent “NS1 and NS2” represents respondents from the Nsukka community, “OB1 and OB2” represents those from the Obukpa community. Different coloured letters were used to represent the responses from different interviewees on the transcript (see appendix 19 for a summary). The NVivo software version 12 was used for data management and organisation. Table 7 presents the framework for data management and analysis. The software performed stage one, step one. In steps two and three, themes were summarised and refined from the coded text, and these involved a cyclical nature of reading and re-reading texts. Constructing the Thematic Networks (section 3.5.12) requires that basic themes are abstracted from the coded text, organising themes are further deduced from the basic themes, and lastly, global themes emerge from the organising themes. The basic, organising, and global themes were illustrated as Thematic Networks, verified, and refined; these were presented visually as the thematic network techniques. In step four, a second researcher independently coded and analysed some materials from the interview to verify the reliability of the primary researcher’s coding and analysis. Both researchers had a discussion session to confirm that the approach was correct. In stages two and three, the networks were explored and described. Patterns discovered from the networks

were interpreted and discussed. Significant evidence was presented verbatim in quotation marks and italicised text.

**TABLE 7: QUALITATIVE DATA MANAGEMENT AND ANALYSIS FRAMEWORK**

Stages and steps	Activities	Activity details
STAGE 1	Data management – reduction or breakdown of text	NVivo software
Step 1	Code material	Devise a coding framework and dissect text into text segments using the coding framework (NVivo).
Step 2	Identify Themes	Abstract themes from coded text segments and refine themes. Texts are read several times
Step 3	Construct Thematic Networks	Arrange themes, select basic themes, rearrange into organising theme, deduce global themes, illustrate as Thematic Networks, verify, and refine the Networks.
Step 4	Verification of entries and thematic networks	A second researcher verified the coding and the thematic analysis.
STAGE 2	Text exploration and analysis	Describe and explore the Thematic Network.
STAGE 3	Integration of exploration	Interpret patterns and discuss findings.

### **3.5.12: The Thematic Network technique and presentation**

The thematic network technique (Attride-Stirling, 2001) visually represents the relationship between the basic, organising, and global themes as illustrated in figure 13 and section 5.2. This pattern was applied to all the Networks.

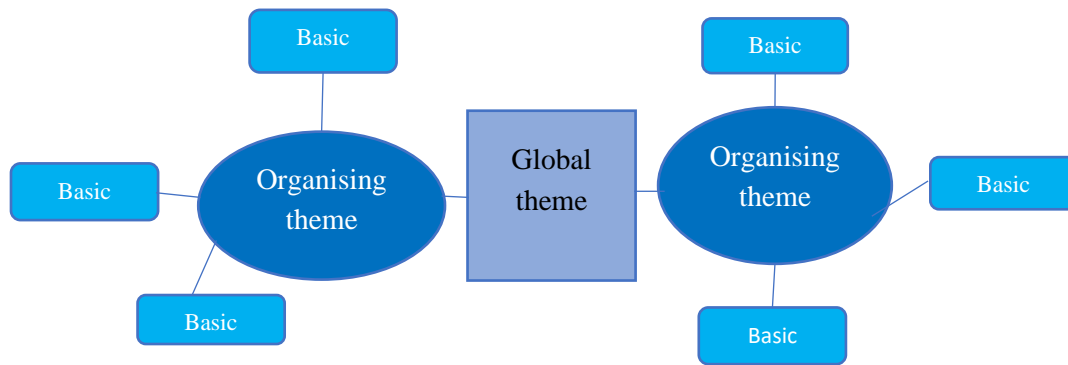


FIGURE 13: THE THEMATIC NETWORK TECHNIQUE

### 3.6 Research ethical consideration

This research considered the participants' privacy, consent, and confidentiality. Permission was obtained in two folds, from the University of Central Lancashire (UCLAN) ethics committee and the NLGA Women Organisation. Research approval was obtained from the UCLAN STEMH (Science, Technology, Engineering, Medicine, and Health) Ethics Committee and the ethics committee for Health Sciences (appendix 20 and 21) for the quantitative and qualitative studies, respectively. Permission was gained from the Nsukka LGA Women Organisation (appendix 22) for easy access to the women. For the quantitative and qualitative studies, women executives were given a request letter, information sheet, and consent form at each district meeting. Similarly, information sheets and consent forms were administered to the participants who consented voluntarily to the study. For ethical and confidentiality purposes (Poldrugovac et al., 2016), the questionnaires and interviews were numbered, and the responses were coded, which made it impossible to identify the respondents. More so, all data collection materials were destroyed at the end of the study.

### 3.7 Limitations and challenges to the qualitative research method

The COVID-19 Pandemic and the national lockdown in the UK and Nigeria affected the qualitative data collection method causing a change in method. There was a delay due to

obtaining ethical clearance for changes to the proposed method of data collection. The researcher could not collect data in person due to lockdowns and travel restrictions; therefore, research assistants were recruited from the University of Nigeria Nsukka and trained for the interview sessions in June 2021. All the COVID-19 safety measures, such as using face masks and hand sanitiser were observed to keep the research assistants and the participants safe. Information sharing was supported virtually.

There could be some limitations in the coding and interpretation of the qualitative data. However, to mitigate these limitations, another researcher crosschecked the coding and interpretation and had similar findings, as highlighted in section 3.5.11. Again, limitations could exist in the method of the selection of the interview participants. As highlighted in section 3.5.8, this research deliberately targeted two households believed to be struggling with food in each of the five most food insecure communities, given a total of 10 households. These households were identified through the women's groups. The pilot study was conducted in two communities of the investigated region, and with two female participants from Southeast Nigeria living in the UK.

### **3.8 Summary of chapter three – research methodology and method**

Chapter three presented the research methodology and method. The methodology clarified the theoretical paradigm of this research. It explained the ontological, epistemological, and methodological stances of the study. The research method described the two research designs applied to study household food insecurity, dietary diversity, food insecurity coping strategies, and responses using quantitative and qualitative methods. It also presented the ethical considerations and limitations of the research methods.



# **CHAPTER FOUR**

## **RESULTS AND FINDINGS FROM THE QUANTITATIVE RESEARCH**

### **4.0: Introduction**

The aim of this chapter is to present the results and findings of the quantitative survey using the HFIAS and the HDDS. The first three research objectives were achieved through quantitative research. These are to ascertain the level of food security in Nsukka LGA using a validated instrument, to examine factors challenging food security in Nsukka households, and to explore household dietary diversity in a challenging period.

This chapter begins by presenting some preliminary descriptive analyses. The study population characteristics are presented in a frequency and percentage table describing the respondents age, household size, household income, education, work status, and marital status. The analysis of the population's mean score and standard deviation of the HFIAS and the HDDS scales followed this. Furthermore, the responses to the nine HFIAs questions were analysed across the three HFIAS access-related domains – anxiety and uncertainty, insufficient food quality, and insufficient food intake and its physical consequences.

The first research objective was achieved by determining the household food insecurity categories, which were calculated and mapped on the household food insecurity table. Different levels of food security were shaded in different colours, used to differentiate the categories of food (in)security. Additionally, the household food insecurity scores were compared with different demographics using the analysis of variance at a 95% confidence level to explore the food security situation of the population.

The second objective was achieved by determining factors challenging food security in NLGA. Some factors such as the age of the household head, education, work status, income, household size, gender of household head, and marital status were tested using Chi-squared to this effect. The result was presented in a table.

The third objective was achieved by calculating the population's household dietary diversity, and the result was plotted on a bar chart. To further understand the dietary behaviour of the population, the consumption level of different food groups was determined and presented in a chart.

#### **4.1: Populations' characteristics**

The respondent's characteristics presented in table 8 and 9 show that 31.8% of the population were between the ages of 31-40 and constituted a more significant part of the population. It is followed by 27.4% who were between 41-50 years. Also, 70.8% of the population were married, their husbands were the heads of their households, 29% of the women were heads of their households, while 5.1% were single parents. About 52.6% had a household size of 2 - 4, 34.6% of households had 5 - 7 members, and 1.8% had 11 or more members. As reported by the women, 30.9% of their husbands had a university education, while 23.3% had no form of formal education. Women with a university education were 29.5%, while 22.3% had no formal education. In the survey population, 40.3% and 40.5% of females and males were farmers, respectively, while 36.2% and 31.8% of females and males were in paid jobs, respectively. The analysis revealed that 55.4% of households had 2 -3 income sources, while 8.2% had more than. In addition, 49.5% of males and 50.8% of females earn below ₦19, 000 (approximately £48.6) monthly, while 1.8% of males and 1.9% of females earn ₦201, 000 and above (approximately £513.7) monthly.

**TABLE 8: DEMOGRAPHIC CHARACTERISTICS**

<b>Items</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age:</b>		
20-30	90	23.1
31-40	124	31.8
41-50	107	27.4
51-Above	69	17.7
<b>Marital status:</b>		
Married	276	70.8
Divorced	27	6.9
Widow	67	17.2
Single parent	20	5.1
<b>Household head:</b>		
Man	276	70.8
Woman	114	29.2
<b>Household size:</b>		
2-4	205	52.6
5-7	135	34.6
8-10	43	11.0
11-above	7	1.8
<b>Wife's education:</b>		
None	87	22.3
Primary school	94	24.1
Secondary school	34	8.7
Vocational training school	60	15.4
Higher Education	115	29.5
<b>Husband's education:</b>		
None	67	23.3
Primary school	52	18.1
Secondary school	40	13.9
Vocational training school	40	13.9
Higher Education	89	30.9
No declaration of husband's education*	102	26.2
<b>Wife's work status:</b>		
Farmer	157	40.3
In a paid job	141	36.2
Businesswoman/trader	85	21.8
Full-time housewife	7	1.8
<b>Husband's work status:</b>		
Farmer	117	40.5
In a paid job	92	31.8
Businessman/trader	72	24.9
No job doing	8	2.8
No declaration of husband's work status*	101	25.9
<b>Number of sources of household income:</b>		
One	142	36.4
Two-three	216	55.4
More than three	32	8.2
<b>Support from the government, Church, or community</b>		
Yes	40	10.3
No	350	89.7
<b>Access to credit facilities</b>		
Yes	32	8.2
No	358	91.8

\*These are widows, divorcees, and single parents. However, a few declared the work status and education level of their late or ex- husbands

**TABLE 9: HOUSEHOLD INCOME**

<b>Income</b>	<b>Husbands</b>	<b>Wife</b>
₦ 18, 000 - below	49.5%	50.8%
₦ 19,000 – 30,000	14.7%	12.2%
₦ 31,000 – 50,000	17.9%	23.4%
₦ 51,000 – 100,000	7.7%	5.6%
₦ 101,000 -200,000	8.4%	6.1%
₦ 201,000 - Above	1.8%	1.9%

## 4.2 HFIAS and HDDS mean score for the population

The mean score of the Household Food Insecurity Access Scale (HFIAS) and the Household Dietary Diversity Score (HDDS) are presented in Table 10. The HFIAS ranges from 0 – 27, while the HDDS ranges from 0 – 12. The HFIAS mean score of the household survey is  $10.21 \pm 7.154$  Standard Deviations (SD), with a variance of 51.179. The HDDS mean score is  $9.02 \pm 2.565$  SD, with a variance of 6.581. Overall, the result shows a high average score for both HFIAS and the HDDS, implying that between the 0 – 27 score obtainable in the HFIAS, most households scored high, indicating more household food insecurity, and similarly, between the 0 – 12 score in the HDDS most households scored high also indicating more household dietary diversity. The result equally reveals a high standard deviation of 7.154 for the HFIAS, implying diverse household food security conditions. The HDDS discloses a low standard deviation of 2.565, suggesting more similar household food diversity levels within the population.

**TABLE 10: MEAN SCORES OF THE HFIAS AND HDDS**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Variance</b>
HFIAS by household	390	10.21	7.154	51.179
HDDS by household	390	9.02	2.565	6.581
Valid N (listwise)	390			

### 4.3: The domains of food insecurity (access-related domains)

The HFIAS contains three domains of food insecurity access (Coates et al., 2007), and these reflect households' food security situation in the various domains, as found in figures 4.1, 4.2, and 4.3 below. The HFIAS question 1 reflects anxiety and uncertainty; questions 2 – 4 depict insufficient food quality, and questions 5 – 9 describe insufficient food intake and its physical consequences. The results of the three-food insecurity access-related domains are presented subsequently.

#### 4.3.1 Experiencing anxiety and uncertainty over food

Some households experience anxiety or uncertainty due to a lack of food or resources to obtain food. These include all households that have answered “yes” to the first HFIAS question of feeling worried about insufficient food for their household. Figure 14 indicates that approximately 72% of households experienced anxiety and uncertainty over household food, while 28% were not worried or uncertain about food. It means that over half of the households within the population were worried about household food and were uncertain about the next household meal.

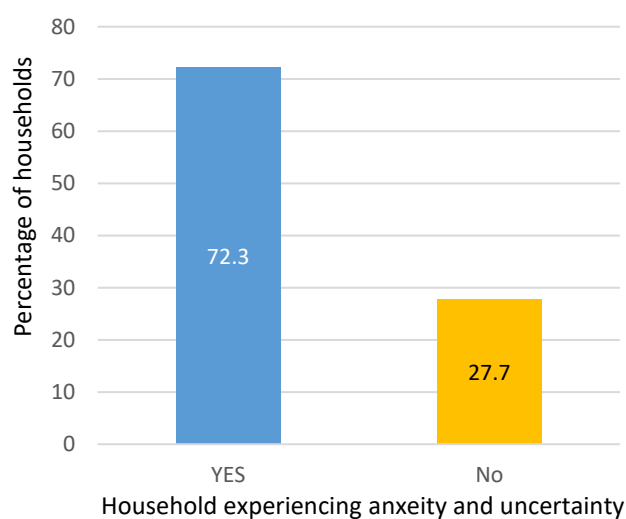


FIGURE 14: HOUSEHOLDS EXPERIENCING ANXIETY AND UNCERTAINTY

### 4.3.2: Households experiencing insufficient food quality

Households experiencing insufficient food quality constitute those that answered “yes” to HFIAS questions 2, 3, and 4 that probed preferences and variety of food. Over half of the study population experienced insufficient food quality due to the lack of resources, as shown in figure 15. More households ate unwanted food, had a limited variety of food, or could not eat preferred food, and fewer households did not experience these conditions. Unwanted food in this context are foods that are socially, culturally, and physically unacceptable and undesirable. Unpreferred food refer to foods that are culturally unacceptable and nutritionally low and could also mean limited choices (Coates et al., 2007)

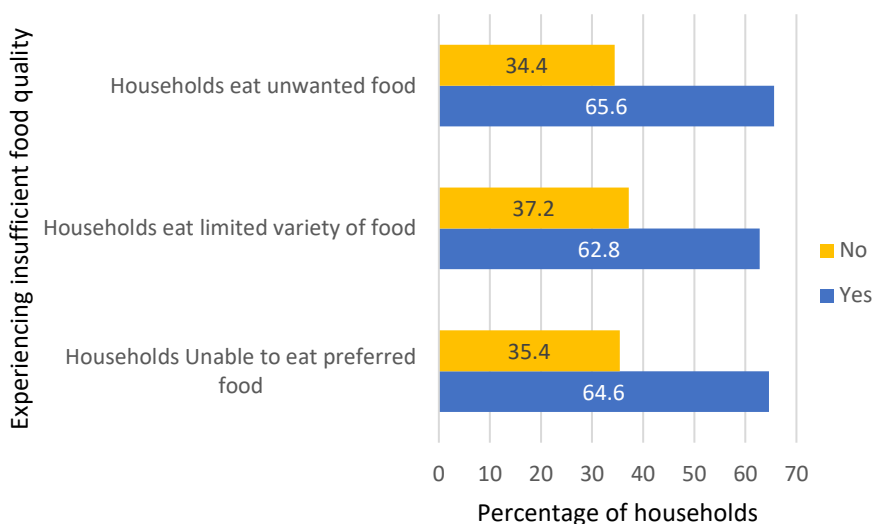


FIGURE 15: HOUSEHOLDS EXPERIENCING INSUFFICIENT FOOD QUALITY

### 4.3.3 Insufficient food intake

The third domain of the HFIAS, which comprises question 5 – 9, examines households experiencing insufficient food intake and its physical consequences. Figure 16 presents the percentages of households in this domain. The results show that some households go a whole day without food, sleep at night hungry, have no food, eat fewer meals a day, and eat smaller portions due to inadequate food. Some households did not experience these conditions. More

households ate fewer meals and smaller portions of meals in a day. Fewer households went a whole day without food, slept at night hungry, or had no food.

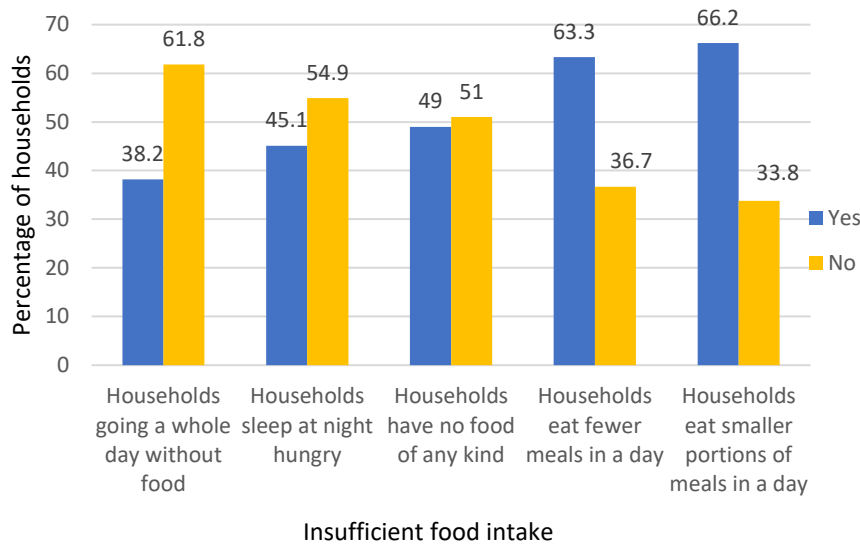


FIGURE 16: HOUSEHOLDS EXPERIENCING INSUFFICIENT FOOD INTAKE

#### 4.4: Households’ responses to the nine HFIAS occurrence questions (access related conditions)

The HFIAS contains nine food insecurity occurrence questions with three levels of occurrences - often, sometimes, and rarely - indicating the frequency at which each food insecurity condition occurred. Presented in table 11 are the survey responses to the nine HFIAS occurrence questions. Questions 7, 8, 9, and those that answered “often” to Q5 and Q6 demonstrate severe household food insecurity, and fewer households fell into this category.

An appreciable percentage - 31% of households often have no food, go to sleep hungry, or go a whole day and night without food; over half of the population did not experience these conditions within the period of recall. Some households often could not eat their preferred food or often ate a limited variety of food.

**TABLE 11: RESPONSES FROM THE HOUSEHOLDS TO THE NINE HFIAS OCCURRENCE QUESTION**

HFIAS QUESTIONS	Option							
	NO		Rarely		Sometimes		Often	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Q1: Worry about food	108	27.7	54	13.8	160	41	68	17.5
Q2: Unable to eat preferred food	138	35.4	62	15.9	117	30	73	18.7
Q3: Eat just a limited variety of food	144	36.9	76	19.5	118	30.3	52	13.3
Q4: Eat food they really do not want to eat	133	34.1	71	18.2	123	31.5	63	16.2
Q5: Eat smaller portions of meals	132	33.8	78	20	134	34.4	46	11.8
Q6: Eat fewer meals in a day	143	36.7	80	20.5	109	27.9	58	14.9
Q7: No food of any kind in the household	199	51	78	20	74	19	39	10
Q8: Go to sleep hungry	214	54.9	62	15.9	68	17.4	46	11.8
Q9: Go a whole day and night without eating	241	61.8	56	14.4	57	14.6	36	9.2

#### 4.5 The prevalence of food insecurity access in Nsukka

Coates et al. (2007) presented an indicator of household food insecurity categories. It classified household food insecurity access into four levels: food secure, mildly food insecure, moderately food insecure, and severely food insecure. Chapter three, table 4, presented a format for categorising food insecurity occurrence questions. One of the key findings of this research work, as found in table 12, is the food security levels of households in NLGA. Findings revealed that 17.4% of households were food secure, and 82.6% were food insecure to varying degrees; 13.3% were mildly food insecure, 9% were moderately food insecure, and 60.3% were severely food insecure. This result indicates a high level of household food insecurity.



**TABLE 12: THE PREVALENCE OF FOOD (IN)SECURITY (ACCESS)**

Occurrence questions	Degree of food insecurity			
	No (%)	Rarely (%)	Sometimes (%)	Often (%)
	0	1	2	3
Worry about food	17.4% Food secure	Mildly food insecure	13.3%	60.3%
Unable to eat preferred food			Moderately food insecure	
Eat limited variety of food		Severely food insecure		
Eat unwanted food				
Eat smaller food				
Eat fewer meals daily				
Have no food of any kind		9%		
Go to sleep hungry				
Go a whole day and night without food				

**4.5.1 Mean comparison of households’ food security scores and some demographic data**

Comparing some demographics and household food insecurity scores using descriptive analysis and the ANOVA gave more insight into the household food security situation in NLGA. The food (in)security scores were compared between the age group of household women and the gender of the household head. The result is presented in the following sections.

**4.5.2a Comparison of household food security between age groups of the women**

The HFIAS by age group of the women was analysed and compared based on their food security categories using ANOVA, and the results are presented in table 14. There was a significant difference in the HFIAS by age group ( $p < 0.001$ ),  $F(3, 386) = 6.113$ ,  $p < .05$ ,  $\eta^2 = 0.45$ . Pairwise comparisons in table 15 revealed that households with women aged 20 – 30 years had a significantly higher mean HFIAS than those of women aged 41 – 50

years ( $p=0.001$ ) and women aged  $\geq 50$  years ( $p=0.004$ ). No significant difference existed between the food security of households with women aged 20 – 30 years and 31 – 40 years or between other age groups. The standard deviation of households with women aged 20-30 years was smaller compared to other age groups (table 13), showing that their scores are clustered around the group mean, indicating the responses within the group were consistent in contrast to other groups where there was a great range of scores. It indicates that households with women aged 20 – 30 years are likely to be less food secure compared to the older age groups.

**TABLE 13: MEAN HFIA S BY THE WOMEN’S AGE**

Age	Mean	Std. Deviation	N	Median
20 -30	12.64*27	6.082	90	13.00
31 – 40	10.48*27	6.946	124	11.00
41 – 50	8.54*27	6.661	107	9.00
51- above	9.00*27	8.403	69	9.00
Total	10.18*27	7.111	390	11.00

**TABLE 14: COMPARISON OF HOUSEHOLD FOOD SECURITY BETWEEN AGE GROUPS OF THE WOMEN**

Dependent Variable: HFIA score by household

Tests of Between-Subjects Effects

Source	df	F	Sig.	Partial Eta Squared
Corrected Model	3	6.113	.001	.045
Intercept	1	780.908	.000	.669
Age	3	6.113	.001	.045
Total	390			

a. R Squared = .045 (Adjusted R Squared = .038)

**TABLE 15: PAIRWISE COMPARISONS OF HOUSEHOLD FOOD SECURITY WITH AGE**

Dependent Variable: HFIA score by household

(I) Age	(J) Age	Mean difference (I-J)	Sig <sup>b</sup>
20 – 30	41 – 50	3.850*	.001
	51 - Above	3.891*	.004

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

#### 4.5.2b Mean comparison of household's food security with the gender of household heads

The mean HFIAS by gender of household heads is presented in table 16. Descriptive statistical analysis revealed close median and mean scores and standard deviation for male and female-headed households. ANOVA revealed no significant difference between the mean scores for both groups (see table 17), indicating that the gender of the household heads does not significantly influence household food security in this community.

**TABLE 16: MEAN HFIAS BY THE GENDER OF HOUSEHOLD HEADS**

Family Head	Mean	Std. Deviation	N	Median
Male	10.03*27	7.103	276	11.00
Female	10.57*27	7.148	114	10.50
Total	10.18*27	7.111	390	11.00

**TABLE 17: COMPARISON OF FOOD SECURITY BETWEEN GENDER OF HOUSEHOLD HEAD**

Tests of Between-Subjects Effects

Dependent Variable: HFIA score by households

Source	df	F	Sig.	Partial Eta Squared
Corrected Model	1	.630	.428	.002
Intercept	1	673.720	.000	.635
Household head	1	.630	.428	.002
Total	390			

#### 4.6 Factors challenging household food security

Using Chi-squared, factors including the age of the women, gender of household head, marital status, education, family income, work status, and household size were tested for associations with household food security. The results are summarised in table 18. The age of the women is a factor that significantly affects household food security which is further supported by the Chi-squared test. Women could be considered great drivers of food security in their households; they can largely influence the food situation of their households.

In addition, both wife's and husband's education were found to be factors affecting household food security. Chi-square indicated a statistical association ( $p < 0.001$ ) between the education level of both husband and wife and household food security, indicating education is a factor that affects food security.

Similarly, the income levels of both husband and wife were significantly associated ( $p < 0.001$ ) with household food security. The income of the household head is an important factor in determining household food security. It is a fact that the more income a household has, the more food secure they are likely to be.

Also, the work status of both husband and wife was significantly associated ( $p < 0.001$  and  $p < 0.001$ ) with household food security, respectively. Over 40% of male and female household heads in the study population were local farmers. The type of work or position at work can determine a person's economic level and directly influence household earnings and food security.

However, the gender of the household head was not a factor associated with household food security. The Chi-square test of independence shows no significant association ( $p > 0.05$ ) between the gender of the household head and household food security, implying that the gender of the household head does not influence household food security status. It concurs with the findings reported in section 4.5.2b.

Furthermore, the result revealed that marital status was not a factor associated with food security ( $p = 0.098$ ) in this population. Thus, regardless of the marital status of the household head, a household could be food secure or food insecure.

Again, there was no evidence that household size was associated with food security ( $p = 0.053$ ).

**TABLE 18: FACTORS CHALLENGING HOUSEHOLD FOOD SECURITY**

<b>Factors</b>	<b>outcome</b>	<b>Sig. level (0.05) Pearson chi-square</b>	<b>P - value</b>
Age of the woman	Factor	$X^2 (9, N = 390) = 34.5, p < .05$	<0.001
Women's education	Factor	$X^2 (12, N = 390) = 75.7, p < .05$	<0.001
Husbands' education level	Factor	$X^2 (12, N = 390) = 59.9, p < .05$	<0.001
Wife's work status	Factor	$X^2 (9, N = 390) = 36.2, p < .05$	<0.001
Husband's work status	Factor	$X^2 (9, N = 390) = 28.2, p < .05$	<0.001
Wife's income	Factor	$X^2 (15, N = 390) = 70.4, p < .05$	<0.001
Husband's income	Factor	$X^2 (15, N = 390) = 94.1, p < .05$	<0.001
Household size	Not a factor	$X^2 (9, N = 390) = 16.7, p > .05$	>0.053
Gender of household head	Not a factor	$X^2 (3, N = 390) = 3.24, p > .05$	>0.355
Marital status	Not a factor	$X^2 (9, N = 390) = 14.7, p > .05$	>0.098

#### **4.7 Household Dietary Diversity**

This section presents the HDDS of the research sample. A score of 0-12 was assigned to the households based on the number of food groups they consumed over a period of 12 hours. The higher the score, the more diverse food the household consumed and vice versa. The food groups investigated include cereals, white root and tubers, vegetables, fruits, meat, eggs, fish and sea foods, legumes, nuts and seeds, milk and milk products, oils and fats, sweets, spices, and condiments.

The dietary diversity scores of households shown in figure 17 indicate that 21.8% scored 12, 16.2% scored 9, 14.1% scored 10, and 0.8% scored zero. Approximately 53.6% of households fell at or below the HDDS average score of 9.02 and consumed  $\leq 9$  food groups. This level of food diversity suggests that less than half of the population consumed more than 9 food groups. The population could have diverse available food but lack access to enough food.

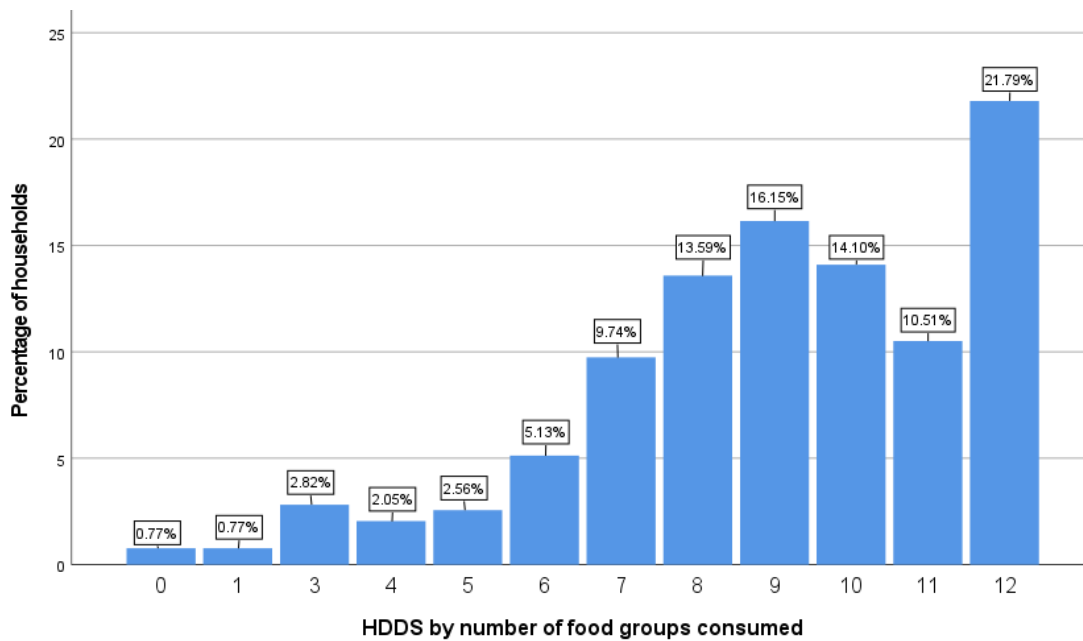


FIGURE 17: HOUSEHOLD DIETARY DIVERSITY SCORE

#### 4.7.1 Consumption of different food groups

Further analyses were undertaken to determine the food groups most frequently consumed by Nsukka households. These are presented in figure 18. The most frequently consumed food crops are cereals (94.6%), white roots and tubers (87.7%), vegetables (85.9%), and oil and fat (83.6). Milk, milk products, and eggs were the least frequently consumed food groups, with 42.3% and 40%, respectively.

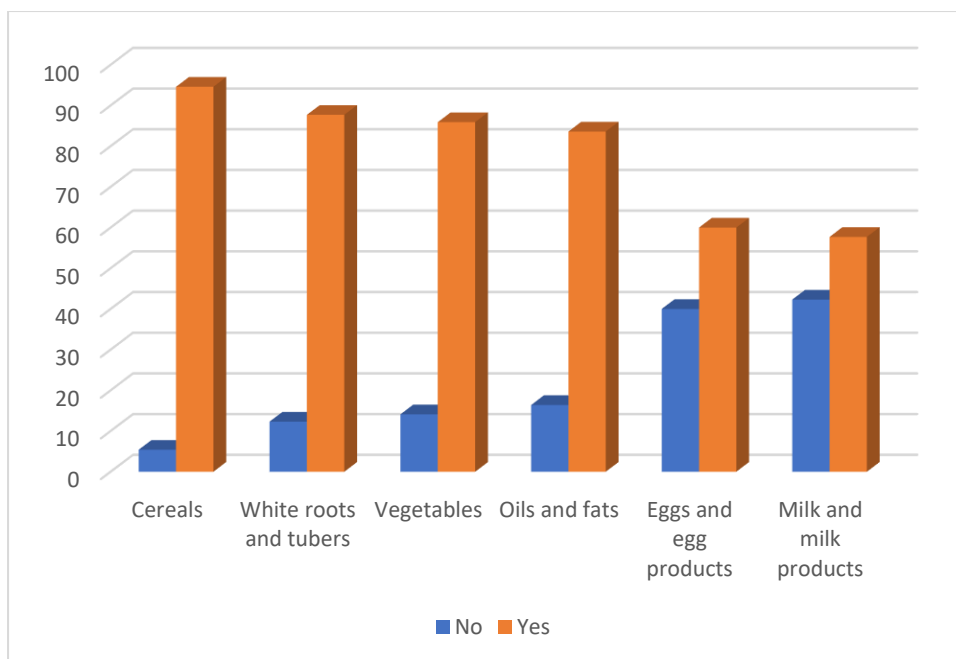


FIGURE 18: MAJOR FOOD GROUPS CONSUMED BY HOUSEHOLDS

#### 4.8 The association between household food insecurity and dietary diversity

The association between HFIAS and HDDS was tested using Pearson’s Product Moment Correlation coefficient to determine how much household food security explains their dietary diversity. The result in table 19 indicates a significant negative correlation ( $r = -.35$ ,  $n = 390$ ,  $p < .05$ ) between HFIAS and HDDS. It means that high household food insecurity is associated with lower household dietary diversity. The variables had a significant association ( $p < .001$ ). The coefficient determination is  $.1211 = 12.11\%$ , indicating that food insecurity accounts for 12% of the variance in respondents’ HDDS.

**TABLE 19: CORRELATIONS BETWEEN HFIAS AND HDDS**

		HFIAS by households	HDDS by households
HFIAS by households	Pearson Correlation	1	-.348**
	Sig. (2-tailed)		.000
	N	390	390
HDDS by households	Pearson Correlation	-.348**	1
	Sig. (2-tailed)	.000	
	N	390	390

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## **4.9 Summary of chapter four – quantitative results**

In summary, this chapter presented the results of the quantitative study. Results indicate a high level of food insecurity in NLGA. The women and their husbands earned about N18,000 (£46) or below. High household food insecurity significantly but negatively correlated with low household dietary diversity. Households with younger women were less food secure than households with older women. No difference was found in the food security level between the male and female-headed households. The age of the women, education, work status, and income were associated with household food security. In contrast, household size, marital status, and gender of the household head were not associated with household food security. Slightly above half of the population consumed 9 or less out of 12 food groups. Over 80% of the households frequently consumed starchy staple foods such as cereal, white roots, and tubers, while protein-based foods such as eggs and milk were consumed less frequently.



## CHAPTER FIVE

# RESULTS AND FINDINGS OF THE QUALITATIVE RESEARCH

### 5.1 Introduction

The findings from the quantitative survey that revealed a high level of food insecurity (82.6%) in NLGA underpin the qualitative study into household experiences and coping strategies for food insecurity. In addition, their experiences, and responses to the COVID-19 lockdown, characterised the households and gave insight into their food insecurity struggles and condition through the pandemic lockdown period.

This chapter presents the qualitative research findings. The Thematic Network Analysis presents the results of the interviews conducted in NLGA, thereby achieving research objectives four and five, which explore household experiences of food management and food insecurity coping strategies during economic challenges. Ten women representing their households took part in the interview. Two women were selected from each of the five local communities most affected by food insecurity in NLGA, as described in section 3.5.8. This chapter uses the qualitative approach and framework analysis of the semi-structured interview described in the research method section (chapter 3) to present the qualitative research findings. It buttresses the Interpretivism research paradigm and uses interviews to investigate food insecurity experiences and coping strategies.

#### 5.1.2 Qualitative household demographics

**Marital status:** six women were married, three were widows, and one was a single mother.

**Gender of household head:** six households were headed by males and four by females

**Age of household primary income earner:** three household heads were between 20 – 39 years, four household heads were between 40 – 59 years, two household heads were between 60 – 79 years, and one was unknown.

**Occupation of all income earners in a household:** Seven households were involved in farming activities (crops and animals). Six households had paid jobs, seven were into one or more of petty trading of local spices, corn starch, cassava starch (garri), and stones.

**The aggregate household monthly income (minus gifts):** two households earned ₦4,999 (£12.8) or below, five households earned between ₦5,000 – ₦14,999 (£12.8 - £38.3), one household earned between ₦15,000 – ₦24,999 (£38.3 - £63.9), and two households were unknown.

**Household size:** seven households had 1 – 4 members, one household had 5 – 8 members, and two households had nine members or more.

## 5.2 Thematic network analysis

Several global, organising, and basic themes were identified using the thematic network analysis (Attride-Stirling, 2001) to explore the data, five global networks emerged from the data, with 17 organising themes and 58 basic themes. The global themes are presented in square shapes, the organising themes in round shapes, and the basic themes in rounded corner rectangular shapes; these were coloured in different shades of blue. This pattern was applied for all the thematic networks (see figure 19).



FIGURE 19: THEMES IN THE THEMATIC NETWORK

The global themes presented in figure 20 with no hierarchical order include household food insecurity experiences, health, and nutrition, causes and solutions to food insecurity, response to food insecurity, and COVID-19 lockdown.

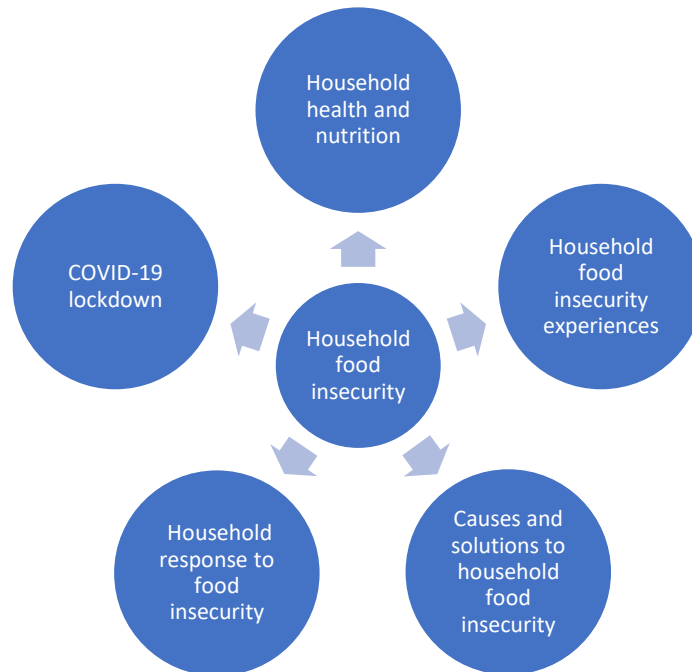


FIGURE 20: RELATIONSHIP BETWEEN THE GLOBAL NETWORKS

The global networks summarise the various aspects of discussions and interview findings. Each global theme formed a network of organising themes and basic themes. In each network, the basic themes represent a set of direct responses from the participants on related issues. These responses were categorised into organising themes and further summarised into global networks. The five networks are inter-related and address the problems of household food insecurity.

The **household food insecurity experiences** as a global network describe situations households undergo to access food, their difficulties, and hardship. It summarises the effect of these experiences on household members both physically and psychologically. Also, the **causes and solutions to household food insecurity** emerged as a global network that explored the participants' opinions and understanding of the causes of their household food

insecurity and the remedies. Their responses generated basic themes classified into two organising themes. Likewise, **household responses to food insecurity** developed as a global network. Within this network are six organising themes and several basic themes. It explains household behaviour in response to food insecurity and includes actions or steps taken by households to combat food insecurity. These could be summarised as their effort within and outside the household and involving a third party in search of a solution to food insecurity. Furthermore, the **COVID-19 lockdown** was another important global network. This network described household experiences and responses to food insecurity during the COVID-19 lockdown. The global network had two organising themes and several basic themes revealing the food conditions and the impact on households during the lockdown period. In addition, **household health and nutrition** as a global network includes four organising themes and several basic themes that explore household nutrition during food insecurity, its effect on the health, food sources, and diet of household members. The following sections present the findings and nexus of each thematic network. The organising themes are presented as sub-headings, and the basic themes are highlighted within the texts.

### **5.3 Global network - Household health and nutrition**

Household health and nutrition formed an important global theme with 4 organising themes: household feeding, food safety, food availability, and household nutrition. 11 basic themes emerged within this network, as presented in figure 21. Household health and nutrition are essential aspects of a household's wellbeing; a household that cannot access nutritious food of their choice to maintain a good and healthy life remains food insecure (Ibeanu et al., 2020). For a household to thrive, good health and nutrition are required (World Health Organisation, 2020a). This global theme explored how food insecurity affects household's health and nutrition.

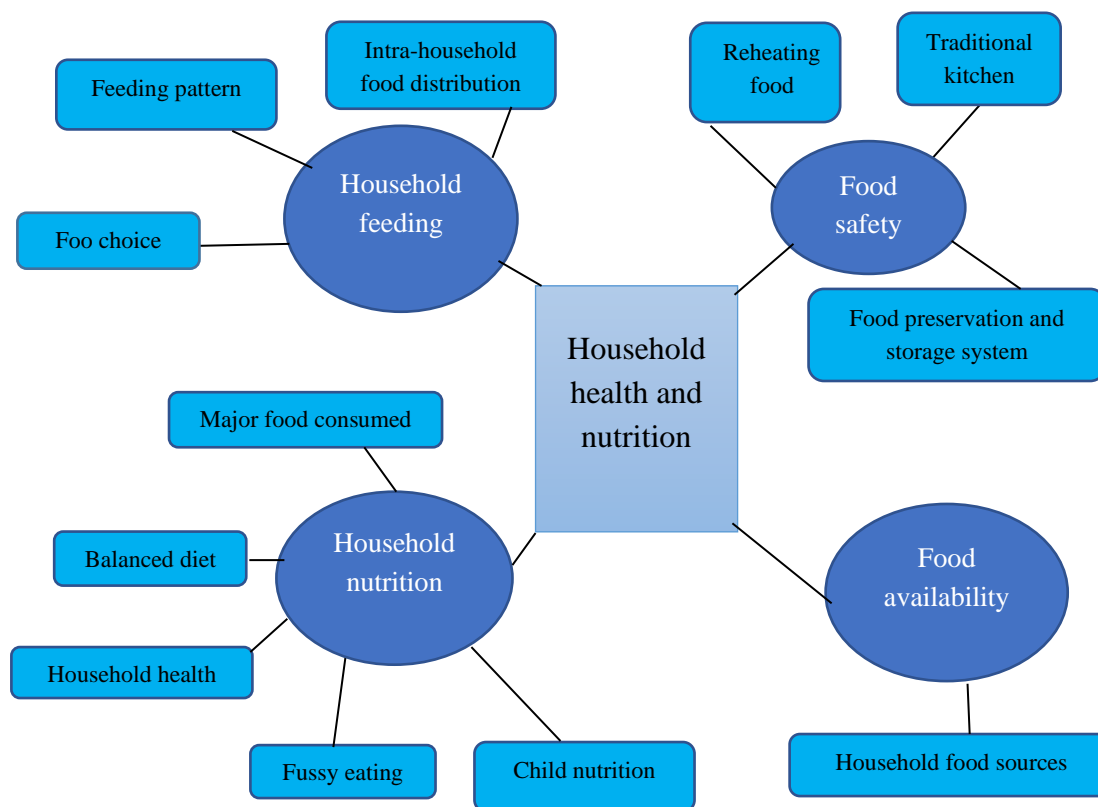


FIGURE 21: HOUSEHOLD FOOD AND NUTRITION THEMATIC NETWORK

### 5.3.1 Organising theme – Food safety

This organising theme relates to how participating households preserve and store cooked food for consumption, reheat food, and the implication of the traditional kitchen system. It explores the understanding of households and their basic practices toward food safety. Findings in this study revealed that households do not apply any form of **food preservation** method or process to cooked food kept for subsequent consumption. Foods were kept in the cooking pots or food flask at room temperature until the subsequent consumption; sometimes, foods were not warmed up before consumption, as revealed by more than half of the participants. A lack of food storage equipment, such as fridges and freezers, excused these practices. It was evident from the discussions that participants knew about the fridge/freezer for food storage. However, they were limited by funds to purchase food storage facilities.

Therefore, about 70% of households stored food at room temperature, and about 50% stored foods made from root and tubers (e.g., cassava meal) in food flasks for days until it is totally consumed. These foods were sometimes wrapped in plastic bags and placed in food flasks at room temperature. These practices raise questions about household food safety.

*“I store the food (fufu) in the food flask, and it can stay for 2days” (OB1).*

*“I will put the cassava meal inside the food flask to keep it hot for three days, so whoever is hungry will go get it from there, we usually do not warm it but if a person chooses, he/she can warm it. We warm the soup whenever we want to eat because we do not have a fridge. While other foods are kept in the pot inside the house and brought out to be reheated whenever we want to eat it” (EZ2).*

*“.... rice, soups, and stews, ayaraaya oka, and achicha in pots, etc and then keep them inside my room overnight then warm it the next day for consumption. We do not have fridge or freezer to store them. “After preparing the semolina and wrapping them in plastic bags, I put them in a small cooler and keep inside the room” (EZ1).*

**Reheating food** is another concept relating to the organising theme. It is a common practice among households. Households continuously reheated food on daily basis for as long as it remained and sometimes several times a day. Participants showed displeasure in consuming food heated several times for a loss of taste and aroma; they needed an alternative to keep their food fresh and tasty. The effect could be the loss of food nutrient and freshness.

*“I will warm it and eat it again. So, if I cook today in the afternoon, I will warm it in the night and still warm it the next morning. I will keep on warming it until it finishes” (NS1). “We keep warming the food until we finish it” (OP2). “I feel bad because the taste is affected, it becomes tasteless. When you constantly warm beans,*

*morning, and evening and then the next morning, you notice a queer smell as you are warming it” (NS2).*

Further investigation revealed that households operate the **traditional kitchen system**, meaning that the kitchen is built as a small room separate from the house compared to the conventional kitchen. It supported moving cooked food from the kitchen to the house or room. It was a common practice across the population; most households interviewed revealed that their kitchens were located outside the main house. Therefore, after cooking, the food is moved from the kitchen into the house for safety and preservative purposes. Storing food, especially cooked food, in the room could attract pests and rodents that can spread infections and diseases. Food stored in covered plates and pots and in food flasks at room temperature may lack adequate temperature for preservation and promotes the growth of harmful bacteria, thereby increasing the vulnerability of household members to food safety and hygiene hazards.

*“...and then keep the food inside my room overnight since my kitchen is located outside the house. We do not have fridge or freezer to store them” (EZ1).*

*“I keep the leftover food in my room, well covered in a pot because our kitchen is outside and there is no fridge to preserve it” (OP1; OP2).*

The discussions showed that participants understood the need to preserve food in the fridge/freezers. However, their poor practices towards safe food emanate from poor economic status and poor food safety knowledge.

### 5.3.2 Organising theme – household nutrition

This organising theme emerged from four basic themes - balanced diet, child nutrition, fussy eating, major food consumed, and household health. This organising theme encapsulates practice and knowledge of household nutrition relating to diet, child nutrition, health, and household food. Most households interviewed knew what constitutes a **balanced diet**, affirming their knowledge of good food for the body. However, they expressed their inability to consume a balanced diet because of a financial lack. Households ate available and affordable food to satisfy hunger and stay alive. Their prior considerations were food sufficiency and affordability rather than optimal nutrition.

*“Hmm... yes, though not really balanced because we may take carbohydrate today and tomorrow, we will still take it. To tell you the truth we may take carbohydrate for about three to four days before changing to protein or others” (NS1).*

*“No, we can't eat balanced food because we do not have money to make such food if there was money, we know the food that is good for us. But for now, we eat whatever is available to stay alive” (OP2).*

*“Is it not money? if there is money we buy from the market when we do not have money, we cannot eat any balanced diet” (OB2).*

*“No, we don't eat balanced diet...” (OB1).*

*“I do not consider whether it is balanced, delicious or nutritious, the only thing I put into consideration is if the food will be enough for us and if I can afford it” (OP1).*

Furthermore, most households do not regularly consume rich protein foods such as eggs and meat. Some families had lost memories of consuming eggs and meat in their households; the



struggle to feed did not give them the opportunity for food preference and a planned balanced meal. They attributed this to a lack of finances.

*“I don’t use meat; I don’t have money for meat” (OB1).*

*“Egg, heeee... Do not even mention it as I cannot remember the last time, we ate eggs in our family” (OP1).*

*“We do not even remember meat/egg as we are struggling to feed. We have not seen food to eat, and you are talking about egg and meat OP2”.*

*“... sometimes with meat sometimes without meat NS1”.*

As households struggle with food sufficiency, adequate nutrition to avoid child malnutrition is questionable. Children need the right and adequate nutrients for growth and healthy life. Some households ignored the children when hungry and waited for a set mealtime for the family meal.

*“I would like to give my kids food that children are supposed to eat, my son likes taking chocolate tea, but I have not been able to provide that since this year” (OP1).*

Also, they distribute occasional food items like meat and egg to household members when used in cooking. The food item is cut up in smaller quantities and served to the children; sometimes, adults enjoyed such food more than the children who need it most. Due to food insufficiency, the child’s daily nutritional requirement could be compromised. It indicates ignorance and lack of knowledge in child nutrition.

*“... everyone eats meat and chicken when it is used to cook nonetheless, it is usually divided into smaller pieces for the younger kids” (EZ2).*

*“.... but if the meat does not go round, I will divide a piece of meat into two for the kids while I and my husband take the remaining” (OP1).*

*“The children eat eggs sometimes, not often. On the days they will have egg, I divide a whole egg in to two for the two children while I and my husband eat whole eggs”*

*(EZI).*

Likewise, a participant believed that giving children meat leads them to gluttony and, if displayed in public, can cause embarrassment. Again, the child’s adequate nutrition is questionable.

*“I do not train my kids with meat, so, on the days I cook with meat, I will not give them. The meat is only consumed by my husband, myself, and my aunt. The reason is that I do not want my son to embarrass himself and the family when he goes to visit people or attend ceremonies. This is because, as he does not eat meat, he will not have to struggle for it when he goes out. It is not advisable to give kids meat at a tender age until the child is grown and matured. They have not tasted meat but only gets to eat fish or egg when available”* (EZI).

**Fussy eating** habits in children can be a big challenge for households struggling with food. When children are selective over food, it adds more strain to household finances because an alternative food would be needed for the child. From the data gathered, some children prefer expensive food over the local food, which the household can afford. Evidence also showed that such eating habits in children could affect the psychological state of their parents. Parents would have to worry about the child’s diet and go the extra mile financially and physically to provide food for the child. It can equally lead to poor nutrition in children.

*“One of my children does not really like eating the soup and its accompaniment since he was born, so I must wait for my husband to come back and bring money so that I can get noodles or beans for him for dinner”* (EZI).

*“My son does not eat many foods and it worries me as we barely have enough to eat*

*or can afford to cook different varieties of food for everyone in the household. The foods he likes eating are costly foods like rice, tea, and he does not like local foods that are somewhat accessible” (OP1).*

**Household health:** food inadequacy raises questions about the health of household members; their nutritional requirements may not be met. Few participants reported that household members’ health was not affected by their state of food insecurity.

*“Our food insecurity condition has not affected any one’s health EZ1”. “No, it has not happened, and I am grateful for that EZ2”.*

However, above half of the participants reported household members’ ill health due to a lack of essential foods.

*“Yes, my husband has ulcer, and it is due to lack of food because when we were living in the north and he was running a business, he was not suffering from it. Since this hardship started, he also started fasting and praying too to know if things will get better” (OP1).*

*“The lack of food is affecting my mother’s health as she is old” (OP2).*

*“What my husband is suffering from is low sugar” (EH1).*

Major **food consumed by households** revealed that starch-based foods were widely consumed within the region, often as an accompaniment to soups made from vegetables like okra, melon seed, and pumpkin leaves that are common during the rainy seasons. Typical household meals comprised of cassava, cornmeal, beans, pigeon pea, rice, yam, and pasta. Affordability and price formed the primary consideration in food purchases and explained the reason for the popularity of starchy food on most family menus. Other reasons include quick satisfaction derived from starchy food, and as peasant farmers, most households planted root

crops like cassava, yam, and cocoyam.

*“We were eating cassava meal (akpu) regularly, but it is now very expensive. So, we are currently eating cornmeal with either egusi soup or okro” (OP2).*

*“We eat Ayaraya azuzu (a local delicacy of pigeon pea and corn), rice, cassava, garri, beans, water yam, and yam. We cook the food that will satisfy us the most” (OB1).*

*“I planted cocoyam, water yam, cassava OB1”. “Cassava, potatoes then some maize” (NSI).*

### **5.3.3 Organising theme – Food availability**

Food availability describes the extent food is physically accessible to households. It describes the sources of household food, whether from the farm, market, or shops. Household food sources can characterise the variety and quality of food accessible to households. It explains the seasonality of household food sources. Participants confirmed the sources of their household food to include the market, shop, and farm, indicating a variety of sources and food availability.

*“So, we get some of our foodstuffs from the farm when they mature, and we also buy from the market. We do not sell the crops we plant; they are majorly for consumption as they are barely enough for us” (EH1).*

*“We also have a little farm we cultivate though the one we planted this season is yet to mature. Therefore, everything we eat is purchased from the market OP1”.*

*“I buy from stores nearby and the market” (EZ1).*

These responses suggest that during the harvest season, some households sourced most food

directly from their farms and purchased most food from the market and stores during planting season or when they ran out of farm produce. Various food sources indicated food availability and could be healthy when sourced directly from the farm. However, food purchased from the market and the shops may not always guarantee quality due to handling, storage, preservation, and sometimes logistics. Furthermore, households may spend more when sourcing food from stores and markets.

#### **5.3.4 Organising theme – Household feeding**

Under this organising theme are three basic themes: household feeding pattern, intra-household food distribution, and food choice. The theme explored household meal patterns indicating meal skipping, frequency, intrahousehold food distribution, and consumption patterns. It substantiated the nature of household feeding within the locality. More light was thrown on the acceptance of household feeding patterns by members.

**Household feeding pattern** feeding patterns reflected their financial status; most household could not access at least three meals a day due to lack of funds. Majority ate twice a day; eating breakfast and dinner was a common practice among them. They attributed it to insufficient food. Even so, there were households that ate only once or went hungry throughout the day. Some women explained that when they are away, their children would have to starve until they return.

*“.... if we have enough, we eat in the morning, afternoon, and night. If we don't have enough, we will eat in the morning, skip afternoon then eat at night. “Depending on the quantity of the food, that determines the way we feed NSI”.*

*“.... even now, we feed at least twice a day EZI”.*

*“We eat two times (morning and night) and sometimes once a day OPI”.*

*“Sometimes we eat once and some other time it might be twice and at times none depending” (OP2)*”.

*“When my children are hungry, they usually wait for me to come back before they can eat, they will have to starve and wait until my return then I will give them money to buy what will be cooked” (EZ2)*.

On examining household members’ (especially children’s) reactions to household feeding, participants revealed that their household members understood the situation and accepted it in good faith. Children were taught to understand the financial difficulties and the consequences.

*“They understand as they have seen the situation of things in the country but sometimes, they are angry and complain” (EZ2)*.

*“There are days we will not have anything to eat and will have to go to bed on empty stomach. The kids cry uncontrollably when they are hungry. My little child of five years is now used to it and sometimes, she will go and pluck or pick fruits from the trees in a nearby compound. Well, we understand and accept it” (OP2)*.

*“... but my son does not mind as he is very playful and can do that all day” (OP1)*.

**Intra-household food distribution** examines various ways households distribute food. Some households serve food to the children before the adults, with the understanding that children are more important, while some serve the adults first, especially the husbands or elderly parents, before the children prioritising food distribution by age and position. However, distributing food by gender among children is not a cultural practice in this region. Some husbands went to work without having breakfast and will eat only on their return from work; the reasons for this practice needed clarification. Discussion with the women equally

disclosed how much sacrifice they make for their children and husbands to eat. When food is not enough, some women forfeit their meals. They sometimes stay hungry or eat little portions when the food is insufficient.

*“I share food from the youngest to the eldest child because their feeding is more crucial especially, the younger ones. I put smaller quantity for the older children and more for the younger ones OBI”.* *“The kids get the biggest portion of food because they cannot endure hunger” (OP2).*

*“I give my husband the biggest portion followed by my eldest son, while my daughter takes the least amount” (OP1).*

*“I will manage the remaining portion if everyone has eaten to their fill, on the days the food will not go round, I will stay without food” (OP2).*

*If the remaining food would not be enough to go round for everyone, then I would not eat but share the food among the children” (OB1).* A similar response was echoed by NSI and OP1.

Food consumption among household members revealed a practice that depicts a close family relationship and encourages cohesiveness. During mealtime in some households, members ate from the same plate, partners ate together, and children ate together. It encourages bonding among household members and improves their understanding of household food management.

*“I usually eat with my partner when he is around while my children eat together from a tray. When my husband is not around, I eat with the children” (EZ2).*

*“Okay, when it’s time to eat we eat together in one plate I, my husband and my children no matter how small or big it is we manage it like a family” (NS1).*

**Food choice** affected household feeding. From the findings, households needed more resources to eat their choice of food. Their feeding revolved around the locally available and affordable food rather than their food choice.

*“The only meals I prepare now is the ones I can afford and not what I prefer to eat. As things are very expensive the commonly prepared food are maize based foods like Ayaraya oka, Otipiri because it is cooked without meat fish or crafish” (OP1).*

### **5.3.5 Summary - Household health and nutrition**

Household nutrition, feeding, food safety, and food availability are central to household health and nutrition. Despite participants’ knowledge of a balanced diet, sufficiency, and affordability other than nutrition was the focus of household feeding. It may lead to nutrition compromise, especially in children. Households had a variety of sources to access food; however, they were limited by economic resources. Safe food consumption was questionable due to food preservation practices in the area.

### **5.4 Global network - Household food insecurity experiences**

Understanding households’ struggle with food insecurity and its impact is important. Given the prevalence of household food insecurity in NLGA as informed by the quantitative study, this global theme explained households’ struggle with food insecurity and its effects. Two organising themes – physical and psychological effects and 8 basic themes made up the global theme, as presented in figure 22.



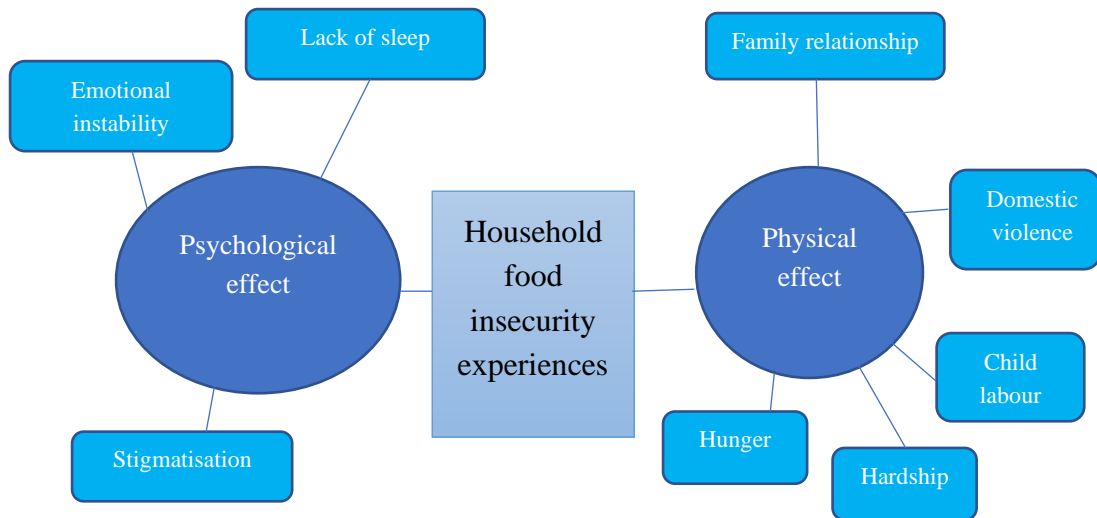


FIGURE 22: HOUSEHOLD FOOD INSECURITY EXPERIENCES THEMATIC NETWORK

#### 5.4.1 Organising theme - Physical effect of food insecurity

This theme reflects the physical effect of lack of food on household members. These are situations experienced by household members due to a lack of food. Five basic themes gave rise to this organising theme: hardship, child labour, domestic violence, hunger, and family relationship.

**Hardship** describes household struggles and difficulties in accessing food. It includes financial hardship, lack of land resources, hard labour, enduring hunger, and deprivation.

*“It takes a whole lot for us to survive as a family. We struggle a lot to survive, and my husband is trying to meet up with the family demand as he is the only one providing for us” (EZ1).*

Lack of financial resources incapacitates households from acquiring enough food of their choice. Households faced financial hardship due to lack of jobs, low pay for menial jobs, and inability to farm. Most households reported a lack of money as the primary reason for their hardship. Usually, when they receive wages, they head for the market to purchase what their

families eat. It is a vicious cycle that hardly allows savings or extra funds for other household needs. Similarly, the lack of land resources could contribute to hardship. Some households revealed they could not improve food security due to the lack of land. Since they didn't have family land and had no money to mortgage land for the farming season, they faced hardship. Also, for those that had land, it was too small to grow what the family needed throughout the year until the next farming season; as a result, they faced seasonal food insecurity. Again, some had land but could not cultivate it due to illness, disability, or lack of money to buy seedlings or pay labourers.

*“...also, the money I am being paid for the weeding is very small” (EH1).*

*“...and for my husband, he has not been paid and even if he was paid, his salary is very small” (OP1).*

Furthermore, **child labour** was another physical effect of food insecurity. Many households facing severe food insecurity and financial difficulties involved children in income-yielding activities, some of which were difficult. Such activities included producing brooms from palm fronds, breaking, and packing stones for sale, hawking food, and going out to beg. Parents inculcated the poverty mentality into their children, giving them reasons to endure hardship and participate in income-yielding activities for food; the children followed their parent's instructions obediently. In some cases, the children were sent out to borrow money on behalf of their parents. However, it could negatively affect the child's psychological, social, and physical development and wellbeing (Ajao et al., 2010; Fram et al., 2011)

*“The children are currently making brooms from palm fronds. Nurse told them to make brooms that they would sell to make money to buy food” (EH2).*

*“I carry my whole family to the stone site, and we will pack stone from morning to evening to enable us to see what we will eat for the day” (EZ2).*

*“What I do when some of the kids were still around is to console and plead with them to be patient that very soon, our sufferings will be over” (OP2).*

*“I was so worried that I had to send my five-year-old child to go borrow ₦1,000 from our uncle which he turned down due to lack” (OP2).*

Again, food security affected the wellbeing of women in their households. Assaults were a physical effect of food insecurity. Some participants reported **domestic violence** from their husbands due to the lack of food or resources. When they requested feeding money from their husbands and had none, there was a transfer of aggression or frustration to the women. It resulted in physical assault, verbal abuse, denial, and deprivation. Sometimes, threats to break up the marriage relationship.

*“Yes, he has hit me once (becomes emotional and lowered voice tone), but I decided to let it go because it could lead to divorce if my family got to know. My major consideration is my children” (EZ1).*

*“The lack of food has constantly caused quarrels between me and my husband. It has caused major issues that have even led to fights between us. If I ask him for money, he will shout and yell at me. For instance, the previous day was our village market day, I asked him for money to buy foodstuffs for the house. He yelled at me and asked me where I wanted him to get money from and whether something is wrong with me, that he does not have any money. I had to borrow from my sister for us to have food in the house” (OP1).*

The woman primarily carries the burden of household food insecurity. Besides contributing to the household food, she faces the psychological trauma of watching her children hungry, begging her for food in the face of emptiness. (This was witnessed during the interview, as the child cried unto her mother, asking her for food). It is double trauma for her to face domestic violence in addition. More so, some participants reported that their husbands do not respect them because they were not engaged in any income-generating activities. Due to the customs and traditions religiously observed by some men, they preferred their wives to be full-time housewives and care for the children. However, the negative impact was evident on the family's economic resources.

*“Though, he asked me not to work, ....he starts insulting me that am extravagant and does not labour to make any money leaving only him to suffer and provide for the family while all I do is spending and making demands. It would have been different if I was making income, I would be respected more” (E21).*

*“It happened when he wanted to be the sole provider of food in the house. I refused and insisted that I must work and farm, because feeding was becoming difficult, and my kids were suffering. Also, I hate to wait until he comes home before I could cook or eat. If my husband is not around or did not make money in a day, we will not eat E22”.*

Also, food insecurity threatened to family relationships in some households; others reported that it did not affect their relationships. Some women endured assault in their marriages due to their children; they were concerned about the effect of divorce on them. Some women were committed because of their religious beliefs about marriage.

*“There are times he has asked me to go back to my parent's house as he is tired of the marriage OPI”.*

*“No, our situation has never caused a strain in the relationship between me and my husband EH1, and was echoed by EH2”.*

*“We do not quarrel because we are wedded in the church and we are holding on to our vows EH1”.*

Besides, households experienced **hunger** as a physical effect due to the lack of food. Some households went to bed hungry because they had no food, and some others attempted to save food or money for the next day’s meal. Children were also reported to go to bed without a meal.

*“There are days we will not have anything to eat and will have to go to bed on empty stomach OP2”.* *“We also go to bed without eating and this affects our health especially my husband who is on drugs because of his ill health. For me, it weakens me and makes me unable to work the next day EH2”.*

*“It has happened uncountable times including the kids. For example, if we have late lunch, and there is little money for food, I do not bother making dinner rather I will preserve the money/food for the next day or I buy things like roasted corn which will serve as dinner then very early in the morning, I will make breakfast OP1”.*

#### **5.4.2 Organising theme - psychological effect**

This theme describes the impact of food insecurity beyond the physical effect. This theme explains the psychological impact of household food insecurity on household members. It was drawn from three basic themes: emotional instability, lack of sleep, and stigmatisation.

Many households reported emotional effects resulting from their food insecurity situations. The emotional effects were felt by all household members and included worry, bad feelings, sadness, crying, deep thinking, and frustration. Such a situation becomes worse when a lack

of food exists alongside other conditions such as disability or ill-health. Almost all the participants reported worrying and thinking about household food. This finding corresponds to the quantitative result in section 4.3.1. Crying due to lack of food was common across the interviews for the women and children.

*“Thinking about my condition and telling these stories makes me sad and brings tears to my eyes (she started sobbing) EHI”.*

*“I worry about food constantly but there is nothing I can do. It makes me sad and unhappy, and the situation also makes my husband go into deep thoughts constantly. I however always try to encourage him. Yes, my children do cry, but I cannot do anything because I don't have money. EZ1”.*

*“Ha...’ I think steadily and continuously, sometimes I think and get confused about what I will prepare for the family OPI”.*

Furthermore, participants reported the **loss of sleep** due to worry or deep thoughts about their food insecurity situation. For some of them, lack of sleep was caused by hunger, thoughts, and worry. The state of worry, thoughts, and lack of sleep can affect one's general health.

*“.... and even lose sleep because of my long deep thoughts on what the family will eat EZ2”.*

*“Sometimes I don't sleep while thinking of what we will eat OBI”.*

*“(With little exclamation), there are days I do not sleep till 3 am due to hunger EHI”.*

Additionally, some households were stigmatised through the deprivation of help as people were aware of their lack of food and poverty. Therefore, some came around to ask if they had eaten, and some people offer them food.

*“Sometimes when we go to buy foodstuffs on credit, some of the sellers will refuse to sell to us while the others will say they do not have what we want to buy because they know we do not have money and might find it difficult to pay debts oP2”.*

*“Fortunately, a relative came by, hearing we have not eaten, gave us Bambara nut flour, pepper, and plastic bags to make Bambara nut pudding (okpa) and that was what we had yesterday oP2”.*

#### **5.4.3 Summary - Household food insecurity experiences**

The physical and psychological effects are fundamental in conceptualising the household food insecurity experiences; both aspects affected every household member. They faced hardship, hunger, domestic violence, child labour, threatened relationships, worry, lack of sleep, and stigmatisation.

### **5.5 Causes and solutions to food insecurity**

This global theme has 2 organising themes – causes of food insecurity and the solutions to food insecurity with 16 basic themes. This global theme explored the participants’ opinions about their food insecurity situation. The central idea of this network is to understand participants’ knowledge of the causes of their food insecurity and their construed ideas of the solutions. Figure 23 presents the relationship between the global, organising, and basic themes.

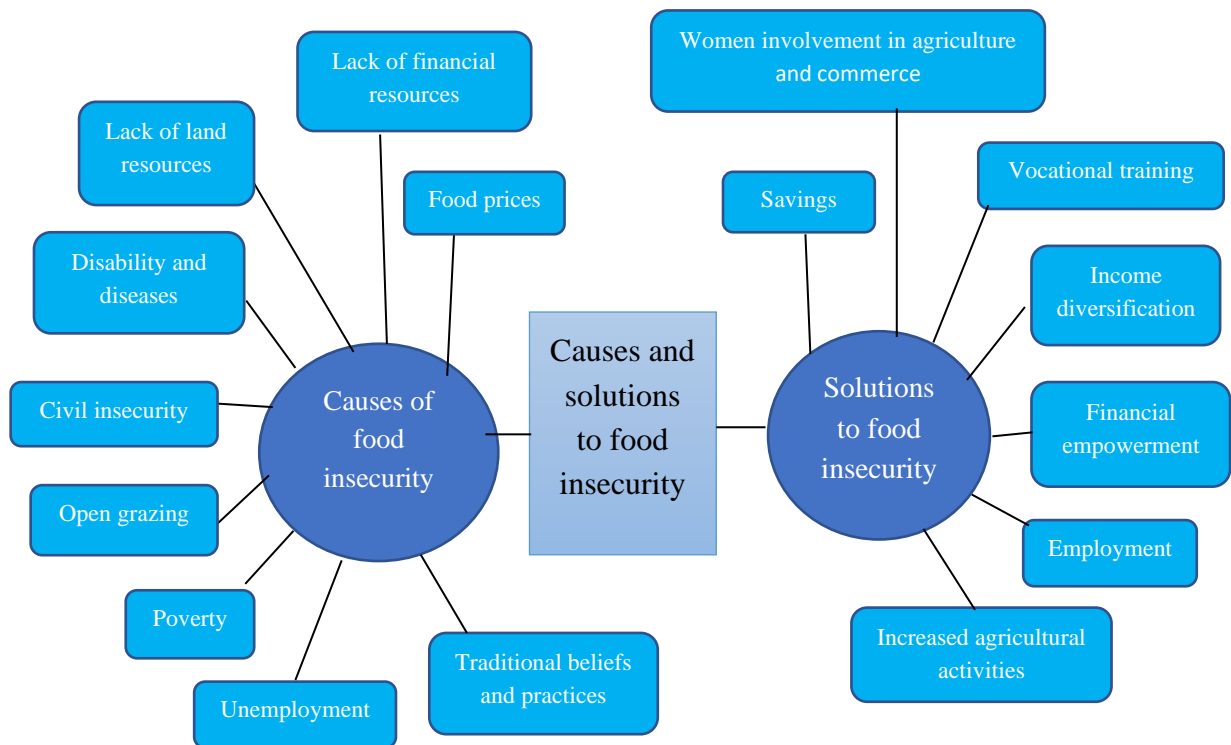


FIGURE 23: CAUSES AND SOLUTIONS TO FOOD INSECURITY THEMATIC NETWORK

### 5.5.1 Organising theme – causes of food insecurity

This organising theme, which stems from several basic themes includes civil insecurity, disability, sickness, food price, lack of financial resources, lack of land resources, open grazing, poverty, traditional belief and practices, and unemployment. These basic themes are rudimentary to the participants’ understanding of their household’s food insecurity.

**Civil insecurity** is a basic theme perceived as a cause of food insecurity. No one thrives amidst civil insecurity. In such times, the safety of life matters most, and people are likely to lose their sources of livelihood and become food insecure. Such situations are characterised by looting, destruction, panic, devastation, and losses. A participant narrated her household ordeal with civil insecurity. They abandoned their thriving business and were forced to return to the village for safety to face food insecurity; since then, they have struggled with food.



*“It was the riot that happened sometime in the north which leads to the killing and deaths of many. So, we came back empty-handed and unprepared leaving our business behind, we were running a grocery business” (OP1).*

Another basic theme is **disability, sickness, and diseases**. People who are physically disabled require help in most cases, especially where the government sets no opportunity or enabling environments for them to thrive. Therefore, household food security is affected, mainly if the head of the household or the primary income earner is disabled. Participants narrated how disability contributed to their inability to access food. The condition affects the disabled person and other household members, including children. Consequently, the children’s physical, social, and mental development and their future are not cared for as they support their parents to raise income for food.

*“I can’t cook because I am blind, they made me blind. It’s just this lack of sight, apart from that I am capable” (EH2).*

*“My two sons became blind when they were already married and not from birth. It is their children who go to beg with them so they can feed. They would have at least been very helpful in feeding” (EH2).*

*“My daughter is crippled from childhood, if not things could have been a little better for us, she would have been working” (OP2).*

Again, sickness and diseases affected household food security. It takes a healthy person to work and provide food for the household. A sick person is unlikely to assist with household food. The situation worsens when the head of the household or the primary income earner becomes ill. The burden of food provision is shifted on the woman if her husband takes ill or dies. The disturbing lack of food stresses an individual’s whole wellbeing and may result in

further health complications. Some participants described their inability to contribute to household food but became liabilities due to ill-health.

*“My husband’s health is also a contributing factor because he is unable to work leaving the whole burden to me.... things have become very difficult for us. I am now left with the sole responsibility of providing for the family with the little money I make from weeding. EHI”.*

*“So, my sickness coupled with my daughter’s conditions (crippled), made things really tough for us and it disturbs me a lot OR2”.*

Furthermore, participants’ experiences with rising **food prices** demonstrated the impact of food prices on household food insecurity. Households could hardly afford nutritious food of their choice due to increase in food prices. They went for cheaper foods that require fewer and inexpensive ingredients to have enough. Again, this could impact the children, denying them the right to adequate nutrition and food choice.

*“We all know how costly things are in the market in Nigeria, we go for the cheaper ones” (NS1).*

*“What my children like eating is rice and tea. To prepare rice, it will cost me up to ₦2,000 (\$4.86) and it will be consumed once. But ₦500-1,000 (\$1.22 - 2.43) will be enough to purchase foodstuffs for local delicacy and it will be more than enough for us. As things are very expensive, the commonly prepared foods in my household are maize, ayaraya oka, otipiri because it is cooked without meat, fish, or crayfish and I can afford it” (OR1).*

In addition, a rise in food prices directly effects the economic stability of households. It reduces the value of household income and alters the household budget, limiting access to

enough food. The situation is exacerbated by other household expenses. The participants confirmed food availability in the markets and local shops, but they had limited access. **Lack of finance** also meant that households who could not cultivate their farmlands by themselves could not afford to pay labourers to do the job.

*“Money is the major reason why we lack food” (EH1).* This response was resonated by EH2, EZ2, EZ1, NS1, NS2, OB2, OP1.

*“There is abundance of varieties of food items here in the local market and shops around our premises, but we lack funds to purchase them, that is the issue” (EZ1, EZ2).*

Furthermore, the **lack of land** contributed to household food insecurity. Households who have farmlands cultivated food for their members; they either paid labourers to cultivate, weed, and harvest the crops or worked on the farm with their household members. However, some households had no farmlands; some had farms but could not work on them and had no money to pay labourers. Consequently, they purchased all their foods from the market. Again, a participant (single unmarried parent) revealed that as a female child, she could not access the family land for cultivation, and that increased her struggle with household food.

*“We buy all our food. We do not have any farm where we cultivate any food crop because my husband’s people do not have lands” (EZ1).* *“hmm...If I had a land, I would clear it and plant, then God helping, it will grow well” (OB2).*

*“We also have a problem of insufficient land, there are people as they are staying in the village, they will cultivate most of the things they consume but it is not so for us as we do not have enough land” (OP1).*

*“... it’s because I am female, so my uncle cultivates the land. If I ask my uncle to allow me to cultivate on the land it would cause problems, so I decided to leave it for him” (NS2).*

While farming is the principal occupation of Nsukka locals, there is a significant hindrance to sustainable farming within the locality. **Open grazing** by Fulani herders, who migrated from the Northern region in search of greener pasture for their cattle limited farming activities and the extent to which locals enjoy the dividends from their farms. Participants reported the inhumane behaviours of the headers who graze their cattle on people’s farms. In some extreme cases, the farmers get killed while fighting to save their farms. As a result, farmers lost their crops, money, time, and effort; it resulted in some locals taking up menial jobs to earn a living. The situation further impoverished the people and deepened food insecurity.

*“... it’s just that Hausa (referring to Fulani Herders) have disrupted my farming activities. Herders have made farming difficult. Destroying crops such as cassava, cocoyam, or yam” (EH2).*

*“I am very good at planting cassava; however, herdsmen invaded our community and destroyed the crops I planted. Their cows destroyed all we cultivated, and I had to abandon my cassava farm and went into stone packing” (EZ2).*

More so, **poverty** was another basic theme perceived to cause food insecurity in the area. Poverty in this context can range from the lack of resources to the lack of financial help from relatives and other people. Households experiencing poverty had little or no opportunities to gain resources. Some households who looked up to their independent children for help were disappointed as the children equally faced hardship in their homes. The signs of poverty were evident in households in different forms, including – lack of money to pay for hospital bills,

lack of food, suspending children's education or withdrawing them from school, working more at retirement age, and lack of valuables.

*My children hardly help because they are not also finding it easy in their respective homes ... despite my age (66 years) I still bend to weed peoples' farm because of poverty in my family. EHI”.*

*“It's what they see that they eat. My children already know that their parents are not wealthy OBI”.*

*“I asked them to stay at home till we can raise their school fees OPI”.*

**Traditional beliefs and practices** were a basic theme because some participants believed the cause of food insecurity and poverty in the locality was ancestral curses and covenants on the unborn generations. Some revealed that their husbands observe the Igbo tradition that recognises the man as the sole breadwinner and regards the woman as a full-time housewife and childminder. A man who fails to provide solely for the need of his household is regarded as a failure before his peers.

*“... because of what the ancestors did. They were not united, things don't move the way they are supposed to, all your struggles and hustles come to nought. There is no progress. People who go to learn a trade as apprentices, come back without succeeding” (OBI).*

*My husband did not allow me to work rather he told me to stay and nurse our children while he caters for the family. I do nothing when there is no food in the house. I wait for my husband to get back and provide what we will eat” (EZ1).*

*“My husband digs well and initially told me not to work let him be the sole provider for the family, but things were getting more difficult” (EZ2).*

**Unemployment or loss of a job** was reported as a cause of food insecurity. Participants reported their food insecurity experiences due to their husband's loss of job or unemployment.

*I am currently unemployed, and my husband does not have a meaningful job, he just was recently employed as security personnel. He has been out of job for 3- years” (OP1).*

*“Not having anything to do is the major cause as we do not have any business or job; we do to earn money to buy any food of our choice” (OP2).*

*“My husband is a tipper driver, but they collected the tipper from him and since then things have become more difficult for us” (EZ1).*

### **5.5.2 Organising theme – solutions to food insecurity**

This organising theme has 7 basic themes: agricultural activities, employment, financial empowerment, income diversification, savings, vocational empowerment, women's involvement in agriculture, and commercial activities. In this section, the solutions to food insecurity are presented from the participants' perspective – what they think could help alleviate their struggles with food.

Findings revealed that a boost in households' **agricultural productivity** will largely support household food access. Households who purchased all their food items from the market faced more difficulties accessing food, while most households with farms reported seasonal food insecurity. Therefore, supporting and enhancing agriculture can help improve households' food access. It is also important to tackle seasonal food insecurity in keeping with the Sustainable Development Goal - to end hunger in all its forms.

*“Things are a bit better for us now because we have started harvesting some of the produce like tomatoes and that is how we have been able to get food. Unlike two or three months ago, haaa things were very hard for us. (Sighed) It was the period when we were still planting, so before we get food to eat, it will be a very big struggle” (EZ2).*

Likewise, **employment** was another basic theme from the discussions. There is no doubt that unemployment increases food insecurity and reduces opportunities for economic stability. A participant disclosed her desire to be employed by the government since she has a college certificate. She believes it will support her household’s economic stability.

*“.... or get employed by the government as I schooled at College of Education Eha-Amufu” (OP1).*

**Financial empowerment** was a common opinion among the participants, suggesting that financial support to start a business or buy a large quantity of food could improve family feeding and ease their struggles with food.

*“I hope to get money to start up a business” (OP1).* This response was resounded by EZ1, EZ2, EH1.

*“I would need some financial assistance to start a petty food stuff business to support my husband. This will make us to have enough income to purchase food that will be enough for our family” (EZ1).*

Furthermore, **Income diversification** as a basic theme means that households can have more than one source of income. Some participants believe it could help tackle the lack of food in their households.

*“I will find other things to be doing I will not rely on one thing. Knowing the situation of Nigeria, I will fix myself in one or two places to have an income” (NS1). This was echoed by EZ2*

**Vocational empowerment** emerged as a basic theme. It means that households could be empowered through skill acquisition to challenge the menace of household food insecurity. One of the disabled participants disclosed an interest in acquiring a skill to support her household.

*“I need support and skill empowerment from the government as I am disabled, and my mother is old. The empowerment from the government will help us to make money and stop borrowing from people OP2”.*

For a few of the participants, **financial savings** through groups helped lessen the effect of lack of food. Women come together to keep aside little money over a period. At the end of the period, the money is either shared out or invested, and the profit is distributed. Although, most of the participants were not part of this practice for lack of money.

*“We contribute little money. Once we bought properties for hire services. When the income from the hire services gets to a certain amount, we then share the money EH2”.*

*“I belong to a women’s meeting group where we contribute a token, and we ballot to know who goes with the money EZ2”.*

*“I don’t save because when I work, they pay me then I use the money to purchase items immediately NS2”*

**Women’s involvement in agricultural and commercial activities** was considered a solution to household food insecurity. For most women, it will form a second source of income to support their husbands and a lifesaver if their husband loses their jobs. However,



culture does not give females access to family lands, as explained under the basic theme “lack of land” in section 5.5.1. Although some women were involved in crop farming, they wish to improve their farms and commercialise their products.

*“I wish I can start trading different foodstuffs, I will realise bigger money from it which I will use to buy varieties of food for us to eat EHI”.*

*“My husband digs well and initially told me not to work, but things were getting more difficult. I insisted that I must farm to assist him, now he is happy because it is our farm produce that we are now eating EZ2”.*

### **5.5.3 Summary – causes and solutions to household food insecurity**

In summary, this section investigated participant’s opinions of the causes of their household food insecurity and the possible solutions. Findings revealed that rising food prices, lack of financial and land resources, disability, sickness and diseases, civil insecurity, open grazing by herders, poverty, unemployment, traditional beliefs, and practices were the causes of food insecurity. The solutions they believe include vocational training, employment, financial empowerment, increased agricultural productivity, income diversification, women’s involvement, and savings.

## **5.6 Household responses to food insecurity**

This global theme has 6 organising themes – food compromise, succour, reduced expenses, alternative provision, religious belief, and food recycling with 17 basic themes, as shown in figure 24. It described household coping strategies for food insecurity. Households may take actions internally to mitigate the severity of food insecurity They may consider sourcing solutions outside the home or involving a third party. Some of these strategies could severely affect all members, including the children.

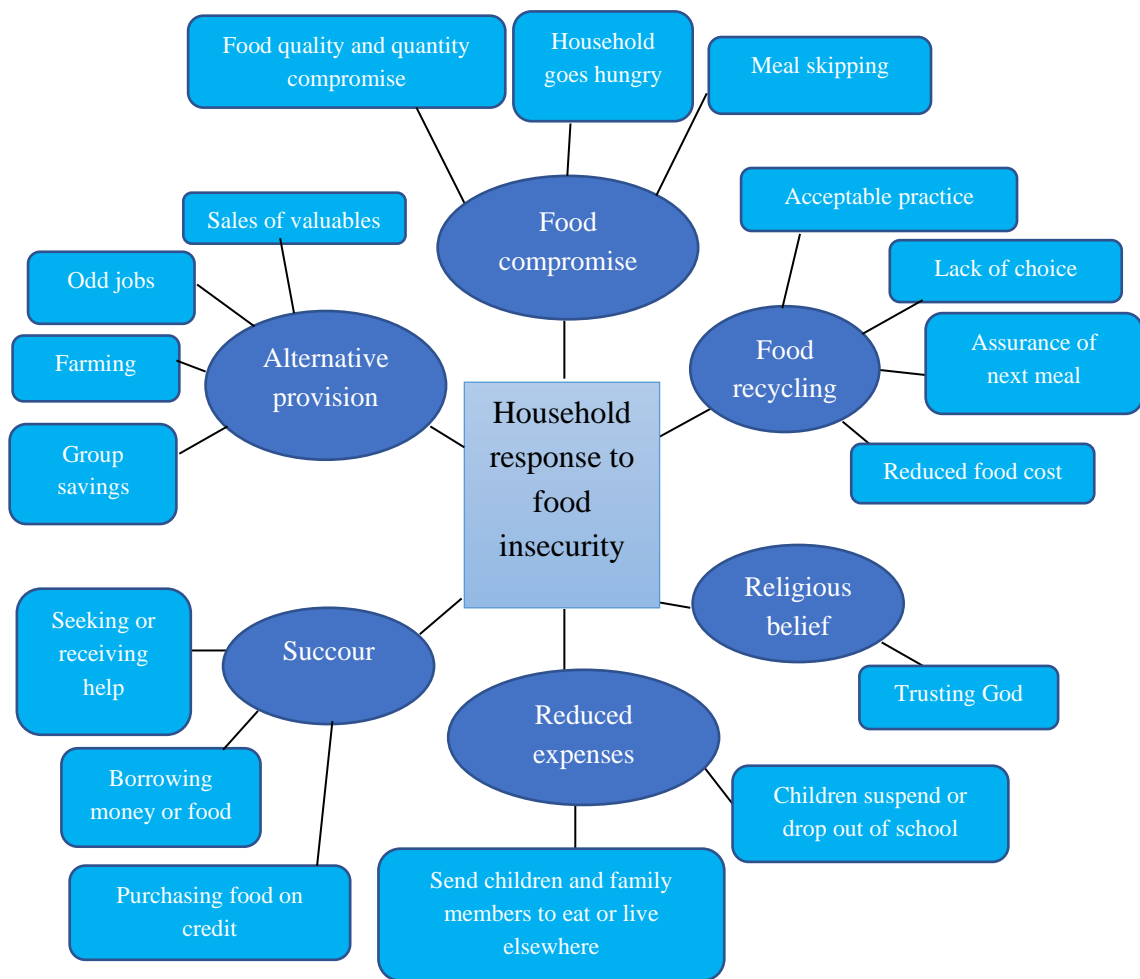


FIGURE 24: HOUSEHOLD RESPONSE TO FOOD INSECURITY

### 5.6.1 Organising theme – Food compromise

This theme has 3 basic themes – food quality and quantity compromise, household go hungry, and meal skipping. Food compromise indicates a drift from good quality and quantity of food. It becomes obvious when households cannot meet the food demands of their members. The first reaction is to consider alternative foods that are cheaper, affordable, and satisfying; food preference is not considered in such situations. It is the initial sign of food challenges. If the situation worsens, they will fail to access enough inexpensive food and subsequently reduce the quantity of food consumed, which could lead to the extreme situation of going hungry. Participants revealed how they cut down food quality and quantity to cope

with food challenges. Women disclosed how they managed little leftover food after they served to all household members. Findings also revealed that sometimes household members were unhappy when food was rationed or reduced.

*“We cook the food that will satisfy us the most” (OB1).*

*“We drank only pap (corn starch) this morning without any accompaniment like bread, moimoi, okpa as there was no money” (OP2).*

*“If my kids disturb me so much, I will give them just bread to manage as dinner, some other time it will be just ‘pap’ (corn starch)” (OP1).*

**Food portioning** is a technique in food quantity control. When there is enough food, households eat together from the same tray. However, food is rationed into individual plates to avoid cheating when food is not enough. Participants reported eating smaller portions of food and drinking water to get filled.

*“On days I prepared a smaller portion that will not be enough for the family, I will divide the food into portions so nobody will be cheated. However, we eat together on a tray when food is enough” (OP1).*

*“We manage it. For instance, in the morning if we were to eat three or four spoons, we eat two or one so it will remain the one we would ... eat and drink water. After all, Igbo’s say that the stomach does not tell what it ate (ndi Igbo si na afo anaghi ekwu ihe oriri), (chuckles)” (NS1), this was echoed by NS2.*

Continuous reduction in the quantity of food consumed leads to hunger, manifesting as meal skips, going to bed hungry, or going a whole day and night without food. Participants revealed how their households’ skipped meals or went to bed without food, including the children.

*“Yes, and there are days we will not have anything to eat and will have to go to bed on an empty stomach OP2, EH1”. “Other times when I have not paid the money I previously borrowed; we will go to bed without eating. I will just console them and assure them they will not die of hunger” (OP1).*

*“No, the children must wait till I make food later in the evening as we mostly skip lunch. Even though I had prepared soup, it is for dinner the boy would manage with hunger till later in the evening. ... but if there is nothing my husband could come up with, we will go to bed without eating.” (EZ1).*

**Meal skipping** was considered a coping strategy because skipping a meal reduces the number of times households source food for their members. For instance, they eat a late breakfast to skip lunch and have dinner, while some eat a late lunch to skip dinner. Either way, meal skipping compromises adequate food intake, but it is a food management and coping strategy for struggling household. For some women, meal skipping is a sacrifice to ensure other members have enough meals.

*“When there is little money for food, we will have a late lunch and will not have dinner, so the money is used for food the next day” (OP1).*

*“I will stay without food to ensure my husband and children eat” (OP1).*

### **5.6.2 Organising theme – Succour**

This organising theme has 3 basic themes: borrowing money or food, purchasing food on credit, and seeking or receiving help. The theme explained various forms of support sought or received by the households. Aside from the initial strategy of food compromise, this is the most common food coping strategy explored by Nsukka households. **The majority borrow food and money** from friends, relatives, and sellers willing to support them; they promise to

pay back as they make income. Inability to pay back as scheduled leads to borrowing and begging from more people. The resultant reality is a vicious circle that keeps households in perpetual poverty.

*“Yes, I borrow food and money from friends and relatives” (NS1). This experience was echoed by (OP2, NS2, EZ2, EZ1, OP1).*

*“I borrow money from a woman who sells foodstuff in my village (EH1)”.*

Similarly, most households **purchase food on credit** promising to pay it back gradually. Nearly all the participants confirmed purchasing food on credit from food sellers. Some of the sellers were sympathetic enough to permit gradual payment.

*“I buy some foodstuffs from her on credit, and I will gradually pay her back when I work. The foodstuff I usually buy on credit is rice, cornmeal, palm oil, spices. Sometimes the woman asks me not to pay her back. I will go to one of my customers and buy beans on credit. She told me I can always buy on credit and pay gradually” (EH1).*

*“Yes, I buy things on credit, but my mind does not...I don't like it” (NS2).*

*“In a situation where we are unable to pay back, it becomes difficult for us to go back to the person to borrow again. Furthermore, when we finally make some money from our sales, we will have to settle our bills taking us back to square one op2”.*

Some households approached other people or organisations (Church) to seek support with household food. Similarly, some people offered support to households known to struggle with food. Such support included food, clothes, shoes, and sometimes a child's school fee. From the information gathered, none of the participants have received any support or intervention

from the government or non-governmental organisations. However, the church has supported some participating households with food and other materials.

*“It is people that know my condition that give me some foodstuff, so we do not starve”*  
(EH1), echoed by (EH2, NS1, OB2).

*“I have not received any form of support from the government even though I am a member of the People’s Democratic Party (PDP) and I attend virtually all the functions organised in my locality EH1”.*

*“I have not received any form of help either from the government, church, or community”* (OP1), echoed by (OP2).

*“I however got support from my church at some point as they brought different items and shared with the women attending the church”* (EZ2), echoed by OP2, EZ1, EH1, OB2.

*“.....but the church support mostly during the Christmas season”* OP2.

### **5.6.3 Organising theme - Reduced expenses**

This theme has 2 basic themes, including suspending or withdrawing children from school and sending children to eat or live elsewhere. They reduced certain expenses to accommodate more food expenditures. Some households **suspended their children’s education** because they could not afford the fees and simultaneously feed the household; others **withdrew their children from school**. Without education and at a young age, children were sent to learn a trade or skill through the apprenticeship system with a master who was an expert in the trade or skill. After several years as agreed, usually six to seven years, the master is expected to start a similar business or trade for them. It was mainly for male children.

*“My child has stopped going to school before due to lack of funds, as we used the money meant for his fees to buy food, so he stayed at home that period” (EZ1), echoed by OB1, OP1.*

*“I sent my child to become an apprentice and get settled to start his own business” (EZ2; OP2).*

Also, some households **send their children or other family members to eat at relatives’ houses or to live with relations** or other people to meet their food demands. This strategy appears harsh as it mainly affects children and youth who are denied of parents’ love and upbringing and opportunities to thrive in their desired careers. However, most families found it an easy way out of their problems.

*“I sent some of my children to live with other people. One of my children that I sent out to live with someone else is back now OB1”.*

*“I send my kids to my parent’s house to eat at times when we do not have food to eat OP1”.*

*“It is because of our condition that we decided to send my grandchildren to go live with my relation as we cannot afford to cater for them and still pay for their school fees. We feel sad especially the kids as they cry uncontrollably when they are hungry. So, I am a bit relieved that they have gone to stay with my uncle OP2”.*

#### **5.6.4 Organising theme – Alternative provision**

This theme has 4 basic themes: odd jobs, sales of valuables, farming, and group savings. The alternative provision refers to other ways or actions households take to provide food for their members in times of scarcity.

Women reported doing **odd jobs** to provide food for their households. These jobs are regarded as low occupations and require hard labour. They include weeding people's farms, breaking and packing stones, de-husking melon seed for people, and processing oil palm fruit for owners. Usually, the labourers are paid meagre wages at the end of a day's job. Alternatively, they could agree to share the product with the owner after the job is done, for instance, de-husking melon or processing palm oil. However, some participants were owed their wages at the end of the day. The effect can be enormous, with physical and psychological implications.

*"To survive, I weed peoples farm and the money realised is what we use to feed" EHI,*

*EZ2.*

*"I process oil from palm fruit for people, then the owner gives me part of the oil, I break bush mango pods, and share the product with the owner, weeding the farm, de-husking melon, making broom, rearing animals, getting those who cut palm fruit and picking the palm fruit from the palm head/ bunch and then packing it" OB2.*

*"However, for my husband stone packing is his major work" EZ1.*

*"A times after work they don't pay me; I must go borrowing and pay them back when am paid. It is so difficult for me" NS2.*

**Subsistence farming** was a common practice used to support household food. Most households had farms where they cultivated crops like cassava, maize, yam, and cocoyam. However, they reported insufficient land or finance to cultivate enough food for their households. For some households, farming was their only occupation.

*"I got a small portion of land where I cultivate different crops" EZ2, echoed by EHI, NS1,*

*OB1, and OB2.*



*“We planted cassava, maize, and cocoyam, they are all for consumption and not for sale as we do not cultivate so much” (OP1; OP2).*

Furthermore, households **sold valuables** to ensure food for their members. Although only a few of the participating households used this strategy to improve their food situation, some reported a lack of valuables to sell.

*“When our situation became critical; we had to sell the tank we use to store water for ₦6,000 (14.58 dollars)” (OP2).*

*“Yes, some time ago when there was nothing to eat, I sold my sandals to a friend to feed my child” (NS2).*

In addition, some women grouped themselves within the community to pull money together, which they shared at the end of a period like Christmas or took turns to have the contribution. These women testified to the great support they got through this forum. They could buy more food when the money was shared, or when it was their turn to have the contribution. However, more women expressed their inability to join in such savings due to financial constraints.

*“Yes, I belong to an “asusu” group where we contribute a little money every week and take turns to take the contribution” (EZ2), echoed by EH2.*

*“I don’t belong to any association that does contribution because I don’t have money” (OB1), similar response was given by EZ1, NS1, NS2, OP1, OP2, OB2, EH1.*

### **5.6.5 Organising theme – food recycling**

All participating households confirmed reusing leftover food. This organising theme explained further the reasons and how households reuse food. The organising theme includes 4 basic themes - reduced food cost, assurance of next meal, lack of choice, and acceptable

practice. All the participants reported purposely cooking food in excess sometimes to have leftover foods that were reused. The leftover foods were mainly for consumption; they could be warmed over three days (six times) and most times loses taste.

One of the reasons for food recycling was to **reduce food costs**. They found cooking a large quantity of food eaten over time cheaper than purchasing fresh food items to prepare each meal. When households have leftover food, it is consumed for another meal and curtails their expenditure on food over days. However, it implies that households will eat the same type of meal repeatedly over a period; food choice, food safety, and nutrition were not considered.

*“I purposely make food to have leftovers so it can be consumed the next day. If I do not do so, I will have to spend on breakfast the next day which is usually difficult as the foodstuff is expensive. For instance, the rice I cooked for dinner last night, I intentionally made extra so there will be leftover which was eaten this morning; it is cheaper for me that way OP1”.*

It was also found that leftover foods **assured the next meal**. For instance, most households cook a large quantity of food for dinner, and the leftover is kept for breakfast; then, they worry less about breakfast for their members. This practice provides short term security and relief over food problems and stress.

*“I keep leftover food to be sure of the next meal at that time” (OP2).*

However, it may not solve the problem of food security, sustainability, food safety, nutrition, and preference.

Also, households recycle foods for **lack of choice**. Some participants saw it as a good option in hard times when they had no luxury of choice.

*“It is good for us as we have no choice; we can even eat a meal for three days” (OP1).*

Furthermore, food re-usage was an **acceptable and helpful practice** among the locals.

*“We are happy to see what to eat, reused food is acceptable” (EHI).* This opinion was echoed by most of the participants.

#### **5.6.6 Organising theme – Religious belief**

This organising theme had 1 basic theme – **trusting God**. Religious belief as a response to food insecurity means that, despite the food challenges, some households believed in God and trusted Him to see them through their hardship. They believed that since God created them, He would provide their needs.

*“When I look at the situation. I decide to trust in God’s providence” (NS1).*

*“Yes, we get worried however, we pray to God and rely on Him hoping that things will get better for us in the future” (OP2).*

#### **5.6.7 Summary - Household response to food insecurity**

In summary, from the households’ responses to food insecurity, it was gathered that food compromise, food reuse, alternative provision, succour, reduced expenses, and religious belief were common ways households responded to it.

### **5.7 COVID-19 lockdown**

COVID-19 lockdown is a global network (figure 25) with 3 organising themes – internal impact, external impact, and post-lockdown with 7 basic themes. This research took place after the COVID-19 lockdown was lifted; it was necessary to investigate the effect of the lockdown on household food and their experiences. The lockdown came with hard times and many difficulties, particularly for households already struggling with food. The interview revealed that households were affected internally, externally, and after the lockdown.

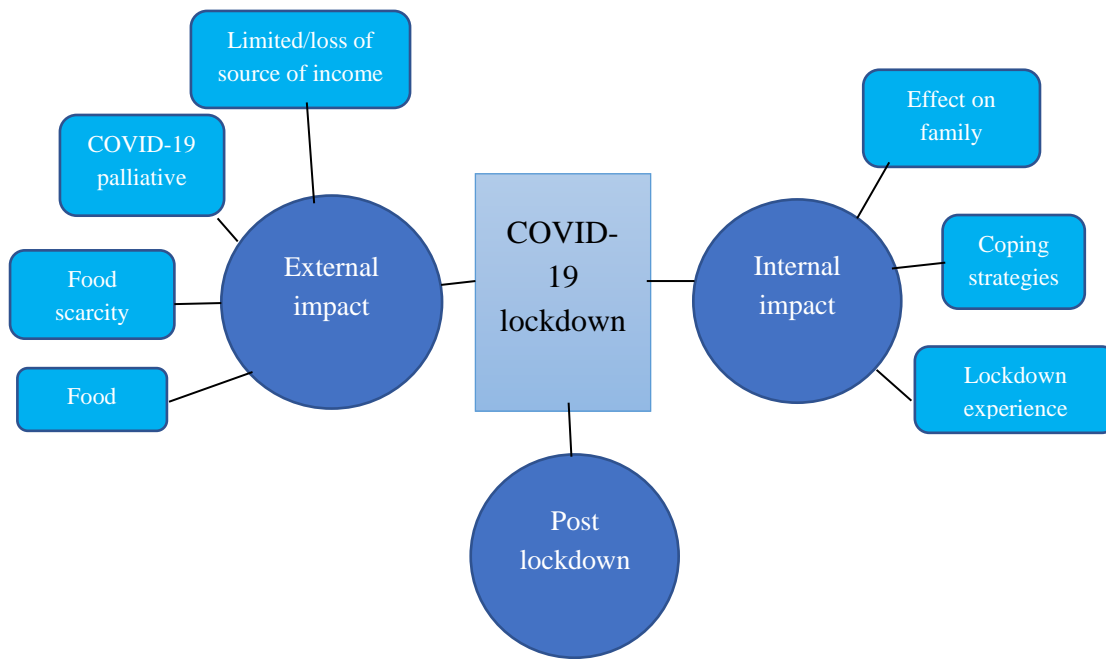


FIGURE 25: COVID-19 LOCKDOWN THEMATIC NETWORK

### 5.7.1 Organising theme - Internal impact of COVID-19 lockdown

This organising theme has 3 basic themes that included lockdown experiences, coping strategies, and the effect on family feeding. The internal impact of the COVID-19 lockdown explains the household's internal struggles during the lockdown.

Participants described their household's **experiences during the COVID-19 lockdown** with some adjectives like “very tough,” “hard,” “bad,” “intense,” and “worrisome.” Evidence from the data showed that households faced more difficult times than usual during the lockdown. It was difficult for them because most people were indoors and were not making income. Some people could not continue in their jobs due to restricted movements. However, because of hardship during this period, some people violated the lockdown rules and they had to look for work within their community to raise some income.

*“Yes o, if I did not come out during the lockdown period, how would I have coped” (OB2).*

Over half of the participants expressed struggles and difficulties, especially with food during the lockdown. However, about two households had a few things that provided support. One household had her farm produce remaining, and another received money from her group's contribution, which they managed during the lockdown. People were worried due to the uncertainty of how long the lockdown could last.

*"No one knew how long the lockdown was going to last and when it would be over" (NS1).*

*"During the lockdown due to COVID-19, we had to go indoors. We didn't have food, some people helped me out with food, the Pastor and his wife helped me with food" (OB1).*

*We were not eating enough, the most important for me was my grandchild's feeding. I moved out to fend for us" (OB2).*

*It affected us so badly, the hunger was intense, and it felt like we were going to die (mama shouted)" (OP2).*

*"(with high tone) 'well... well', it was indeed a very difficult time for us" (EZ1).*

Nevertheless, households resorted to **coping strategies** such as begging, doing menial jobs, and using up family savings to manage the effect of the COVID-19 lockdown. Households adopted coping strategies similar to their regular strategies to cope with food insecurity. Therefore, by implication, households already faced difficult times before the emergence of COVID-19, and households had limited opportunities to overcome their food insecurity. So, there were no new strategies used during the lockdown. The lockdown worsened their food situation and limited their prospect of managing food insecurity. Some of their strategies included a further reduction in the number of meals eaten, begging, odd jobs, and loan, involving every household member in income yielding-activities.

*"As lockdown progressed from a week to two weeks then a month...I went to a friend and*

*explained everything to her. I told her that I don't know what to do, pleaded with her not to allow us (me and my family) to die of hunger and she lent me some things on credit and allowed me to pay back whenever I got the money" (NS1).*

*"The COVID period was worse for us due to movement restriction as I could not sell the things I harvested, so I had to abandon them and delve into stone packing to survive" (EZ2).*

*It was the little money my husband was saving in the bank pre-COVID that helped us survive" (EZ1).*

*"My kids (children in secondary school) were also doing some menial jobs in building constructions sites, carrying concrete blocks to make money for our feeding".*

*"... so, we went to people that still had some crops on their farm and pleaded with them to allow us to harvest a portion so we can have food to eat" (OP2).*

Furthermore, the effect of the lockdown on **household feeding** was another basic theme. Households reported a reduction in household feeding during the lockdown period. Most households reduced the quantity and quality of their meals, and sometimes they slept without food to cope with the situation. So, household nutrition requirement during such a period is questionable since households ate cheaper, less quality and quantity of food.

*"During normal times, even now, we feed at least twice a day but with the emergence of COVID, we fed only once which we are ever grateful to God" (EZ1).*

*"Yes, yes, yes, during the COVID-19 lockdown period when we were eating once a day" and a few times twice (NS1).*

*At that period, we sleep sometimes without food. (with high tone) 'well... well', it was indeed a very difficult time for us" (EZ1).*

*We reduced the number of times we ate from thrice to twice and sometimes even once including the children. Some other time, we will drink fried cassava starch (garri) and have it as dinner. What I did was to cook mostly okra soup as it is cheaper than other types of soup and I prepare it without meat or fish” (OP1).*

### **5.7.2 Organising theme – the external impact of the COVID-19 lockdown**

Four basic themes were included in this organising theme: food prices, food scarcity, limited/loss of sources of income, and COVID-19 palliative. External impact in this context refers to factors outside the household that affected their food security during the lockdown period.

During the lockdown, major roads were barricaded, and police checkpoints were created to check movements. Generally, food availability may drop at such times. Food became scarce, especially food items from other parts of the country. It means that households could not access varieties of foods. Also, many households suspended their farm work and did work that paid quicker.

Similarly, **food prices** increased drastically due to a shortage in supply and restriction of movement. Limited agricultural activities, transport services, the road barricade, and checkpoints on major roads made the movement of food items difficult and thereby inflating food prices.

*“It affected us badly as it restricted a lot of things even when I go to the market to buy stuff, the price keeps changing on daily basis and sometimes some foodstuff becomes scarce and unavailable for purchase” (OP1).*

The increase in food prices was reaffirmed by other participants, who confirmed the situation during the lockdown was unpleasant.

Again, participants reported the **limited/loss of sources of income** as an impact of the lockdown on their household food. Due to restricted movement, some people could not go far searching for jobs. It limited their sources of income. Some could not continue with their jobs like stone packing and selling because buyers could not gain access. A woman narrated how her husband could not continue with the stone packing that was his main job but resorted to other menial jobs to feed his family.

*“My husband resorted to doing odd jobs (working on people’s farm) for us to feed and survive as everywhere was blocked. This is because after packing stones and there is no tipper to evacuate them, he will not make any money for the day, so he left that job entirely and started doing odd jobs to cater for the family” (EZ1).*

*“There was lockdown, we didn’t go to the market, and there were no paid job to do” (NS2).*

Furthermore, the **COVID-19 palliative** distributed by the Nigerian government was meant to alleviate the impact of the COVID-19 lockdown on household feeding. However, about seven of the investigated households did not receive the COVID-19 palliative from the government, and the three households that received it expected more and better support from the government. During the lockdown, a few participants got support from the church, friends, and relatives.

*“No, we did not receive any form of palliative from the government” (EZ1).*

This point was accentuated by other participants (EZ2, NS1, NS2, OPI, OBI, and OB2)

*“My family received four packets of noodles and rice. The government should give the citizens more because what they shared was not enough and did not go around” (EH1).*

*We didn’t receive anything from the government, not at all. We got help from my*



*friends and relatives” (NS1).*

*No, I didn't get palliative from the government, No one except the vicar gave me palliative” (OB2).*

Participants aired their views about their expectations from the government in distributing the COVID-19 palliative. Most participants believed the palliative distribution was partial and untransparent, with underlying corrupt practices.

*“The sharing pattern/format was unjust and very unfair as they were partial. The government could mean to give it to the needy but the community heads of Eziani will give only a few people who are their relations and keep the rest for themselves. For the palliative to reach those that truly need it, the palliative should be sheared through the king and not the village politicians” (EZ1).*

*“They should devise better means of sharing the palliatives as it hurts to hear and see others getting bags of rice while we got none. People that got were mostly members of a political party” (OP1).* This opinion was echoed by other participants *EH1, NS1, EZ2, and EH2.*

Some participants were unhappy and questioned the basis and justification for determining who gets the palliative. From their responses, likely widows and elderly people were most targeted. However, they believe every household felt the impact of the COVID-19 lockdown, and everyone should receive the palliative.

*“Though later it turned out to be that those whose names were on the list are the elderly men and women in our village, were the only ones they considered eligible for the items. So, I asked, if the rest of us are not human beings and suffering from the same Covid-19 lockdown. Why should they discriminate?” (NS1).*

*“Some Widows got palliative, but those of us whose husbands are still alive didn’t get any palliative” (OB1).*

### **5.7.3 Organising theme – Post COVID-19 lockdown**

There were mixed feelings in the responses to the household situation during the post-lockdown period. People had mixed feelings for various reasons. During the lockdown period, the anxiety and fear of contracting the virus and lacking food made life more difficult for households. Yet, food prices inflated, and some foods became scarce; movement restrictions worsened the situation. These dilemmas characterised the COVID-19 lockdown and made some participants believe life was worse during the lockdown period. However, during the post-lockdown period, food prices remained high. Food prices were expected to normalise after the lockdown instead, the reverse was the case making life more difficult for the already struggling households. Therefore, some participants agreed life became worse for their households after the COVID-19 lockdown. Nevertheless, some participants confirmed that lifting restrictions on movement gave them some relief. It opened again the opportunity to look for daily jobs to raise income. Notably, most parents were daily income earners who purchased food immediately after receiving their wages. Also, since children could go back to school, it reduced the time they cried to their parents for food.

*“It’s worse now. Food prices are high, there is no food. It is not getting better. You cannot use a thousand naira to buy food for your family. I have about 7 children around with me now and feeding is difficult” (OB1).*

*“Hmm... (Thoughtful) since this COVID it is worse because food prices increased and there was no money. Prices of food have doubled, and we lack money to buy them” (OB2).*

*“It is a bit better now because movement restrictions have been lifted and crops planted are now being harvested gradually. Also, the kids have started school again, and the stress of constant demands and hunger cries that came with their stay at home during the COVID-19 lockdown period has reduced” (OP1).*

*“Things are a bit better now because no one is scared or worried about getting sick again. The only thing we are worried about currently is hunger unlike the COVID-19 lockdown period when we were worried about both contracting the virus and hunger” (OP2).*

#### **5.7.4 Summary – COVID-19 lockdown thematic network**

The COVID-19 lockdown had external impacts, internal impacts, and post lockdown experiences. It came with uncertainty, hardship, hunger, loss of sources of income, rise in food prices, and food scarcity. The impact on household food resulted in the use of coping strategies similar to their usual food insecurity coping strategies. The COVID-19 post lockdown period came with mixed feelings because although the lockdown was lifted, nothing changed with food prices and the households’ economic situation. The Federal Government responded through the COVID-19 palliatives, but its administration and distribution were dissatisfactory and disappointing to the people. It is difficult to establish if these impacts are transient or long-lasting since this data was collected approximately fifteen months after the government initiated the lockdown.

#### **5.8 Summary of chapter five - qualitative findings**

This chapter presented the result of the semi-structured interview with 10 women from Nsukka LGA. Through the thematic network analysis, 5 global networks emerged from the organising themes. These include household health and nutrition, household’s food insecurity

experiences, causes and solutions to household food experience, household response to food insecurity, and COVID-19 lockdown. Seventeen organising themes emerged from 58 basic themes that were explored in this chapter.

# **CHAPTER SIX**

## **DISCUSSION AND IMPLICATIONS**

### **6.1 Introduction**

This chapter presents a discussion and implications of the quantitative and qualitative research results divided into sub-sections that harmonise both types of research. To this end, the chapter explores the research findings relevant to the objectives. It adopts the Stetler and Marram (1994) model updated by Stetler (2001) towards developing a draft roadmap for implementing the research findings.

The quantitative survey took place in 2019. It explored the level of household food security and factors challenging it shedding light on households' response to food insecurity conditions. Dietary diversity and the type of food consumed were also studied. Three hundred and ninety households from NLGA represented by household women were surveyed using self-administered questionnaire that included HFIAS and HDDS, as discussed in chapter three. Demographic information about the participating households was also collected, including the husband's education, work status, income, and designation of the primary decision maker (head of household). The qualitative study engaged ten women who represented their households, from the five most food insecure communities using semi-structured interviews based on the findings of the quantitative study. The women's meeting group executives purposely selected the interview participants from households struggling with food insecurity, to understand further their conditions and coping strategies. The research novelty lies in the findings, the geographical area of study, and the method applied to study the population. The research objectives are re-stated in section 6.2 to aid linkage

with the research implications. Subsequent sections present the discussions and implications of the research findings.

## **6.2 Research aim and objectives**

The aim of this study was to investigate household food security level and dietary diversity in Southeast Nigeria and explore household food insecurity experiences and responses. It produces evidence that was used to develop a roadmap toward improving food security in NLGA. The research objectives were:

- i. To measure the level of food security in NLGA using an identified instrument
- ii. To examine the factors challenging household food security
- iii. To explore household dietary diversity.
- iv. To examine the experiences of households on food insecurity
- v. To explore household coping strategies during food and financial scarcity.
- vi. To provide a draft road map toward achieving household food security.

## **6.3 Demographic characteristics of respondents**

The demographic characteristics described the research population on the gender of the household head, women's age, marital status, income, educational attainment, household size, and occupation. The demographic information revealed that approximately 92% of the research participants were within their most productive years or economically active age (20–50), which could boost household food security. It is expected of this age group to achieve a high level of productivity and diverse knowledge in making ends meet for their household

food. The productive age could also mean more remarkable experience, exposure, and access, enabling a household to improve food security (Agada & Igbokwe, 2014). They are more likely to meaningfully contribute to agriculture and non-agricultural activities that improve rural household food security. Approximately 53% of households had a family size of 2-4; expectedly, a smaller household size should support household food security. Culturally, a large household could be an asset as it provides labour for larger productivity regarding household farming activity (Oyetunde-Usman & Olagunju, 2019). The husband is the head of the household in over 70% of the investigated households. Culturally and socially, male-headed households are expected to be more food secure than female-headed households. Male-headed households may have greater income potential as the man generates the primary income (Nour & Abdalla, 2021a; Oyetunde-Usman & Olagunju, 2019). Males spearhead income activities of their households, with the females supporting them to the best of their ability. In contrast, in a female-headed household, the woman bears the burden of food alone. More so, Irohibe and Agwu (2014) noted that culturally, males, through paternal inheritance, have access to family lands more than females, giving male-headed households an edge over those headed by females, especially in farming households.

Nearly half of the participants had no education or had primary education; this level of education may not significantly impact household food security. Obayelu (2012) discovered that an increased education level has a probability of improving food security. Bbaale (2014) found that, apart from socioeconomic factors, maternal education beyond the secondary level positively influences the child's nutrition, on the argument that it positions the women well for high-paid jobs and therefore supports household feeding. It also avails them of the opportunity to gain information about nutritional care. Similarly, Bahiru et al. (2023) observed the importance of education in gaining access to agricultural information for a rural farm community. Household heads with secondary education may easily access the media,

improved technologies, and new skills. They found a significant relationship between the educational level of the household head and food security, meaning that households with uneducated household heads were more food insecure. Also, as highlighted in the literature review, Kuwornu, Suleyman, & Amegashie (2013) found that education positions a person for gainful employment and helpful information to attain food security. In this research, a significant positive impact on food security is expected, with slightly above half of the population attaining above primary education. However, this impact was rarely felt as most households were within the food insecurity domain. There could be other factors inhibiting the effect of education on food security within this population; this requires further investigation.

Furthermore, most households were predominantly farmers, amidst other occupations, with almost an equal number of males and females (40.5/40.3 respectively) involved in farming on a subsistence scale, with sometimes a little or no surplus to sell after the harvest season. Okonkwo et al., (2012) have observed that the Southeast region is facing the challenge of cultivating enough food for its populace. Thus, it imports most of its food from the North and Central regions, including meat, a significant protein source. A resultant food deficit is facing the region in producing many crops. The dominance of the agricultural sector by small-scale household subsistent farmers could threaten the sector's development and impact individual, household, and regional food security. Although households were involved in farming and other paid jobs, they were food insecure – the level and category of jobs they did could be a factor. A low household monthly income of ₦18,000 (£46) was recorded for approximately 51% and 50% of the women and their husbands, respectively, despite most households having about 2-3 income sources. Small-scale farming, a low-level job, or low paid one may not lift a household out of food insecurity. There could be other factors that inhibit food security in the area that may require further investigation.



## 6.4 The prevalence of household food security

One of this research's key and novel findings is the level of household food security in NLGA. The household food security level was categorised into food secure, mildly food insecure, moderately food insecure, and severely food insecure (Coates et al., 2007). Findings revealed that most households were food insecure (82.6%) to varying degrees (13.3% mildly, 9% moderately, and 60.3% severely food insecure); 17.4% were food secure. This finding corresponds with some outcomes of household food security research in rural areas of Nigeria and Sudan (Arene & Anyaeji, 2010; Ene-Obong et al., 2017; Nour & Abdalla, 2021b; Obayelu, 2012; Olawuyi, 2019; Olayinka et al., 2016; Omotesho et al., 2006; Tsegaye et al., 2018) (Sassi, 2021). However, it contradicts some findings in similar settings (Irohibe & Agwu, 2014). In investigating a rural community within NLGA, Nzeagwu & Alike (2016) reported households' food insecurity of 93% at varying degrees. Also, Arene and Anyaeji (2010) found a high level of food insecurity (60%) within Nsukka Metropolis. Similar situations were reported in some parts of Africa. Knueppel et al (2010) reported household food insecurity in rural Tanzania at 79.3%. Crush et al. (2012) reported a significant level of food insecurity in South Africa, Zimbabwe, and Swaziland, and 70% of household food insecurity was reported in Ghana (Tuholske et al., 2018). Globally, a similar result has been found, such as in North Carolina; Johnson (2021) reported 68% of household food insecurity. Generally, food insecurity describes a of lack of food, either in quantity or quality. Lack of food could result from the unavailability of food or households' inability to access the available food. For Nsukka households the primary issue is food inaccessibility, meaning that most households lack the resources to access food. Some households confirmed seasonal food insecurity, implying that they could access food during harvest, but were food insecure during planting season. *“Before the harvest period, oh... things were very hard for us. Hmm... because it was planting season, things were a bit better for us now because we have*

*started harvesting some of the produce*” (EZ2). The high level of food insecurity in this area characterises their standard of living and affirms the high level of poverty. Although many households in Nsukka (over 50%) are primarily farming households with a nearly equal proportion of male-to-female farmers, yet a high level of household food insecurity exists. This finding is consistent with Obayelu (2012) and Arene and Anyaeji (2010) who found that households in the predominantly farming area of North Central Nigeria were more food insecure. By implication, households could neither farm enough nor access enough food for their members, though it is expected that farming households should be the most food secure. Perhaps, upscaling the farming system of the locals may help improve food security in the region. Several factors could contribute to the food insecurity situation in NLGA. For instance, the survey results evidenced a low household monthly income, about 50% of adult male and female household members earned below the minimum wage of ₦18,000 (£46) or below as found in the survey demographics. Some interview participants also affirmed this condition. “...also, the money I am being paid for weeding is very small” (EH1). “...and for my husband, he has not been paid, and even if he was paid, his salary is very small” (OP1). Also, the nature of their jobs is evidence of low household income, such as weeding on people’s farms, stone packing, and working on palm oil farms. Frayne and McCordic (2015) found that income is a strong predictor of household food security indicating that high household income is associated with household food security. Nour and Abdalla (2021a) opined that enhanced household food production and increased income could eliminate food insecurity. Nsukka households are local subsistence farmers with no evidence of enhancement to their farming systems or support from the government or private organisations for increased productivity, as noted by some respondents (EZ1, OP1, and EH1). The chairman of Nsukka local government, in an interview with Radio Nigeria Southeast Station, appealed to the Federal and State government to support farmers by providing soft loans, irrigation farming

implements, and farm inputs (Igwe, 2022). It is an indicator that optimal productivity has not been achieved. Furthermore, the low educational profile of participating households could have a negative impact on their ideas, knowledge, technique, and approach to farming and non-farming income initiative and activities, which could indirectly influence their food security level. Irohibe and Agwu (2014) agreed that education could enhance the knowledge of innovative farming and positively inform decisions on household food production and nutrition.

Results revealed that households with younger women aged between 20 – 40 years were less food secure than households with older women of 41 years and above. There was no significant difference in the food security of male and female-headed households levels indicating that the gender of the household head may not have influenced household food security within this populace. However, some studies reported that male-headed households were more food secure than female-headed households due to factors affecting women in society, such as gender inequalities (Matemilola & Elegbede, 2017; Nwaka et al., 2020). Women's education and paid jobs may explain the similar levels of food security between male and female-headed households in this study sample. Approximately 78% of women had some form of formal education. The presence of one of the first and most famous Universities in Nigeria (the University of Nigeria Nsukka) could influence the desire for education. Nzeagwu (2016) reported that the University of Nigeria Nsukka positively influences women's education and, indirectly, their food security level. However, the argument remains that, regardless of a woman's education level, social and traditional factors such as inequality in employment, skill training, and traditional beliefs affect them negatively and may result in underutilisation of their potential (Matemilola & Elegbede, 2017).

The findings revealed conclusively that a prevailing household food insecurity condition exists within NLGA. Some situations that could jeopardise household food security include

low income, low education level, poor agricultural practices, and low productivity. Results revealed that households with younger women were less food secure than those with older women. Also, the gender of the household head did not significantly impact household food security.

## **6.5 Challenging factors and causes of household food insecurity**

Investigating the challenges and causes of food insecurity in NLGA revealed some original findings. Since the area was characterised as severely food insecure, it was necessary to understand the factors challenging food security and participants' interpretation of the causes of their food insecurity situation. These findings could help to categorise and appreciate the communities for any necessary food security screening or assistance in the future. Factors that could challenge household food security, such as gender of household head, marital status, age of the woman, education, family income, work status, and household size, were tested for association with household food security using Pearson's Chi-square test. These factors can increase or reduce household food security levels. Findings show that the age of the women, education levels, work status, and income level were significantly associated with household food security; these factors positively influence household food security within the study population. This result is consistent with Fawole et al. (2016); Nzeagwu and Aleke (2016); Obayelu (2012); Tuholske et al. (2018); Abu and Soom (2016) that also reported a positive relationship between education, income, gender, and household food security, and that income has a positive impact on household food security. Adepoju and Adejare (2013) reported determinants of household food insecurity to include the gender and education of the household head. Lee and Frongillo (2001) noted that a high level of education directly impacts economic capacity; it is a tool for empowerment, improves knowledge of food and nutrition, and boosts economic productivity and quality of life.

Furthermore, Adebayo (2010) argued that age is a determinant of the productive and active level of household heads. They explained that women are considered great drivers of food security in their households; they can largely influence the food situation of their households. Young women are likely to be more active and productive, open to innovations and new ideas, and physically disposed to income-yielding activities than older women. Contrarily, Abu & Soom (2016) found a negative association between the age of the household head and household food security. No significant association was found between food security level and household size, gender of household head, and marital status (section 4.6) in this research, inferring that these factors did not influence household food security. This finding is incongruent with Adepoju and Adejare (2013); Aidoo et al. (2013), who concluded that household size, marital status, and gender of household head are determinants of household food security. Nour & Abdalla (2021a); Oyetunde-Usman & Olagunju (2019); Irohibe and Agwu (2014) revealed that males have more economical the prospects with potentials than females. Adepoju & Adejare (2013) noted the controversy in the previously published literature on the relationship between the gender of the head of the household and household food security, with some reports suggesting that female-headed households are more likely to be food secure than male and some reporting the reverse. Women in this population are industrious and active. About 98.2% of them were engaged in activities that yielded income. Most women revealed that they worked hard to feed their children and support their husbands. This finding is congruent with Nwuba (2020), who revealed that the women of the South-east region make tangible contributions to the provisions and progress of their households regardless of the patriarchal and patrilineal culture of the region. These could account for the insignificant association between food security, gender, and marital status. Abu and Soom (2016) argued that household size can negatively impact household food security. However, this may sometimes impact positively. A large household could have

several members contributing to the household food resources by providing labour or income earnings; thus, they could become more food secure.

There were several factors perceived as causes of food insecurity by the participants. For instance, poverty was seen as a significant cause of food insecurity and manifested in different dimensions. Saad (2013) recognised poverty as a critical factor that leads to chronic food insecurity. He described absolute poverty as the inability of an individual or household to meet their essential needs, such as food, clean water, shelter, basic health, and education. Households in this research experienced poverty in different forms including, financial, food, and land poverty. Households needed more finance to offset hospital bills, repay loans, purchase enough food, or buy valuables. Children were suspended or withdrawn from school. They were made to understand and accept and live with their poor condition. Financial poverty means households needed more money to acquire their basic needs and live as they desire. *“Money is the major reason why we lack food”* (EH1, EH2, EZ2, EZ1, NS1, NS2, OB2, OP1). There were limited or no opportunities to increase household income. Food poverty was experienced as a lack of enough food for household members. *“It is what they see that they eat. My children already know that their parents are not wealthy”* (OB1). Again, the rise in food prices was a cause of food insecurity that reduced the quantity of food households accessed because their income was meagre due to inflation, distorting household budget, and limiting their food access despite the availability of food in the market. This finding agrees with (Korir et al., 2020). So, increasing food prices reduced their food access and increased their food insecurity, as presented in section 5.5.3. Nutritious food was beyond the household budget, and cheaper and poor-quality food became the affordable option. Therefore, the rise in food prices negatively impacted households’ economic and nutritional stability. Land poverty was another factor that contributed to household food insecurity in rural areas that depend more on agriculture. Households lacked enough land to cultivate food,

and some households could not pay labourers to cultivate their farmlands. as reported in section 5.4.1. A participant commented - *“Another difficulty we experience in getting the food to eat is lack of land because my husband’s family does not have any land, which if it was available, we could have cultivated some crops like cassava, maize, cocoyam, and akidi”* (EZ1). Most land poverty cases could have a cultural undertone; lands in the Igbo cultural setting are acquired by inheritance. Buoyant families purchase lands and pass them on to the following generation as an inheritance. Poor households may have small, or no land passed on to them by their parents for inheritance and have no resources to purchase new lands. Such a situation may translate to land poverty and, subsequently, to food insecurity. Some households faced land and financial poverty, so they purchased all their food from the market. Such households face a “double burden of poverty” (Ervin et al., 2021; Oldewage-Theron & Grobler, 2021) and had no season of relief, as discussed in section 5.5.1.

Furthermore, illness and diseases were identified as causes of household food insecurity, significantly when the primary food provider is affected. For instance, if a husband is ill or dies, the burden of feeding lies on the woman. Ill health and disability could negatively affect household food security, as highlighted in section 5.5.1. *“My sons became blind when they were already married and not from birth. It is their children who go to beg with them so they can feed. They would have at least been very helpful in feeding”* (EH2). Also, another participant described her illness and her daughter’s disability as a factor in their poverty and food insecurity. Disabled participants described their household experiences with food insecurity because they could neither work nor farm and had no money to employ labourers. Findings show that the government gave no support to assist the situation. This result buttresses on the “theory of access” (Ribot & Peluso, 2003). Mutea et al. (2020) describe the “theory of access” as the differentiation between an individual’s right to access resources (ownership of land) and their capacity to benefit from these resources. Some households that

possess lands could not access other productivity components (labour and capital) to farm and improve household food security due to low economic status. Households could rightly possess resources such as land or capital, but factors such as illness or disability, or poverty could deter them from accessing it.

The Ministry of Budget and National Planning (2016) reported that conflict and insecurity, climate shocks, natural, and manmade disasters are the main causes of malnutrition and hunger in Nigeria. Public Health England (2017) noted that drought is the most common cause of food shortage globally, with climate change exacerbating existing adversities. Climate change threatens food security in Africa, resulting in drought, climate variability, and extremes (Food and Agriculture Organisation & ECA, 2018). These factors are primary contributors to household food insecurity. Participants also identified the insecurity they face on their farms in the hands of Hausa-Fulani men grazing their cattle as a cause of food insecurity; the loss of lives, time, effort, and farm products they have experienced. The herders are Fulani by ethnic origin, a large group of migrant spreads throughout West Africa. From the East Lake Chad to the Atlantic coast, Guinea, Mali, Chad, Senegal, Cameroon, and Nigeria have the largest number of Fulani settlers (Erondu & Nwakanma, 2018). Research has traced the reason for Fulani headsmen's migration to the impact of climate change. Lake Chad, once one of the largest freshwater bodies in Africa and a source of livelihood for over 30 million people, is affected by climate change and overuse; it has shrunk by 90% since the 1960s. The impact of the drying lake resulted in the loss of livelihood, leading to widespread food insecurity and poverty (Owonikoko, 2020). As a result, people migrate to bordering countries in search of livelihood and water. The endorheic lake, which borders part of Northern Nigeria, Chad, Niger, and Cameroon, has triggered violence and malnutrition, placing the region on red alert for emergency assistance (Owonikoko, 2020; Usigbe, 2020). The diminishing lake considerably impacts cattle rearing in North-eastern Nigeria, causing



the migration of the herders whose presence were resented by the regions they crossed because of their hostility. It has exacerbated violence and conflict between farmers and herders (Chukwuemeka et al., 2018).

Okonkwo et al. (2021) reported that open grazing by the Fulani herders from the Northern region has affected all the regions they crossed towards the south, in search of greener pastures and water for their cattle. Reports on clashes between herders and local communities in Nigeria's Central and South-eastern regions are documented. Some of these clashes have resulted in the loss of lives as the herders claimed to use weapons for self-defence. Also, the destruction of farm crops along these axes has contributed to the rising food prices (Chukwuemeka et al., 2018). Participants in this research reported that cattle graze on their farmlands, eating up crops, destroying farms, and making farming activities difficult. The finding is congruent with (Okonkwo et al, 2021). For fear of the herders and to save their lives, some farmers abandoned their farms for menial jobs and off-farm income activities. A participant recounted - *"I am very good at planting cassava; however, herdsmen invaded our community and destroyed the crops I planted. Their cows destroyed all we cultivated, and I had to abandon my cassava farm and went into stone packing"* (EZ2). Thus, increased food insecurity, poverty, and the fear of attacks on innocent lives and property by the herders is the resultant effect.

While a high-level debate on open grazing in Nigeria has been ongoing (Agbedo, 2021; Chukwuemeka et al., 2018), more lives and communities are impoverished daily. It is unknown when the government will assist the affected communities and resolve the problems of open grazing in Nigeria.

Similarly, civil insecurity impacted household food security. People who are displaced become refugees, and properties are destroyed. Households who lose their livelihood in such

situations may be unable to regain their livelihood. It could lead to food insecurity, as revealed by a participant, and highlighted in section 5.5.1. *“It was the riot that happened sometime in the north which leads to the killing and deaths of many. So, we came back empty-handed and unprepared leaving our business behind, we were running a grocery business”* (OP1).

Again, unemployment and job loss were considered factors of household food insecurity. Some women had no job or business that yielded income, and some reported their husbands being out of a job for years or losing their jobs. These conditions negatively impacted household food security. This is congruent with Huang et al. (2016), which found a positive association between unemployment and food insecurity during economic recession. Chater, Prayogo, and Grimble (2020) emphasised that loss of jobs, unemployment, and lack of benefits are some financial shocks that can lead to household destitution.

Interestingly, some participants understood the causes of food insecurity from the perspective of their traditional beliefs and practices. They believe that ancestral dis-unity, fetish practices, and pronunciations affect the generations after them. Therefore, their ancestor’s evil curses and covenants contributed to their poverty, leading to food insecurity. This finding aligns with Ene-obng, Onuoha, and Eme (2017), who recognised that some cultural beliefs and practices in Igboland have negatively influenced household food and nutrition security. Similarly, some husbands did not allow their wives to work because they upheld the traditional belief that women are inclined to domestic duties. In contrast, men work to provide for the household. The consequence is food and material insufficiency since the man alone provides for the entire household, as found in this study. Likewise, the cultural practice that a female child cannot have access to the family wealth, including land through paternal inheritance, was revealed to impact negatively on household food security. A participant narrated how she could not access the family lands for farming because she is a female child,

and as a single mother, her household was struggling with food. It is a form of gender inequality that gives the male child privileges and support over the female child. Fasoyiro and Taiwo (2012) observed that women are more gender-based and vulnerable, with few benefits than men under statutory and customary legal systems. Similarly, Ene-obong et al. (2017) recognised that gender difference hinders to food access even when food is available due to unequal access to resources. However, they observed that many studies have proved that women's access or ownership of lands can improve their productivity and allocation of the output towards household food, which translates to well-fed children. The United Nations (2018) noted that global hunger could be reduced by 150 million people if female farmers are assigned equal access to resources as males. Therefore, giving women access to wealth and resources will likely boost household food security.

In summary, the challenging factors and causes of household food insecurity in Nsukka households revealed that factors such as education, income, work status, and age of the woman were associated with household food insecurity, while household size, gender of household head, and marital status were not. Poverty (food, material, and land), illness and diseases, conflicts, civil insecurity, open grazing challenges, unemployment and loss of jobs, traditional belief, and cultural practices are some causes of food insecurity.

## **6.6 Household dietary diversity, nutrition, and health**

Otaha (2013) expressed undernutrition as a consequence of substantial unavailability and inaccessibility of food. It is a lack of energy (macronutrient), vitamin and mineral (micronutrient) requirements with the consequences in terms of growth and development of infants, children, and adolescents, as well as morbidity and mortality across all age ranges. Exploring the household dietary diversity, nutrition, and health in NLGA and how it shaped household food security led to some novel findings. The most common access to food was

through farming. Farming characterises a typical Igbo household (Okonkwo et al., 2021). Udeagha and Nwamah (2019) noted that a great and successful farmer is enlisted in Igboland's traditional hall of fame. His pride lies in how large his yam (tuber crop) barn is and how fat his yam tubers are. It is worth noting that a typical Igbo man works on his farm along with his family members (Okonkwo et al., 2021). Therefore, they value large households, which they believe translates into great productivity for having more hands work on the farm. In essence, the dietary diversity of a typical household will depend more on farm produce than convenience food. Ene-Obong et al. (2017) identified about 400 variations of cultural foods in Igbo land, indicating good regional food diversity.

Household dietary diversity describes the range of different food groups consumed by the sampled population. As reported in section 4.7, the twelve investigated food groups comprise white roots and tubers, cereals, fish and seafood, meat, eggs, oils and fats, milk and milk products, sweets, legumes, nuts and seeds, and spices and condiments. The mean HDDS was 9.02 out of a maximum of 12. About 21.8% of households consumed all the food groups; approximately 53.6% fell at or below the HDDS mean score and consumed  $\leq 9$  food groups. Further investigation revealed that cereals (94.6%) were the most frequently consumed food groups, closely followed by white roots, tubers, vegetables, and oils and fats (87.7%, 85.9%, and 83.6%, respectively). These staple crops farmed by households in these areas form the basis for most family menus. Typical household meals include cassava, cornmeal, beans, pigeon pea, rice, yam, and pasta. Sometimes they are an accompaniment to soups made from vegetables like okra, melon seed, and pumpkin leaves or are eaten alone with sauces. Cereal, roots, and tubers had the highest recorded consumption level, possibly because they are staple foods in Nigeria. They are cultivated and traditionally valued in the south-East region (Ogbonna et al., 2012). For instance, the region celebrates the new yam festival during the yam harvest season (Obidiegwu & Akpabio, 2017). This finding corresponds with Nzeagwu

& Aleke (2016), who reported in similar research that many households had several food crops, especially roots and tubers but lacked the financial power to acquire enough food. Also, Murendo et al. (2021) found that cereals, tubers, and roots have high consumption in Zimbabwe. The high consumption of cereals, tubers, and roots staples in the Nsukka region (Udeagha & Nwamah, 2019), explains why most households cultivate them. Also, they are affordable and energy-dense, enough to satisfy and shield hunger for longer. However, nutrients such as protein, vitamins, and minerals may not be consumed in sufficiently to meet the recommended amount in a typical diet, which requires further investigation. Poor quality food may be calorie dense but poor in micronutrient density, thus failing to meet recommended dietary allowance for optimal growth, development, and health. Therefore, nutrient deficiency may result in poor cognitive and physical development in children (UNICEF UK, 2019), while adults are more susceptible to infections and non-communicable diseases (Centers for disease control and prevention, 2022). Food insecurity accounted for a 12% variance in the dietary diversity of the study population. Other factors could affect dietary diversity other than food insecurity, which requires further studies.

Food rich in protein, such as milk, milk products and eggs, were the least consumed food groups (42.3% and 40%, respectively). Although meat and fish were consumed by 69.7% and 79% of households, respectively, the quantity and frequency of consumption remain questionable. One of the participants revealed that she does not give her children meat, only fish and eggs when available (EZ1). Two participants noted that meat is divided into small portions for the children when used in cooking (EZ2, OP1). However, NS1 noted, “....*we cook sometimes with meat, sometimes without meat, things are costly....*” This finding corresponds to Ene-obong et al. (2017), who discovered that in a part of South-eastern Nigeria eggs and milk were not consumed frequently; in fact, they are not prominent in the Igbo cultural food system. They referred to as “privileged food” due to their high costs.

Similarly, Murendo et al. (2021) reported less consumption of milk and dairy products in Zimbabwe. A participant revealed that the consumption of meat and eggs in her house was almost a thing of history, as reported in section 5.3.2, *“We do not even remember meat and egg as we are struggling to feed. We have not seen food to eat, and you are talking about egg and meat”* (OP2). Interestingly, some parents deprive children of meat consumption, believing it is the right way to curtail a child’s excesses, which can lead to greed. Some parents may not understand the importance of protein in children’s diet. When they cook with meat or eggs, pieces of portions are served to the children while adults get whole portions. For instance, a participant revealed (ref. section 5.3.2): *“The children eat eggs sometimes, not often. On the days they will have egg, I divide a whole egg into two for the two children while I and my husband eat whole eggs”* (EZ1). The low consumption of rich protein food questions the adequate nutrient intake of household members particularly, the children, and could worsen with fussy eating. Bbaale (2014) noted that a mother’s nutrition knowledge could enhance her child’s healthy life. Household members could become susceptible to protein malnutrition or micronutrient deficiency due to a lack of vital nutrients for nourishment and growth, resulting from food insecurity (Weiser et al., 2011).

Furthermore, Households sourced foods from farms, markets, and shops. Interview discussions highlighted seasonality in sourcing food. Farm produce supplied essential foods during harvest season, while markets and food shops were accessed for food during cultivation and before harvest season. *“So, we get some of our foodstuffs from the farm when they mature, and we also buy from the market”* (EH1). OP1 NS1, NS2, and OB1echoed this. More findings indicate that households in this population face insufficient food intake. This means that households needed access to more food. *“We do not sell the crops we plant; they are majorly for consumption as they are barely enough for us”* (EH1). Households do not produce enough food and purchasing food from the market or shops would increase the cost

of household food; either way, food access remained difficult. It does not only signify economic poverty but also land poverty (Bbaale, 2014). Though the variety of food sources or options suggests food availability, access to enough and preferred food for the household is uncertain. Findings also revealed that insufficient food access occurs in different degrees, from having small portions to going a whole day without food; a similar result was reported by Tsegaye et al. (2018). As presented previously in section 4.3.3, household food consumption revealed that some households ate smaller portions of food (66.2%), some ate fewer meals (63.3%), some had no food of any kind (49%), some households slept at night hungry (45.1%) while others go a whole day without food (38.2%). The family feeding pattern was characterised by meal skipping and insufficient food. This is supported by the interview responses. *“Sometimes we eat once and some other time it might be twice and at times none depending, there are days we will not have anything to eat and will have to go to bed on empty stomach”* (OP2). *“We eat two times (morning and night) and sometimes once a day”* (OP1). Uncertainty and worries surround basic human needs as households live one day at a time, unsure of their future meals and their children’s. Also, household members accept and adapt to their feeding pattern in ‘good faith’; including children who are aware of the food insufficiency and are taught to understand the financial difficulties in the home and live with them. These findings correspond to Fram et al. (2011), whose results expressed that children from food insecure households have cognitive, emotional, and physical awareness of their food insufficiency.

The most important consideration when purchasing food was affordability and sufficiency as highlighted in section 5.3.5, the nutritional content of food was not given priority despite their understanding of a balanced diet and its importance. As a participant commented, *“I do not consider whether it is balanced, delicious or nutritious, the only thing I put into consideration is whether the food will be enough for us and if I can afford it”* (OP1). The

satisfaction from filling up the belly was more important in this than nutrition context. The nutritional need of different population groups within the household was not considered. Some household members could be at risk. This research has a mixed household population indicating that children and adults experienced insufficient food quantity and quality. Children, pregnant women, older adults, and other immunocompromised are more at risk of severe consequences.

The safety and the nutritional content of the accessed food needs to be maintained throughout the food handling processes, from the procurement to the consumption of food. If not handled properly, the food preparation and the cooking process could result in the loss of essential nutrients; food safety could be compromised. When food preservation is not adequate, the risk of food poisoning becomes likely. This research revealed that households need an understanding of basic food safety practices. Households applied no preservative measures to cooked food kept for future consumption. About 70% of the investigated households stored cooked foods covered in pots and food flasks at room temperature for up to three days, especially starchy food like cassava or cornmeal. In some households, they are wrapped in plastic bags before storage. Other foods, such as soups, stews, seeds, and grain-based foods, were reheated intermittently for consumption. For instance, one of the interview participants recounted (ref. section 5.3.1), *“I will put the cassava meal inside the cooler (food flask) to keep it hot for three days, so whoever is hungry will go get it from there, we usually do not warm it but if a person chooses, he/she can warm it. We warm the soup whenever we want to eat because we do not have a fridge. While other foods are kept in the pot inside the house and brought out to be reheated whenever we want to eat it”* (EZ2). These practices make food potentially unsafe for consumption jeopardising the health of household members. It raises the question of food safety and hygiene that would warrant further investigation. Constant reheating of food daily or twice a day and as long as the food lasts was a common



practice among the people *“I will warm it and eat it again. So, if I cook today in the afternoon, I will warm it in the night and still warm it the next morning. I will keep on warming it until it finishes”* (NS1). The constant warming of food was to prevent offensive smell or taste and make it acceptable for consumption. However, participants showed displeasure in consuming such foods as their taste and flavour faded through constant reheating. Also, the consequence is detrimental to health and can result in malnutrition especially, micronutrient deficiency. Again, this queries malnutrition, especially in children, and needs further investigation. However, Participants knew the importance and use of fridges/freezers and wished they had them for food storage, but they lack the resources to purchase them.

Some research associated the severity of food insecurity with the prevalence of health circumstances, linking an increase in the incidence of health conditions with people in the severe food insecurity category (Loopstra & Tarasuk, 2013). Findings in this research revealed that lack of essential food resulted in the ill-health of household members in more than half of the participating households (ref. 5.3.2). *“Yes, my husband has an ulcer, and it is due to lack of food because when we were living in the north and he was running a business, he was not suffering from it. Since this hardship started, he also started fasting and praying too to know if things will get better”* (OP1). Gucciardi et al. (2014) observed that food insecurity affects not only the health of the food insecure, but also the ability to manage their health conditions. Coupled with other household expenses, the overall health condition of household members may worsen.

In summary, more than accessing enough food is required for food security. Food must be accessed to meet the recommended nutritional intake for every household member. Nsukka households are mainly peasant farmers; therefore, household diets mainly comprise of farm produce rather than convenience foods. However, insufficient access to food characterised

households' food conditions. A typical household diet constitutes more starchy foods which are staples within the region. Consequently, fewer rich protein foods were consumed and less than a quarter of the population consumed all the investigated 12 food groups. Poor food preservation practices were found around the safe food handling, although households had a basic knowledge of refrigerating food but lacked the resources to acquire a refrigerator - linked. Adverse health conditions linked to household food insecurity.

## **6.7 Household food insecurity experiences**

Describing the conditions of food insecurity experienced by the investigated households gave insight into household struggles with food. It tells the story of poverty, low standards of living, and food deprivation faced by the communities. Findings revealed that households experienced food insecurity both physically and psychologically. Some physical experiences included hardship, hunger, domestic violence, child labour, and have negative impact on family relationships. The psychological experiences were worries and uncertainty, sleeplessness, and stigmatisation.

Hardship constitutes suffering, lack, and material deprivation and is significantly linked with dietary quality through food insecurity (Chater et al., 2020). The burden of hardship with greater severity highlights increased household vulnerability with the implication of understanding food insecurity consequences (Loopstra & Tarasuk, 2013). In the present research context, hardship was first characterised by a lack of financial resources. Financial hardship indicates a lack of jobs, low-paid jobs, and the inability to farm or engage in business activities. Households survive on a vicious cycle that channels all wages to food after payment, leaving little or no money to meet other household expenses. The burden of multiple hardships amid food insecure households that manifests as difficulties in accessing other necessities of life has implications for the general wellbeing of the household. Second,

land hardship is another level of hardship. Lack of land resources was a significant player in food insecurity. Participants revealed that lack of family land for cultivation or money to mortgage land and pay for labour exacerbated their food insecurity condition. Some households reported a lack of land, and others had insufficient land to cultivate enough food, sometimes resulting in seasonal food insecurity.

Food security exists when people have access to sufficient quantity and quality of food of their own choice. Choice is a significant factor in food security. People should have the ability to choose food. However, this was different with Nsukka households. Findings revealed that households ate unwanted food and a limited variety of food (ref. section 4.3.2). Similarly, Saaka et al. (2017) reported a 60% rate of unwanted food and a 63% rate of unpreferred food consumption in their study. Some households had a variety of food that was not their choice or preference food. Also, many households had no choice because they could access a limited variety of food.

For some households, illness and disability constituted a major constraint despite the availability of land. Food security and provision for disabled persons in Nigeria is a grey area that calls for research. There is a lack of evidence for the effective implementation of government policy, plans, and funding for vulnerable people (Haruna, 2017). Martinez and Vemuru (2020) reported that the Nigerian Discrimination Against Persons with Disabilities (Prohibition) Act 2018 is yet to be implemented. While some people in the study population received assistance from some charitable organisations or persons, there is a need for recognition, social inclusion, provision, and protection for them in society, especially by the government.

Furthermore, children within the food insecure households faced neglect and exploitation. Evidence showed that young children were exposed to hard labour and income-yielding

activities to assist their parents in raising household income. Participants attest to involving children in activities like broom-making, stone packing, food hawking, and begging or borrowing money on behalf of their parents. This finding concurs with Fram et al. (2011), who found that in households experiencing food insecurity, children not only take responsibility for managing household food resources through parental strategies but also contribute their initiatives and strategies in generating household food resources. Similarly, Keane et al. (2020) found that child works in all its forms is disadvantageous to their development. They proposed policies that will enhance child development, involving a total shift from all kinds of work and a focus on education. Exposing young children to hardship could make them vulnerable to societal ills, and they could be victims of miscreants and hoodlums. Unfortunately, no government policy is proactive in protecting the right of children in Nigeria, notwithstanding the Child Right Act of 2003, which has not been signed into law in 12 States in Nigeria and has a poor implementation in states that have signed it into law (Guardian, 2018; Jones et al., 2012). Positively, some human rights activists operate NGOs that are proactive against child labour and trafficking. However, protecting the right of children should be prioritised.

Furthermore, women's vulnerability subjects them to exploitation, domestic violence, and food insecurity worsens it. Findings suggest that some women experienced verbal abuse, physical assault, deprivation, and denial due to food insecurity. For instance, a participant revealed (ref. section 5.4.1) - *"The lack of food has constantly caused quarrels between me and my husband. It has caused major issues that have even led to fights between us. For instance, the previous day was our village market day, I asked him for money to buy foodstuffs for the house, and he shouted and yelled at me"* (OP1). This finding is congruent with research evidence that showed a direct and bi-directional relationship between female domestic violence and household food insecurity or economic hardship (Field et al., 2018;

Hernandez, 2014; Hernandez et al., 2014; Spencer-Walters, 2011). The social-cultural beliefs of the south easterners (the Igbos) arrogate power to the man and the feminine gender submit to him (Udeagha & Nwamah, 2019). Against this backdrop, most women do not have authority over what they want for themselves but flow with the husband's opinions of what they can do or achieve. They will likely underutilise their potential and lack the power for independent decisions and choices. Some Igbo men believe in showing off their ability and ego by being the sole provider of the family (Dike, 2015; Ezenwanebe, 2006). Refutation of such decisions by their wives can lead to squabbles in the home. A participant reported, *"It happened when he wanted to be the sole provider of food in the house. I refused and insisted that I must work and farm, because feeding was becoming difficult, and my kids were suffering. Also, I hate to wait until he comes home before I could cook or eat. If my husband is not around or did not make money in a day, we will not eat"* (EZ2). Although Igbo society is patriarchal, Nwuba (2020) emphasised that the dignity and rights of Igbo women are still respected, primarily through women's organisations. Ezenwanebe (2006); Opata et al. (2021); Udeagha and Nwamah (2019) Chuku (2001) concluded that there are unheard and unseen roles of women in the Igbo culture which are pivotal in the development of Igbo culture, history, and society, and to the sustenance and continuity of humanity.

Again, findings revealed the household's psychological experiences of food insecurity. Food anxiety and uncertainty meant that households were worried, fearful, and unsure of the next meal, especially for the women or the leading food provider. Findings show that almost three-quarters of the surveyed households experienced food anxiety and uncertainty over household food (ref. section 4.3.1); it was a common experience across the interviewed households. Similarly, Saaka et al. (2017) reported that 60% of households worry about food insufficiency in their study. Participants reported emotional instability, including worry, bad feelings, sadness, crying, deep thinking, and frustration for adults and children. Such

situations could affect health by increasing the chances of life-threatening conditions (Johnson, 2021), such as high blood pressure, stroke, heart attack, and psychological devastation. The victim could become susceptible to depression and mental illness (Arenas et al., 2019; Fang et al., 2021). Congruently, Hadley and Patil (2008) found food insecurity to predict depression and anxiety symptoms strongly. Bukhaman et al. (2020) echoed this. Johnson (2021) concluded that the state of anxiety, stress, and stigma due to food insecurity can contribute to poor dietary intake and the development of chronic diseases, particularly for women. In addition, children raised under such conditions may develop emotional problems and lack confidence.

Findings show that children that exhibit fussy food habits exacerbate parents' anxiety as they must plan and prepare a different food for the child from meagre resources. It stresses household finances because such children usually prefer expensive food over what the family can afford (ref. section 5.3.2). *“My son does not eat many foods and it worries me as we barely have enough to eat or can afford to cook different varieties of food for everyone in the household. The foods he likes eating are costly foods like rice, tea, and he does not like local foods that are accessible”* (OP1).

Another psychological effect of food insecurity is lack of sleep (Arenas et al., 2019). Participants reported sleeplessness and deep thoughts due to insufficient food. Some participants reported losing sleep due to long deep thoughts about household feeding. Sleeplessness has psychological and physical effects in that it could affect an individual in both ways. Costandi (2018) noted that insomnia (sleeplessness) affects the brain and function and contributes to emotional disorders, fatigue, and poor productivity. A growing body of research suggests an association between food insecurity and poor sleep. Ding et al. (2015) found that food insecure women reported substantially shorter sleep as compared to the food secure ones. Bermudez-Millan et al. (2016) suggest that household food insecurity is not just

associated with poor sleep quality but also a potent household psychological stressor. Similarly, Nagata et al. (2019) found that more food insecure young adult Americans had trouble falling and staying asleep than the food secure ones, which has been identified as an underlining factor for developing anxiety and depression (Hertenstein et al., 2018). Therefore, the complexity exacerbates for women who suffer insomnia due to household food insecurity and are susceptible to several health conditions and social challenges. Their productivity in household and childcare may diminish, increasing the child's vulnerability and the entire household.

Furthermore, some households felt stigmatised due to food insecurity. They were well known in the community as households that could not afford daily food. People come around to ask if they have eaten and sometimes assist them with some food. Such a situation undermines psychological wellbeing and debases an individual's or household's social status. A worse situation arises when a disabled or sick person experiences food insecurity. Few households reported facing both conditions. In a particular instance, an aged mother was sick while her daughter was crippled; they lacked help from the government or any charity organisation. Narrating their double ordeal of food insecurity and disability emphasises the psychological and physical trauma of food insecurity. Correspondently, Purdam et al. (2016) reported embarrassment and social stigma concerns among food bank users in the United Kingdom. Earnshaw and Karpyn (2020) suggest that stigma linked with food insecurity manifests as structural (neighbourhood infrastructural) and individual level (stereotypes and internalised stigma).

In summary, the ongoing discussion on household food insecurity experiences revealed physical and psychological aspects. Hardship, hunger, domestic violence, child labour, and broken family relationships constitute physical experiences. Psychologically, households experienced anxiety, uncertainty, sleeplessness, and stigmatisation, due to food insecurity.

## 6.8 Household food management and coping strategies

Food insecurity coping strategies are strategies households adopt to manage food deficiencies, reflecting households' poor access to food. Among the significant findings of this research are the several ways households manage food and devise means of coping with food insufficiency.

Food compromise was the initial response to food insufficiency. At first, households reduced food quality and then food quantity as the situation deteriorated. As previously stated in section 4.3.2, households reduced food quality by consuming unwanted, unpreferred, or limited variety of food; this corresponds with Olajide and Doppler (2013). As the situation deteriorates, they consume smaller portions of food and ate fewer meals a day. Further cuts on meal frequency resulted in sleeping at night without food and going hungry a whole day. As reported by some respondents (ref. section 5.6.1), *"We cook the food that will satisfy us the most"* (OB1). *".....We manage it, for instance, in the morning if we were to eat three or four spoons, we eat two or one"* (OP1). *"Yes, and there are days we will not have anything to eat and will have to go to bed on an empty stomach"* (OP2). Participants EH1 and OP1 echoed it. This result agrees with (Saaka et al., 2017; Tsegaye et al., 2018). The implication of food quality and quantity compromise raises questions about family health, especially in children, women of reproductive age, the older adult, and other immunocompromised groups. Chandra and Newberne (2012); Maggini et al. (2018) noted that Poor nutrition depresses the body's immunity and increases susceptibility to diseases and infections, consequently reducing an individual's level of productivity in life. Constant illness and poor well-being may have a consequence of low productivity and increase household members' financial burden. Again, women of reproductive age are vulnerable because it affects their ability to produce healthy children (Fontana & Torre, 2016). Participants revealed how they go hungry to ensure their husbands and children have food to eat. *"On the days the food will not go-*



*round, I will stay without food. I make sure my kids and my husband eat”* (OP1). It was reverberated by other participants (OB1, NS1). Sometimes, they eat the left-over portion after household members have had their portions. Also, households skip meals as a food management coping strategy. It means that a household could skip a meal to have the next one early or they have a late meal to skip the following one; they would not have to source or spend for three adequate meals in a day; this supports the report by Tsegaye et al. (2018) who found food insecure households in some Northwest Ethiopian regions decrease food frequency and portions to cope with food insecurity.

Furthermore, households took steps to curtail expenses to cope with food needs. Such steps include suspending children’s education or withdrawing them from school due to a lack of funds to pay their school fees; this finding is consistent with (Gouda & Sekhe, 2014; Irohibe & Agwu, 2014). These strategies have consequences for the child, household, and society. For instance, United Nations Education Scientific and Cultural Organisation (2017) noted that education is pivotal to developing of individuals, households, and society. Suspending a child’s education widens the illiteracy gap, reduces their development opportunity, and promotes low a level of education in a country (Sassi, 2021). They considered the effect as adverse and long-term on the country’s development and growth. Tamiru and Belachew (2017) observed that past studies reported a significant association between food insecurity and poor school attendance. Also, Maynard et al. (2015) noted that children out of school are more likely to be associated with substance use, criminal behaviours, and poor mental health compared to their peers in school. First, withdrawing children and adolescents from school could lead to social withdrawal. Rubin et al. (2009) clarified that social withdrawal for these population groups could result in psychological effect such as low-esteem, anxiety, and depressive symptoms limiting integration and interaction within their social circles. Its complexity widens existing economic and social inequalities (Chugh, 2011). Second, the

impact of missing school on the child's education and cognitive development reduces their ability to learn and compete among their peers; it creates gaps in the learning processes and affects their productivity in adulthood. Peng and Kievit (2020) emphasised the importance of academic achievement in a child's development. A child out of school is denied his right and the opportunity of developing his academic and cognitive ability and attaining his full capability. Society could be deprived of such children's contributions and impacts on humanity; instead, it costs society more (Rouse, 2007).

Children were sent to relatives' or friends' houses to eat or live with them to reduce the burden of food insufficiency. The effect may be a negative impact on the child. The child may become vulnerable to abuse, bad habits, and social vices. Furthermore, some male children were sent as apprentices to learn a trade, after which the boss established them in similar trades, which means they were provided with money to start their own businesses (ref. section 5.6.3). Through the apprenticeship system (igba boy), the Igbos are recognised internationally as the hardest working, industrious, and creative tribe in Nigeria. This system is widely known as "The Nigerian model of stakeholders capitalism" (Ekekwe, 2021), and this has trended on 'TED talk' shows. While this system helps to establish young people to become entrepreneurs (Alike & Orjiako-Umunze, 2019; Ejo-Orusa & Mpi Destiny, 2019), it repudiates the opportunity for education and may limit their level of social interaction and civilisation. *"I sent my child to become an apprentice and get settled to start his own business"* (EZ2, OP2).

Additionally, seeking alternative ways to provide for the household included sales of valuables, odd jobs, farming, and group savings. Participants in this research reported that their households sold their valued items to meet their food requirements. These findings support Ukpe, Nweze, and Arene (2016); Tsegaye et al. (2018). Ukpe, Nweze, and Arene (2016) believe that sales of valuables indicate food vulnerability. It is a temporary provision

that may not sustain food security but impoverish households. While farming, group savings, and doing odd jobs have been discussed in other sections (sections 5.6.4 and 6.8), it is important to highlight these as part of household food insecurity coping strategies.

Also, some households sometimes sought help or received support from people such as money, food, material things, land, and children's school fees. They build support networks to fall back onto when they need to source food. For instance, women built good relationships with the traders from whom they collected foodstuff on credit. Ninety percent of the participants have sought help from friends, relations, neighbours, and the Church. Nearly all the participants begged, borrowed money, or purchased food on credit from similar sources to meet their household needs; these findings correspond with Tsegaye et al. (2018). Ukpe, Nweze, and Arene (2016) observed that buying food on credit indicates food insecurity susceptibility that increases a household's vulnerability to opportunists who could take advantage of the household for their selfish gains. A non-physical coping strategy is faith and religion. Some participants believed and trust in God for providence through fasting and prayer. It supports findings from Fram et al. (2011), who found religious explanations towards food providence in some US households that believed God's intervention met their food needs. Another non-physical way of coping with food insufficiency was through resilience, encouragement, and building up hope in household members. Women encouraged their husbands and children over household food situations with the hope that their situation would one day be a thing of the past. "... *I will just console and assure them that we will not die of hunger*" (OP1). No household from the population reported support from the government, non-governmental, or international organisations in any capacity. Yet, the National Social Safety-Net Coordinating Office (NASSCO) established by the Nigerian government in 2016, has the responsibility of supporting the Poor and Vulnerable Households (PVHHs) by alleviating food insecurity, malnutrition, and poverty (The National

Social Safety-Nets Coordinating Office, 2020). The Nigerian National Safety Net Program (NASSP), an arm of NASSCO, reported the number of beneficiaries of the economic inclusion programs at 2.8 million PVHHs (Partnership For Economic Inclusion, 2020). There seems to be a gap in identifying and assisting households in NLGA; this needs further investigation. Erhabor (2015) has called for a more effective and strategic way of ameliorating PVHHs from the claws of poverty and food insecurity. He proposed “*better human capital investment, protection from aftermath economic recession effect, the opportunity for self-reliance, and a better social safety net system,*” among others. Some food charitable organisations are not widespread in the country but are active only in major cities- for instance, the Lagos Foodbank initiative (Lagos Foodbank Initiative, 2022). Erhabor and Erhabor (2016) observed that food banks in Nigeria remain in the infancy stage and recommended adopting the food banking model from developed countries like America and more robust collaboration with the Global Food Banking Network for efficient and broader coverage in Nigeria.

Food recycling through the reuse of food was a typical food coping strategy that emerged from the findings (ref. section 5.6.5). Households cook large quantities of food to eat over a period. It implies that they consume a particular food up to four to six meals consecutively for several reasons. “*Yes, I intentionally prepare food and ensure there is leftover so that we can eat it as breakfast the next day and in some cases over some time, so we do not have to worry about what to eat at that time*” (EZ1). In such a situation food becomes monotonous and mealtimes unexciting. Food cost reduction motivated the reuse of food. It reduced the frequency of food preparation and saved money for other bills. So, they found it cheaper, less worrying, and less time-consuming to reuse food. However, it could affect members’ appetite, enjoyment, and mealtime expectations, especially for young people. Again, as noted previously, such practices could jeopardise food safety and adequate nutrition. Interestingly,

many women reported their household members' acceptance of the consumption of leftover foods, though acknowledging in most cases that members understand household's economic situation and the country at large. Hence, the acceptance was not out of choice but due to lack of food and poverty; it assured households of their subsequent meals.

In summary, households adopted several coping strategies to cope with food insecurity. Some could jeopardise members' health and wellbeing or marginalise the interest of some population groups within the households, like the children and the elderly. Prominent among these strategies are food quality and quantity compromise, going a whole day, and sleeping at night without food. Meal skips, suspending children's education or withdrawing them from school to probably learn a trade, sending off household members to eat from or live with relatives or friends, sales of valuables, odd jobs, farming, and group savings. Furthermore, households sought help or received assistance, begging, borrowing, recycling food, and purchasing food on credit. Some households had faith in God to provide for their needs.

## **6.9 Household food insecurity and COVID-19 lockdown**

The novel Coronavirus, which originated in Wuhan, China, was first declared by the World Health Organisation as a Public Health Emergency of International concern in January 2020 and as a pandemic in March 2020 (World Health Organisation, 2020c). It became a global threat that led to lockdowns in almost all the nations of the world, grounding movements, trade, and socialisation (Olaseni et al., 2020). Nigeria has had previous experience with the Ebola virus, although it was quickly eradicated; the outbreak of COVID-19 appeared to have a more severe impact on the nation (Oginni et al., 2020; Olaseni et al., 2020). National Bureau of Statistics (2020), in their COVID-19 impact monitoring survey, reported that 79% of Nigerian households reported a decrease in household income, and 35-59% struggled with accessing staple foods like yam, rice, and beans, while 85% felt the increase in food prices.

Similar difficulties were reported with the household's livelihood (Ibukun & Adebayo, 2021). The impact of the COVID-19 lockdown was felt globally since many countries shut down economic activities and restricted movement. A study of the implication of covid on household food security in Pakistan showed that 71% of households asserted to the negative impact of the pandemic on their household's livelihood. Household food insecurity doubled during the Pandemic while household income was reduced. Households altered their nutrition to negate the consequences (Shahbaz, Haq, & Boz, 2021). Several studies, such as Shupler et al. (2020) in Kenya, Abate et al. (2020) in Ethiopia, and Arndt et al. (2020) in South Africa, among others affirm the increase in household food insecurity during the Pandemic.

The quantitative research conducted before the COVID-19 Pandemic, revealed a high level of household food insecurity in NLGA, and the qualitative interview conducted after the Pandemic lockdown revealed the lived experiences of households already struggling with food insecurity under the constraints of the lockdown. Okonkwo et al. (2021) noted that the total lockdown introduced in March 2020 amplified the challenges of food supply, especially in South-eastern Nigeria. However, they recognised that a food deficit has been an existing issue in the region since the civil war of 1967 – 1970, but COVID-19 worsened the effect. In this research, the lockdown period was difficult for households, and they qualified their experience with strong adjectives like “very tough, hard, and worrisome.” Three broad aspects of the effect emerged from the interview the internal, external, and the post lockdown effect. The internal impact of the COVID-19 lockdown explains the internal struggles of households in obtaining food describing their experiences, coping strategies, and the effect on household feeding. More than half of the Participating households reported more difficult times than normal, hardship and poverty increased, and food access decreased. Most people relied on daily wages for their livelihood, but due to the lockdown, most of them remained indoors and could not earn their daily wages. A similar finding was reported by Adebayo and

Oluwamayowa (2021), that the enforced COVID-19 lockdown in Nigeria undoubtedly had adverse effects on household livelihoods. Ibukun and Adebayo (2021) found that 58.9% of Nigerian households experienced severe food insecurity during the pandemic restrictions. It was echoed by (Headey et al., 2020). Empirical evidence from Wolfson and Leung (2020); Shupler et al. (2020) supported the high level of food insecurity during the Pandemic. Households lost their sources of income and means of survival. A participant described how she thought her household would be wiped out due to hunger. *“It affected us so badly, the hunger was intense, and it felt like we were going to die (mama shouted)”* (OP2). Due to movement restriction, parents could not continue their daily job hunt to support their households. However, several people reported violating the lockdown rules to search for menial jobs on nearby farms and homes. Hunger and lack of support during the lockdown were the major reasons for violating the lockdown rules. *“I moved out to fend for us. Yes o, if I did not come out during the lockdown period, how would I have coped”* (OB2). Oleribe et al. (2020) opined that the government’s failure to respond quickly to COVID-19 challenges, inadequate communication, and poor orientation gave Nigerians the notion that COVID-19 was a hoax resulting in the violation of government rules and guidelines.

On the psychological effect of the Pandemic on Nigerians, the National Bureau of Statistics (2021) reported that 77% of low-income Nigerians were very apprehensive over the spread of the virus. Olaseni et al. (2020) found a significant level of anxiety during the Pandemic, with 51% and 49% reporting moderate and severe anxiety, respectively. Although there is yet no clear statistical evidence of the rate and impact of the COVID-19 lockdown on the mental health of Nigerians, it is expected to have aggravated existing mental health situations or triggered new cases (Oginni et al., 2020) that could arise from stressors specific to the COVID-19 period such as food shortages, loss of jobs, social restrictions, and financial difficulties. Being a collectivist society, social isolation sequel to lockdown could negatively

impact mental wellbeing (Vincent & Iguisi, 2018), reducing access to religious and social support that could be a coping strategy (Osundina et al., 2017) for vulnerable families and individuals. Lack of stable electricity and limited information technology in rural settings mean inadequate information, communication, and knowledge that should lessen the deficits and improve people's physical and mental wellbeing (Tayo et al., 2016). Among Nsukka households, uncertainty and worry grew as the lockdown continued not only for the spread and fear of contracting the strange virus but also, for the uncertainty surrounding the length of the lockdown period. A participant commented, "*No one knew how long the lockdown was going to last and when it would be over*" (NS1). Adopting coping strategies was essential to manage the situation and harness the best possible alternative.

Coping strategies adopted by households in Nsukka to mitigate the effect of the lockdown were their usual strategies to cope with food insecurity. It suggests that though the COVID-19 lockdown worsened their situation, and because households were already food insecure, they could not do differently to alleviate the lockdown impact. Some usual coping strategies were eating fewer and poor-quality meals, going without food, begging, odd jobs, seeking loans from people, and having every member into income-yielding activities, including teenage children. Some of these findings correspond with Shahbaz et al. (2021). Households reported irregular feeding patterns due to a lack of means to purchase food during the lockdown. The internal effect of the lockdown on household feeding could result in insufficient and unbalanced nutritional intake.

More so, findings revealed some external impacts of the COVID lockdown on household food security. These are external factors that affected household feeding, which is more general than peculiar to the individual household. For instance, there were restrictions on interstate travel and the movement of commodities. Major roads were barricaded, and police checkpoints were mounted. Food exports across regions, states, and localities reduced



(Okonkwo et al., 2021). These created a type of food scarcity, limiting food varieties. Therefore, food prices increased, making food inaccessible to struggling households. Restricted movement meant limited jobs and livelihoods for many households in this locality; in some cases, people discontinued their existing jobs (Inegbedion, 2020). *“There was lockdown, we didn’t go to the market, and there was no paid job to do”* (NS2).

The Nigerian government, at the federal and state level, in response to and to alleviate hardship created by the COVID-19 lockdown, announced the distribution of COVID-19 palliatives to poor Nigerian households. The palliative included food, cash distribution, and loans to struggling households (Eranga, 2020; Ozili, 2020). Results in this study revealed that most of the sampled households did not receive any of the distributed palliatives, while those that received some food items expressed displeasure and disappointment over what they distributed as the government palliative. A few participants received assistance from friends, relatives, and the Church; these findings correspond with (Oleribe et al., 2020) (ref. section 5.7.2) *“No, I didn’t get palliative from the government, No one except the vicar gave me palliative”* (OB2). Ibukun and Adebayo (2021), in conformity with this finding, noted that only a small fraction of the population received the distributed Pandemic palliative, which was echoed by (Oleribe et al., 2020). On discovering that the targeted groups were the vulnerable widows and older adults, most participants felt discriminated against since they also experienced the lockdown impact, which sometimes could be more excruciating than as experienced by the selected vulnerable groups. They questioned the criteria and justification for measuring vulnerability. *“So, I asked, if the rest of us are not human beings and suffering from the same Covid-19 lockdown. Why should they discriminate?”* (NS1). Some participants identified corrupt practices as fundamental to the poor distribution of the COVID palliative. They believe the officials who received the relief items from the government hoarded some food for their personal interests. Obvious responses demonstrated a lack of

organisation, planning, and distribution on the part of the government. The target population, the selection criteria, and the sharing formula were questionable. This finding supports Ibukun and Adebayo (2021), who found that palliative and its distribution were grossly inadequate, and only a few households received food or cash assistance. Okonkwo et al. (2021); Oleribe et al. (2020) observed that the lockdown support only made news headline on the television and the radio. The national saga of the government palliative distribution during and after the lockdown confirms the findings in this research. The Nigerian youths discovered, first, in Lagos State and subsequently in other States, hidden warehouses where State Governments and their officials hid some lockdown relief materials given by the Federal Government for distribution. This discovery raised resentment and the warehouses were raided by people (Ezeah, 2020; Olisah, 2020; Ujah, 2020). Corruption, selfishness, and embezzlement by government officials could create a considerable gap in governance, leading to distrust, lack of corporation, and sometimes lawlessness. Society becomes the survival of the fittest, broadening the inequality gap and resulting in underdevelopment.

While it may not be feasible for everyone to receive government palliative, the argument is that some households with vulnerable members may be more privileged than households without this group. Therefore, developing a sharing formula with household characteristics may not have captured well the population impacted by the lockdown. Consequently, a form of assessment is essential in such a situation to reach the targeted population (Johnson, 2021). Johnson (2021) noted that the Nigerian government could only determine who gets what benefits if accurate assessments and distribution methods are carried out. The sample in this study are some of the poorest households in the area, yet they felt no impact of the government assistance during the lockdown. It raised doubt and distrust among the people, and this was reiterated by (Oleribe et al., 2020). Progress and development will be implausible in a country without citizens' trust and confidence in the government. Adebayo

and Oluwamayowa (2021) have argued that extreme instability in households' food accessibility and the poor distribution strategy of the government Covid-19 palliative triggered the incidence of violence. Violence may be lacking where hunger exists. Okonkwo et al. (2021) described the food challenges of COVID-19 as a wake-up call for the authorities to the reality of food insecurity in South-eastern Nigeria.

Post COVID-19 lockdown equally presented its challenges. Participants had mixed feelings; they were unsure if their household food situation improved after the lockdown as food prices remained on the increase against their hope. Although movement restrictions were lifted, and they could go about their daily activities to provide for their households, children went back to school, and the rate of COVID infection was less, which gave them some relief. Therefore, the post-lockdown seemed not to have improved household food security. However, life returned to normal, and people could go about providing food for their households daily. Some participants had these to say (ref. section 5.7.3), *"It's worse now. Food prices are high, there is no food! It is not getting any better"* (OB1). *"It is a bit better now because movement restrictions have been lifted and crops planted are now being harvested gradually. Also, the kids have started going to school, and the stress of constant demands and hunger cries that came with their stay at home during COVID have reduced"* (OP1).

In summary, the COVID-19 lockdown experience by Nsukka communities suggests some negative impacts, such as high food prices, lack/loss of jobs, movement restrictions, and lack of income. Intense hunger and lack heralded the period with government assistance eluding most of the households. The coping strategies used by most households were not different from their usual coping strategies signifying saturation of ideas and means of coping with food insecurity. The help of the government through initiatives that consider other strategies could assist these communities. The lifting of the lockdown did not make any difference for some households as the increased food prices further made it difficult to access food.

However, the lasting period of the effect of the lockdown is uncertain. Similarly, it is unknown when communities like Nsukka would receive succour.

## **6.10 Perspectives towards improving food security**

This section discusses new research findings on the possible remedies to household food insecurity in NLGA as construed by the households. Participants' views on household food insecurity were explored to understand their perspectives and awareness, which could contribute to any necessary intervention in the future. First, participants understood improvement in agricultural activities as a way forward. Households agreed that agricultural activities significantly support household food security. It is consistent with (Obayelu, 2012; Otaha, 2013). Improving the safety of farmers and their farms and supporting their productivity above the peasant level could have a positive implication for household food security. In agreement with this finding, Otaha (2013) recommended conflict resolution and prevention mechanisms as crucial to reducing the vulnerability of locals. It may require necessary policies, implementation, and adequate monitoring to retreat the source of the conflict and ensure safety for the locals and their farms. Also, since most Nsukka households are small-scale farmers, government assistance through soft loans and mechanised farming could improve farming activities, increase productivity, and alleviate food insecurity. Obayelu (2012) recommended government policies and reforms and availing more agricultural lands to local farmers. Another element to this opinion is the full involvement of women in agriculture and commercial activities; importantly, through empowerment, training, and education. According to Essilfie et al. (2020), women's empowerment through women's education and power to decision-making are significant indicators for enhancing household food security. The participants believe it will immensely support their husbands if

they lose their jobs or fall ill, and it could serve as a second source of income for the household.

Second, financial empowerment was a major suggestion among participants for improving food security. Most participants showed interest in starting a business or trade that will positively impact their household food and wished they could be empowered. A participant held (ref. section 5.5.2): *“I would need some financial assistance to start a small foodstuff business to support my husband. This will make us have enough income to purchase food that will be enough for our family”* (EZ1). Another aspect of empowerment identified was vocational empowerment. It means that women could be trained in different skills that can support independence, primarily, but not limited to, people with disability. The government could intervene through such training to alleviate the problems of food insecurity, as observed by a respondent: *“I need support and skill empowerment from the government as I am disabled, and my mother is old. The empowerment from the government will help us to make money and stop borrowing from people”* (OP2). Third, income diversification can improve household food. It implies that a household could have several businesses or jobs that yield income concurrently. However, it requires financial support to be feasible.

Fourth, participants noted that gaining employment would support their household food. A participant with a College of Education certificate explained how employment could improve her household food security. It is also important to mention that uneducated women could be motivated to acquire/improve an existing formal education/qualification if employed in the non-skilled sectors, thus positively impacting household food and the overall strategy towards achieving Sustainable Development Goals 4 and 5 – Quality Education and gender equality. Fifth, some participants identified with group savings to improve food security. It means belonging to an informal group where women make weekly or monthly contributions and take turns to receive the total contribution, which assists in their family’s food access. The

group could invest the money contributed and share the profit. Some women described how this method abetted their household food; others expressed an extreme lack of funds that could not support such savings. Women could do more through group savings to reap more benefits and formally make their voices heard in the political and economic arena. Ukpe, Nweze, and Arene (2016) recognised that belonging to a cooperative society reduces the vulnerability of households to food insecurity. It increases social networks, improves access to information, supports agricultural input and access to credits, and gives a sense of belonging.

In summary, participants suggested several solutions to household food insecurity; these include improvement in agricultural activities through mechanisation, and the safety of farmers and their farms- financial and vocational empowerment to farmers, especially women, through loans and skill acquisition. Also, income diversification to improve household food security, gain employment, and group or corporate savings could go a long way to support household food.

### **6.11: A framework of research findings, food security SWOT analysis, and the draft of a roadmap towards food security using research evidence utilisation model**

This section considered concepts that support a road map towards food security intervention. The section begins by describing a road map in the context of this research and presenting the summary of the findings through a framework. From the findings, a food security SWOT analysis of the households' highlighted areas of household's strength and opportunities that could be harnessed, weaknesses that could be strengthened, and threats that could be mitigated to improve household food security. Further sections also propose the adaptation of Stetler (2001)'s model of Research Utilization to facilitate Evidence-Based Practice (EBP) in food provision or intervention programs that could be implemented and monitored using this

model towards achieving food security. It simplifies the research utilisation processes based on the existing evidence in a few steps.

The purpose of this research is to make an impact that brings positive development. Farquhar et al. (2002) concluded that research projects should considerably enhance the application of quality improvements. In addition to academic publications, research must be made accessible to stakeholders and policymakers to change practice and policy. Dissemination roadmaps can assist researchers, individuals, groups, or governments implement research findings (Centre for construction research and training, 2014). A roadmap is vital to translate research evidence into practical, workable plans and strategies. In this way, research findings make a real life-impact, and achieve ideal changes. A roadmap in the context of this research is a technique, an implementation outlook of a strategic plan with solutions towards sustainable food security in Nsukka, which could be for a short or long-term period. The draft roadmap derived from this research provides a possible route by which household food security could be supported and achieved in NLGA, through food and nutrition interventions, educational support, training, and community programs. It could help to transform research-based knowledge into practice (Soba, 2014). The present research draft roadmap is aimed primarily at government organisations, private and nongovernmental organisations, international and local humanitarian organisations, policymakers, researchers, educators, and community leaders. Furthermore, by providing evidence of food security intervention needs and potential strategies to solutions through a SWOT analysis that lends support towards the development of a draft roadmap, this research provides the above organisations confirmation of the support needed to alleviate food insecurity at the household level in NLGA.

### **6.11.1 Research Utilisation**

Brown and Rodger (1999) described the research process as a cyclical process where practice raises questions for research, and research informs practice. Research findings are utilised for change, development, or further research in a system. Research utilisation is a process of critiquing, implementing, evaluating, and disseminating research findings (Hickey, 1990). It transforms research knowledge into practice (Stetler, 2001).

Statler (2001) refined model of Research Utilization was used to propose a model for the utilisation of the finding in the present research. It modelled the process of adequately utilising research findings to impact real life situations. The model is rooted in knowledge utilisation which originally addressed clinical practitioners emphasising evaluating research for clinical application, but it is also used to implement changes in other settings (Indra, 2018). It contains a systematic set of standards operationalised by some judgmental activities to engage a nurse or group of nurses (Brown & Rodger, 1999). However, this model applies to other fields of study (Stetler, 2001). For instance, Soba (2014) applied the model in food security screening. This research adopted this model because it involves a procedural screening, adoption, and application of an intervention method from existing literature to real life situations. Also, it indorses a research application method that promotes adequate validation of the intervention method and evaluation of the physical application (Stetler, 2001).

Table 20 presents a framework that highlights and describes the present research findings. The framework supports the development of a SWOT analysis.



**TABLE 20: A FRAMEWORK OF RESEARCH EVIDENCE**

S/N	Findings	Description
1.	A high prevalence of food insecurity access.	A prevailing household food insecurity condition exists within NLGA at approx. 82.6%.
2	Household food insecurity experiences had both physical and psychological impact.	Physical – hardship, hunger, domestic violence, child labour, and broken family relationships. Psychological - anxiety, uncertainty, sleeplessness, and stigmatisation.
3	Household dietary diversity, nutrition, and health.	Good dietary diversity but insufficient food quantity and quality, low consumption of protein rich food, adverse health conditions linked to food insecurity, and poor food safety practices.
4	Several challenging factors and causes of food insecurity exist.	Low education, low income, low work status, age of the household women, poverty, illness and diseases, disability, conflict and civil insecurity, unemployment, loss of jobs, COVID-19, and some cultural practices.
5	Food insecurity coping strategies were internal and external.	Prominent among these strategies are food quality and quantity compromise, going a whole day and sleeping at night without food, meal skips, suspending children’s education or withdrawing them from school to learn a trade, sending off household members to eat from or live with relatives or friends, sales of valuables, odd jobs, farming, and group savings. Also, households sought help or received assistance, begging, borrowing, recycling food, and purchasing food on credit. Some households had faith in God to provide for their needs.
7	Solutions to household food insecurity from the participants perspective.	Improvement in agricultural activities through finances and mechanisation and the safety of farmers and their farms. Financial and vocational empowerment to rural farmers especially, women, through loans and skill acquisition. Also, income diversification to improve household food security, gaining employment, and group or corporate savings.
8	Household food insecurity during the COVID-19 Pandemic.	Some negative impacts such as high food prices, lack/loss of jobs, movement restrictions, and lack of income. Uncertainty and intense hunger and lack heralded the period with the government palliatives eluding most of the households. Households employed their usual coping strategies.

### **6.11.2 The SWOT Analysis of household food security**

The application of a Strength, Weakness, Opportunities, and Threats (SWOT) analysis as an analytical tool or technique in understanding food security and for strategic planning toward improving its status is recognised in the literature (Abid & Jie, 2021; Mostova, 2017; Ommani, 2011; Schroeder et al., 2013). Ommani (2011) described SWOT analysis as a framework or technique that helps planners and researchers identify and prioritise goals and develop strategies to achieve them. He used SWOT analysis to identify strategies for agricultural development toward achieving food security. Schroeder et al. (2013) referred to it as an analytic tool for identifying and measuring Strengths and Weaknesses (internal factors), Opportunities and Threats (external factors) of businesses, institutions, organisations, and projects to understand the current reality and strategise toward achieving a goal. Abid and Jie (2021) have argued that SWOT analysis is not only valuable for strategising and prioritising but, essentially, through the combination of internal and external factors (opportunities and threats), aids scientific decisions making. It is the initial planning phase and focuses on key issues (Ommani, 2011).

The food security SWOT analysis in this research context identified the strength, weaknesses, opportunities, and threats to the Nsukka household's food security. The internal factors which can be controlled are the strengths and weaknesses. The strengths are aspects of strong capacity, such as pre-existing natural or manmade resources, skills, knowledge, and practices (Abid & Jie, 2021). Weaknesses are areas of poor performance that can be strengthened or improved. The external factors that cannot be controlled are opportunities and threats. Opportunities are prospective strengths or unharnessed possibilities that can improve food security status in the area, while threats are risks, dangers, or disadvantages that could further reduce the food security levels (Ommani, 2011) of the household; these should be mitigated or eradicated. Table 21 attempt to match the internal factors with the external ones to harness

the strength and opportunities or to reduce the weaknesses and threats. For instance, strategies to match strength-opportunities (S-O) imply that households could be assessed for capacity building and interventions - local training, exchange of ideas, mentoring, shadowing, and skill development can be offered, and farmers and traders empowered. Such schemes could be delivered through women's groups, village/community meetings, and religious groups. Also, strategies to minimize weaknesses and explore opportunities (W-O) will aim to turn the weak areas into viable advantages - for instance, improvement in the educational system and increased knowledge on farming, nutrition/food safety, and wealth creation. Adult education could be encouraged with some incentives. Again, strategies to mitigate threats and explore strengths (T-S) suggest that threats to household food security could be minimised or eradicated for household food security to thrive. Although, most external factors may require government actions like policies to fight insecurity, inflation, poverty, and unemployment. However, they can reduce threats and boost strengths. Furthermore, strategies to minimise weaknesses and threats (W-T) may include plans to create jobs, boost income/resources, improve the standard of living, good health facilities, and support for households during pandemics or disasters.

Analysing the strengths, opportunities, weaknesses, and threats highlights areas to explore in identifying pathways towards the draft roadmap for achieving food security in NLGA and supporting the utilisation of research findings. This SWOT analysis is based on the research findings.

**TABLE 21: THE APPLICATION OF A HOUSEHOLD FOOD SECURITY SWOT ANALYSIS**

<p><b>Internal factors</b> (can be controlled)</p>	<p><b>Opportunities (O)</b></p> <ul style="list-style-type: none"> <li>• Large scale farming</li> <li>• Increased productivity</li> <li>• Innovation and technology</li> <li>• Government/NGOs/private support</li> <li>• Vocation/skill development</li> <li>• Women empowerment</li> <li>• Nutrition/food safety Sensitisation</li> <li>• Corporative societies/saving scheme/Loans for investments</li> <li>• Education/trainings</li> </ul>	<p><b>Threats (T)</b></p> <ul style="list-style-type: none"> <li>• Insecurity of lives</li> <li>• Loss of farm produce</li> <li>• Surge in food prices and inflation</li> <li>• Poverty</li> <li>• Hardship</li> <li>• Unemployment</li> <li>• Pandemic</li> <li>• Poor government strategies to reach out to the vulnerable households</li> </ul>
<p><b>External factors</b> (cannot be controlled)</p>	<p><b>Strength (S)</b></p> <ul style="list-style-type: none"> <li>• Believe in self/productivity</li> <li>• Similarities in male and female headed households' food security</li> <li>• Women involvement in agriculture and business initiative</li> <li>• Existing women's groups</li> </ul>	<p><b>Strategies to match strengths and opportunities</b></p> <ul style="list-style-type: none"> <li>• Capacity assessment and building</li> <li>• Farmer's empowerment</li> <li>• Local training/skill development through women's groups</li> <li>• Nutrition interventions</li> <li>• Improve farming technology</li> <li>• Interactions/exchange of ideas/nutrition/food safety talks in women's groups.</li> <li>• Local and international interventions</li> </ul>
<p><b>Weaknesses (W)</b></p> <ul style="list-style-type: none"> <li>• Poor education and knowledge</li> <li>• Low economic resources</li> <li>• Lack of land resources</li> <li>• Low income</li> <li>• Poor food access</li> <li>• Poor nutrition</li> <li>• Disability and diseases</li> <li>• Cultural practices</li> <li>• Poor farming practices</li> </ul>	<p><b>Strategies to minimize weaknesses and explore opportunities</b></p> <ul style="list-style-type: none"> <li>• Improve education</li> <li>• Access to more farmlands</li> <li>• Food support programs (foodbanks/food safety nets)</li> <li>• Policies to strengthen equality and inclusion</li> <li>• Address poor cultural practices, especially as it affects women and children.</li> </ul>	<p><b>Strategies to minimise weaknesses and threats</b></p> <ul style="list-style-type: none"> <li>• Ensure security of lives and properties</li> <li>• Checkmate inflation and rising food prices</li> <li>• Alleviate poverty and hardship</li> <li>• Women empowerment</li> <li>• Good workable policies</li> <li>• Create employment</li> <li>• Create jobs to boost income/increase financial resources</li> <li>• Improve interaction between local farmers.</li> <li>• Policies to tackle Pandemics and support households.</li> <li>• A framework for assessing/supporting vulnerable households</li> <li>• Good health facilities</li> </ul>

Adapted from Schroeder et al (2013); Abid & Jie (2021); Ommani (2011)

### **6.11.3 Stetler-Marram Model (1994) of research utilisation as refined by Stetler (2001)**

The SWOT analysis suggests some relevant potential strategies towards achieving household food security. However, relevant scientific model is apt to facilitate Evidence Based Practice through an intervention process that is evidenced from literature search, critique, appraisal, application, and implementation. Evidence based practice (EBP) is defined as the conscientious use of existing best evidence in research to inform practice in health care decisions; in the present context it will inform practice in food security intervention. EBP models support organised approaches to implement EBP (Indra, 2018). Some examples of EBP models include the ACE Star Model, ARCC model, the IOWA model, and Stetler's model. Stetler's model was adopted as a tool that could facilitate the search for an intervention program towards the development of a roadmap for achieving household food security. Romp & Kiehl (2009) recognised Stetler's model as providing excellent framework for the development of programs and effective application of EBP. They explained that using a relevant model of research utilisation can assist in the application of a research-based knowledge through interventions. It helps to prevent inaccurate utilisation of research outcomes. Stetler's model presented in figure 26 involves five phases through which literature findings are made, scrutinised, validated, translated, and applied to real life situation, and the outcome evaluated.

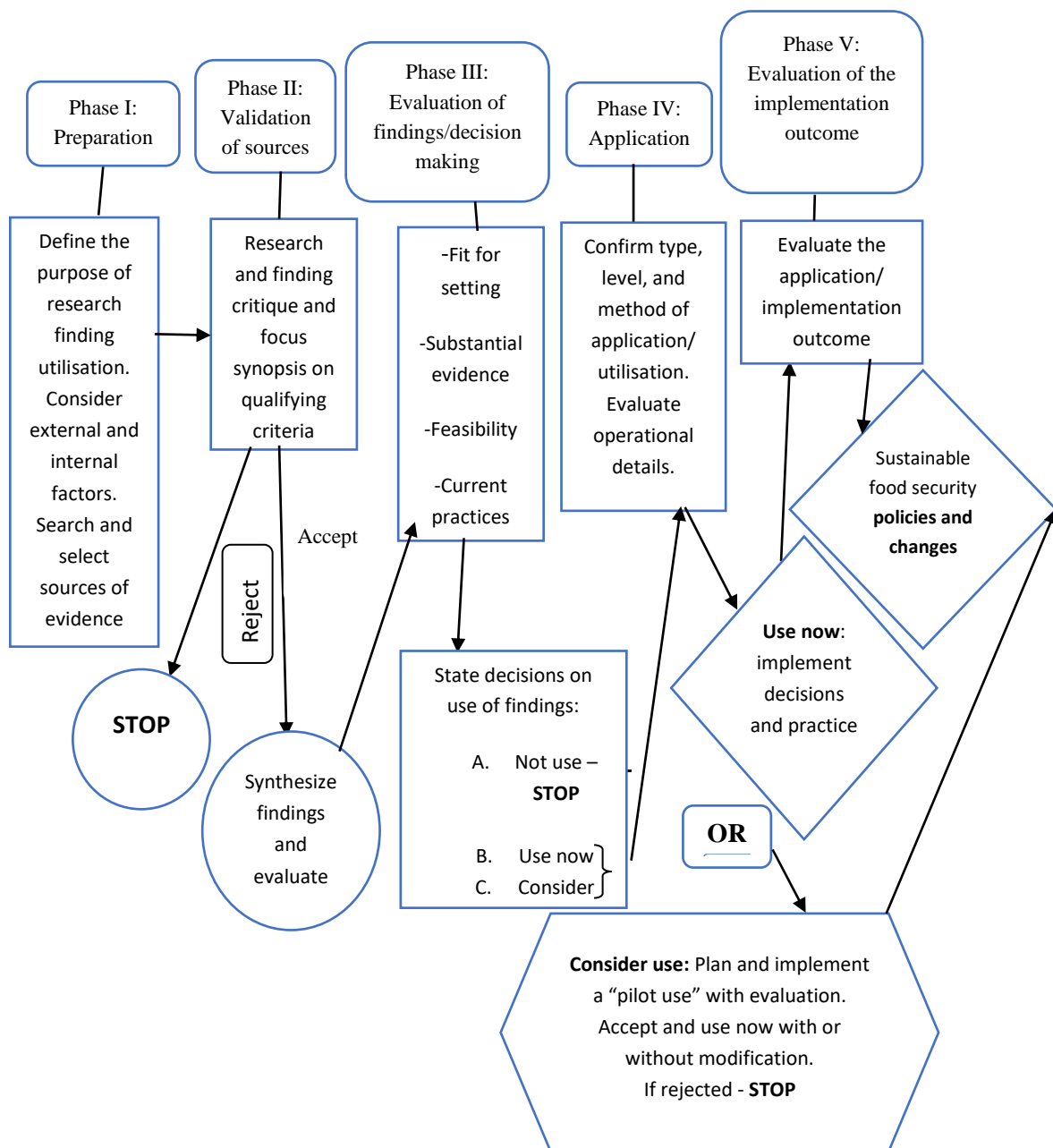


FIGURE 26: RESEARCH UTILISATION/IMPLEMENTATION MODEL

Adapted from Stetler (2001).

#### 6.11.4 Applying the refined Stetler (2001) model of research utilisation

The five phases of Stetler’s model (figure 26) involve organising research finding utilisation project. This process buttresses a framework that identifies pertinent and valid research with the best approach in applying solutions to a problem or bringing about changes in a person or group of people or practice. Each phase provides a direction in the intervention journey and answers essential questions. The purpose of this section is to propose the process of food

security intervention in NLGA communities using Stetler's model based on the research findings in this study. The model sets out the process of researching and applying a suitable intervention and implementation method that delivers solutions to problems established through research. The following paragraph explains the phases in the model and how its application could support food security intervention in NLGA.

**Preparation (phase I)** is a critical thinking and conscious process with clarity of purpose, context, and literature review method. An efficient literature review that ascertains how various food security interventions have assisted populations with similar characteristics like NLGA is facilitated by refined questions. Questions that need addressing include – Are there populations like NLGA that have received interventions in the past? What intervention is needed? What comparisons could be made? And what outcomes are of interest? Romp & Kiehl (2009) suggest using the PICO format to identify the specific questions for review. “*P stands for the population of interest, 'I' stands for the intervention of interest, 'C' stands for the comparison of interest, and 'O' stands for the outcome of interest.*” However, Snyder et al. (2011) included Time (PICOT); they considered the time frame for the outcome of interest. Considerations are given to potential implications of external factors that may influence the application process, which could be environmentally inclined (resources, timeline, politics) and internal factors that are more personal (belief, lifestyle, instinctive appeal of the intervention); these form important assumptions of the refined Stetler's model. Focus on the identified problems should be on high-priority aspects. The need for a team of researchers or key stakeholders could be considered. The literature search evidence could be from a single or a group of research.

**Validation (phase II)** – this phase is utilisation focused. It includes critiquing the selected intervention-focused literature and synopsising the credibility of literature findings, systematic reviews, and identifying qualifying factors (Snyder et al., 2011). Sources are

reassessed, and the quality and level of each evidence of intervention implementation processes are rated. This phase asks questions such as if the review results is valid. Is there sufficient evidence to support a particular intervention type and process? Are they helpful in addressing the intervention need? The identified articles undergo a rigorous process of synthesis and evaluation criteria to be validated for acceptance or rejection. Rejection of findings ends the research utilisation process, while acceptance validates and moves the process to phase III.

**Comparative evaluation of evidence/decision making (phase III)** – This phase evaluates the desirability and feasibility of applying research findings to practice (Romp & Kiehl, 2009). Important questions in this phase would be – are the documented intervention and application method feasible for NLGA? Did the evidence in the documented intervention support the achievement of food security? Both human and material resources required are considered. The core of this phase anchors on the four relative applicability principles. These are fit for setting, substantiating evidence, feasibility (including the assessment of the communities), and current practices. The decision to apply research findings to a setting qualifies the research through substantial evidence fit for the setting. Consideration will be given to the feasibility of the intervention’s application and the impact on current practices. In the context of the present study, it will be the impact on the household’s food situation, current practices, demographics, and how they perceive food insecurity solution. Sufficient evidence that supports a selected intervention as a means of achieving household food security is crucial. Furthermore, a decision is made in either of these three categories. “Not to use” ends the utilisation of the research process. “Use now” and “consider use” takes the research utilisation process to phase IV.

**Translation/application for achieving food security (phase IV)** – the application or implementation phase focuses on implementing the synthesised evidence and the



recommendations, including findings that require modifications or trial implementation before use. It includes translating the evidence into plans for implementation. It is vital to confirm the type, method, and level of intervention application or implementation, including operational details that involve the designation of duties, timelines, and procedures or guidelines. At the end of this phase, the outcome is either to “*use now, consider use with modification or not use*”. Implementation of decisions and practices are considered for the findings that fall within the “use now” category. Findings that require further consideration before acceptance and usage are further evaluated through “pilot use” with or without modifications. Findings that cannot be further justified or fit for implementation at this stage are rejected and not used, including piloted findings.

**Evaluation of the implementation outcome (phase V)** – the implementation outcome will be evaluated for impact and effect. The potential output (food security) can be physically measured from the lifestyle and standard of living of the research subjects. If the evaluation of the impact and progress of the implementation produces the expected change, it will impact policies, ending the entire process. Appropriate tools like HFIAS and HDDS, which were used for the baseline research in this study, could be used again to establish the food security status after the intervention and compared with their status before the intervention. A credible result from the implementation process evaluation would translate into positive and sustainable policies and changes in household food security conditions and practices. Snyder et al. (2011); Stetler (2001) confirm that phase five is the final phase of the model. However, it could prompt a new EBP cycle as often, new gaps in knowledge are discovered in the process of implementation and evaluation, leading to new research questions.

### 6.11.4 The draft roadmap

The draft roadmap is a proposal for the application of the findings of this research to a real-life setting in NLGA. The roadmap infused knowledge from Stetler’s model and the household food security SWOT analysis to propose a potential intervention map toward food security. It is a step-by-step process toward achieving sustainable food security within the LGA. Figure 27 is a highlight and a proposed plan of the draft roadmap; a more detailed explanation follows this.

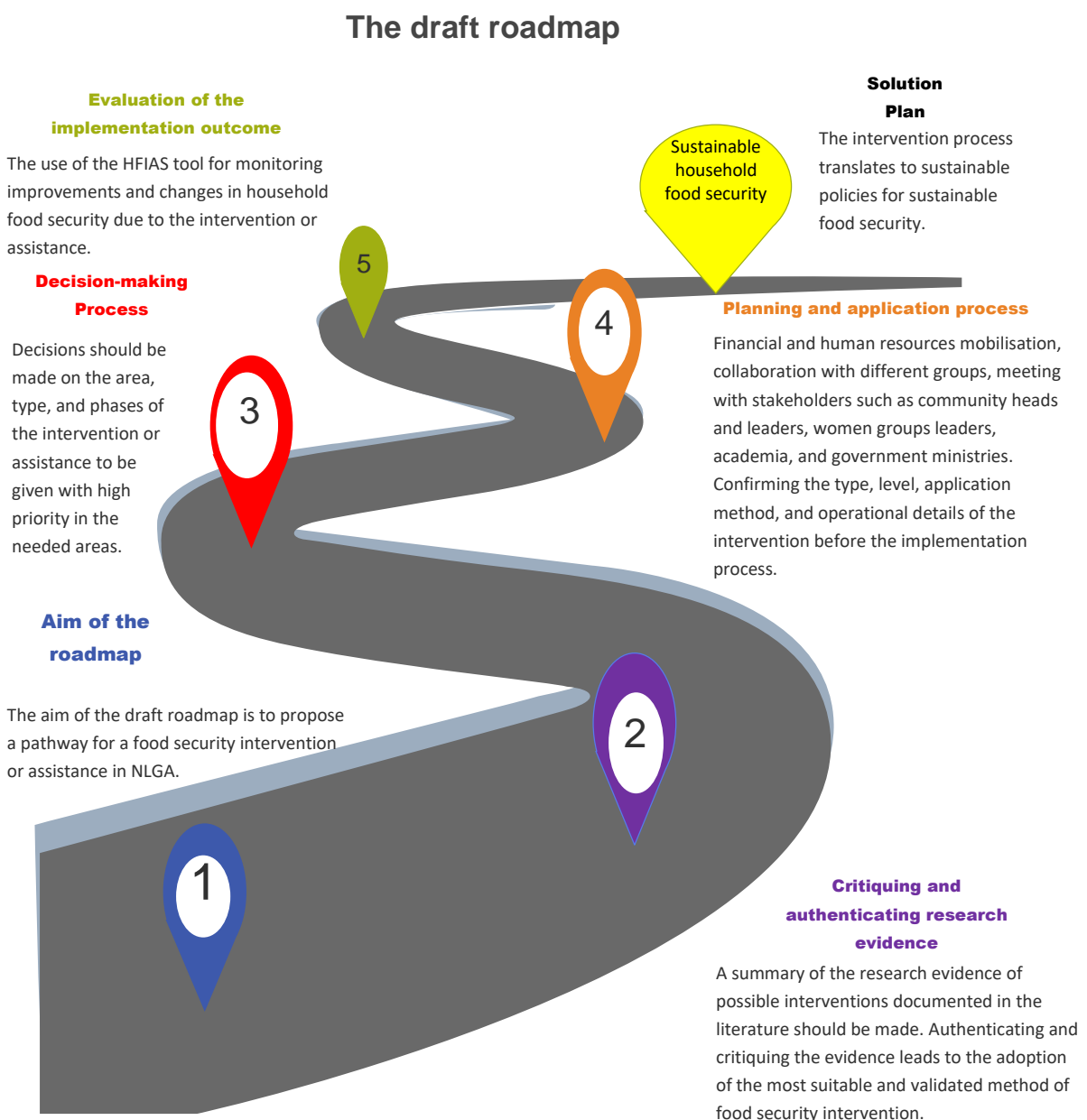


FIGURE 27: THE DRAFT ROADMAP MODEL

**STEP 1 – The aim of the roadmap.** The aim of the draft roadmap is to propose a food security intervention or assistance process in NLGA using a draft roadmap. Having found a high level of household food insecurity and evidence of poverty and poor standard of living in this research, and as evidenced in the literature, NLGA could benefit from an intervention from the Local, State, or Federal Governments of Nigeria, Non-governmental, private, charities, and international organisations. Group/individual philanthropists could also offer interventions or assistance to alleviate food insecurity in the area.

**STEP 2 – Critiquing and authenticating research evidence.** Adopting Stetler’s model is essential for validating a suitable type and method of food security intervention evidenced in the literature and will present the most viable method to be selected. A synopsis of the qualifying criteria is essential and qualifies the intervention for adoption and implementation.

**STEP 3 – Decision-making process.** The organisation offering the intervention will make the initial decisions or in collaboration with selected stakeholders such as community heads and leaders, women groups leaders, academia, ministries, and religious leaders. Decisions would be made on the area and type of intervention or assistance to be offered, such as food and agriculture, nutrition, education, empowerment, training and skill development, capacity building, loan, and financial support. The intervention could be community-specific, where the communities will be considered individually. It could also be number specific, where certain households from all the communities will be considered at each phase of the intervention. The framework of the research evidence in table 20 presented a summary of the research findings and could help select the type and method of intervention. The research findings revealed that communities in NLGA need intervention in all the areas mentioned above; therefore, prioritising the type of intervention is imperative. The SWOT analysis in table 21 is another helpful tool in the decision-making process. These are strategies for

overcoming weaknesses and threats to food security and exploring strengths and opportunities available to improve food security in NLGA - strategies to match strengths and opportunities, strategies to mitigate threats and exploit strengths, strategies to minimise weaknesses and explore opportunities and strategies to minimise threats and weaknesses. Simelane and Worth (2020) recommend two-folds responses to food insecurity intervention in their vulnerability model. It is in the form of alleviating food insecurity risks and improving household resilience to a potential one. This approach ensures the sustainability of household food security. Furthermore, a feasibility study is necessary at this stage to consider current practices, and assess beneficiaries, substantiate the level of need, and confirm that the intervention decision fits the setting. Again, the summary of findings in this research characterised households in this area and established their level of need. Specific factors to be considered at this phase are culture and traditions, environment, economic factors, political factors, language barrier (if applicable), and time frame. If the intervention is not feasible, the process should stop. However, another type of intervention could be considered. The process should be moved to the planning and application stage if it is feasible.

**STEP 4 - Planning and application process.** At this stage, it is assumed that a type and intervention method have been selected. The planning process involves financial and human resources mobilisation, collaboration with relevant groups, and meeting with stakeholders. Confirming the type, level, application method, and operational details and drafting the modalities, and intervention phases is imperative. It is either the intervention is implemented/applied, or where some planning and application process is not clearly defined, or there are hindering external and internal factors, a pilot use can be implemented.

**STEP 5 – Evaluation of the implementation outcome:** Very important of all the steps is to evaluate the intervention implementation outcome. The baseline research conducted to determine the food security level of NLGA households could be repeated to evaluate the

impact of the intervention or assistance. The HFIAS is a validated tool for monitoring food security interventions (Coates et al., 2007). Having been used at the baseline research to determine the food security level of households within NLGA, it makes it a perfect instrument to evaluate and monitor any changes in household food security due to the intervention. The evaluation result should lead to policies for sustainable food security in NLGA. The policies could emanate either at the local or state government levels depending on the source or nature of the intervention. The evaluation stage could also lead to discovering knowledge gaps that could start a new cycle of evidence-based investigation.

## **6.12 Research contribution to knowledge**

Certain academic gaps identified were filled through this research; these are areas that no study has investigated. By filling these gaps, this research contributed to literature and knowledge in the following ways:

1. A few research on food security in the Nsukka region focused on related topics or individual communities of the NLGA. For instance, Ibeanu et al. (2010) investigated food preservation and security at the household level in rural Nsukka (Ehalumuno and Opi), and Arene & Anyaeji (2010) investigated Determinants of Food Security among Households in Nsukka Metropolis. Nzeagwu and Aleke (2016) investigated Household nutrition and food security in the Obukpa rural community. However, this research investigated households' food security and dietary diversity level, food insecurity experience and coping strategies in NLGA.
2. Using the qualitative method to access first-hand information on households' food insecurity experiences and coping strategies, this research established household's experiences, perceptions, and responses to food insecurity.

3. This research developed a food security SWOT analysis of Nsukka households and a draft roadmap for interventions and assistance programs toward achieving food security in NLGA. The Nigerian government could adopt these at the local, state, and federal levels and non-governmental/charities or international organisations for food security intervention.

## **6.13 Recommendations**

Based on the research findings, this study made the following recommendations for practice, policy, and further studies.

### **6.13.1 Recommendations for practice**

Women revealed that savings through groups are one of their food security coping strategies (section 6.8 and 6.9). An organised co-operative society by women groups can improve this system of savings. Women who cannot afford cash can deposit farm produce which the co-operative could sell, and the value credited to the woman's deposit account. An organised co-operative society affords easy recognition and accessibility to government at the local, state, and federal level and possibly at the international level. The group could make submissions with their priority needs. Inclusion is vital in setting up such a system to carry the poorest households along. Initiating the system at the clan or village level could ensure inclusion and equity. Also, frequent forums for women to share their experiences and exchange ideas of coping strategies and receive expert talks, advice, and seminars/workshops on household food and nutrition security would be beneficial. Such events could help them better understand their struggles with food insecurity and prioritise solutions. Again, this could facilitate easy access to food security interventions.

### **6.13.2 Recommendation for Policy**

1. Adoption of the SWOT analysis and the draft roadmap developed in this study is recommended for food intervention and assistance programs in NLGA and similar regions of the country.
2. Farmers at the regional or sub-regional levels should be financially supported, provided with land, equipment, and seedlings to increase their productivity. Soft loans should be made easy to access. Every assistance should be monitored adequately to achieve its purpose.
3. Strong policies should be enacted to protect farmers, their farms, and the entire civil society.
4. The Act that prohibits discrimination against disabled persons in Nigeria should be implemented to the later. Policies that support inclusion and equal opportunity, community integration, and employment for disabled persons as well as good benefits or assistants from the government, should be prioritised.
5. Feasible policies on food safety nets for social welfare should be made to accommodate households and individuals struggling with food. It is crucial that what constitutes “poor households, food insecure households, or individuals” are clearly defined, and the modalities of assessments stated and followed to the later, especially during a Pandemic or natural disaster. Non-governmental organisations and charities should be approached/encouraged to support this course.
6. Government should develop mechanisms for monitoring palliatives (food or financial assistance) distribution to poor households and individuals to ensure it reaches the target population, especially during pandemics such as COVID-19 and disasters. Such policies should promote transparency, accountability, integrity, and good governance. The government at every level should demand physical evidence, monitoring, and

evaluation of the palliative's impacts to reduce corrupt practices and promote good governance.

7. The Nigerian government should review its success and flaws in fulfilling its obligations as stated in the food and nutrition policy of 2016.
8. The government should be proactive in implementing the child's right and protection Act 2003 in all the States of the Federation.
9. Gender equality and the right of the female child should be taken seriously, and female citizens should be assured of protection upon reporting any act that violates their rights.
10. Through viable policies, the government could explore and transform the women's group's informal saving structures into an effective practical tool for resolving household food and nutrition challenges.

### **6.13.3 Recommendation for further studies**

Further research to establish approaches and types of suitable intervention or assistance programs and, through collaborations, prioritise needs and create broader interest toward alleviating food insecurity is necessary. Also, poor food preservation measures practiced by households raise questions about food safety and hygiene. Therefore, further study is needed on the food safety and hygiene practices of households in NLGA. Again, this research raises questions about adequate child nutrition since households do not frequently consume protein-rich foods; when consumed, they are eaten in small portions. Therefore, this study recommends a further study on child's dietary diversity and nutritional status in households in NLGA. Further research could be conducted to assess and improve the infrastructures available to households for increasing resilience to food shocks from "farm to fork" (food systems) especially during Pandemics. Further research on government's structures and



response to risk mitigation and disaster management with regards to household food is recommended.

The scope of this research was limited to NLGA and does not represent the food security conditions, experiences, and coping strategies of other LGAs of Enugu state or rural communities in Nigeria. A replication of this study in other rural communities of the state and the country at large is recommended.

## **6.14 Summary of chapter six**

This chapter is in two sections. The first section presented the discussions of the research findings and their implication. The second section described the draft of a road map for research evidence implementation. It includes a synopsis of the research findings, a SWOT analysis of food security in NLGA, the adaptation of Stetler's (2001) model of research EBP, and a draft roadmap proposing a process of food security intervention based on the research findings.

## **6.15 Dissemination of research findings**

During this study, efforts were made to disseminate research findings through international and local conferences. Oral presentations were made at three international and two local conferences. The abstract for the International Conference on Building Resilience in Tropical Agroecosystems (BRITAE 2023), Sri-Lanka, was published in the book of proceedings. Presentations of conference posters featured at two international conferences (see appendix 23). Furthermore, an article submitted to *Maternal, and Child Nutrition* (Wiley publications) has been peer-reviewed and corrected. More articles are underway for similar publications.

## **6.16 Conclusion**

This research investigated households' food security and dietary diversity in NLGA and analysed their food insecurity experiences and coping strategies. Using the HFIAS and the HDDS, it randomly surveyed 390 women who represented their households and gave information on their household food conditions. Going by the severe food insecurity results obtained two women from each of the five most food insecure communities were interviewed on their household food insecurity experiences and coping strategies. Data collected were managed and analysed using SPSS and NVivo software. Based on the research findings, this study concludes that there is a high prevalence of food insecurity within households in NLGA of Enugu State, Nigeria. However, some households reported seasonal food insecurity. More than half of the households had or fell below the average dietary diversity. Households consumed more cereals, tubers, and root crops but less protein-rich food such as eggs and milk.

The study also concludes that several challenging factors and the causes of food insecurity within Nsukka households include low education level, low income, age of the household women, poverty, illness and disability, conflict and civil insecurity, unemployment, low work status, loss of job, tradition, and COVID-19 pandemic. Households experienced the impact of food insecurity in two significant ways: physical and psychological. The physical effects include hardship, hunger, domestic violence, child labour, and impaired family relationships. The psychological effect includes anxiety, uncertainty, loss of sleep, and stigmatisation. During the COVID-19 lockdown, negative experiences such as high food prices, lack/loss of jobs, movement restrictions, lack of income, and the lack of government palliatives impacted household food security. In response to food insecurity, households adopted some strategies to cope with food insecurity. These include food quality and quantity compromise, going a

whole day and sleeping at night without food, meal skips, suspending children's education or withdrawing them from school to learn a trade, sending off household members to eat from or live with relatives or friends, sales of valuables, odd jobs, farming, and group savings. Households sought help or received assistance, begged, or borrowed food and money, recycled food, and purchased food on credit. Some households had faith in God to provide for their needs. Households' opinion of the solutions to food insecurity includes improving agricultural activities through financial support, agricultural mechanisation, the safety of farmers and their farms, financial and vocational empowerment for rural farmers, especially women through loans and skill acquisition. Also suggested were income diversification, employment, and group or corporate savings.

This research produced a draft roadmap towards achieving food security in NLGA using a food security SWOT analysis and Stetler's model. The roadmap could be applied nationally and internationally to populations with similar economic, social, political, and environmental characteristics as NLGA.

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# Appendices

## Appendix 1: Number of undernourished people in the world

### NUMBER OF UNDERNOURISHED PEOPLE IN THE WORLD, 2005–2019

	Number of undernourished (millions)							
	2005	2010	2015	2016	2017	2018	2019*	2030**
<b>WORLD</b>	<b>825.6</b>	<b>668.2</b>	<b>653.3</b>	<b>657.6</b>	<b>653.2</b>	<b>678.1</b>	<b>687.8</b>	<b>841.4</b>
<b>AFRICA</b>	<b>192.6</b>	<b>196.1</b>	<b>216.9</b>	<b>224.9</b>	<b>231.7</b>	<b>236.8</b>	<b>250.3</b>	<b>433.2</b>
Northern Africa	18.3	17.8	13.8	14.4	15.5	15.0	15.6	21.4
Sub-Saharan Africa	174.3	178.3	203.0	210.5	216.3	221.8	234.7	411.8
Eastern Africa	95.0	98.1	104.9	108.4	110.4	112.9	117.9	191.6
Middle Africa	39.7	40.0	43.5	45.8	47.2	49.1	51.9	90.5
Southern Africa	2.7	3.2	4.4	5.1	4.5	5.2	5.6	11.0
Western Africa	36.9	37.0	50.3	51.2	54.2	54.7	59.4	118.8
<b>ASIA</b>	<b>574.7</b>	<b>423.8</b>	<b>388.8</b>	<b>381.7</b>	<b>369.7</b>	<b>385.3</b>	<b>381.1</b>	<b>329.2</b>
Central Asia	6.5	4.8	2.1	2.1	2.2	2.1	2.0	n.r.
Eastern Asia	118.6	60.6	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.
South-eastern Asia	97.4	70.1	66.7	63.9	63.4	64.2	64.7	63.0
Southern Asia	328.0	264.0	263.1	256.2	245.7	261.0	257.3	203.6
Western Asia	24.3	24.2	27.6	29.2	29.5	30.4	30.8	42.1
<i>Western Asia and Northern Africa</i>	42.6	42.0	41.4	43.6	45.0	45.4	46.4	63.5
<b>LATIN AMERICA AND THE CARIBBEAN</b>	<b>48.6</b>	<b>39.6</b>	<b>38.8</b>	<b>42.4</b>	<b>43.5</b>	<b>46.6</b>	<b>47.7</b>	<b>66.9</b>
Caribbean	8.4	7.2	7.4	7.3	7.1	7.3	7.2	6.6
Latin America	40.1	32.4	31.4	35.1	36.3	39.3	40.5	60.3
Central America	11.8	12.4	13.4	14.7	14.4	14.7	16.6	24.5
South America	28.4	20.0	18.0	20.4	21.9	24.6	24.0	35.7
<b>OCEANIA</b>	<b>1.9</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>3.4</b>
<b>NORTHERN AMERICA AND EUROPE</b>	<b>n.r.</b>	<b>n.r.</b>	<b>n.r.</b>	<b>n.r.</b>	<b>n.r.</b>	<b>n.r.</b>	<b>n.r.</b>	<b>n.r.</b>

■ On track   
■ Off track – some progress   
■ Off track – no progress or worsening

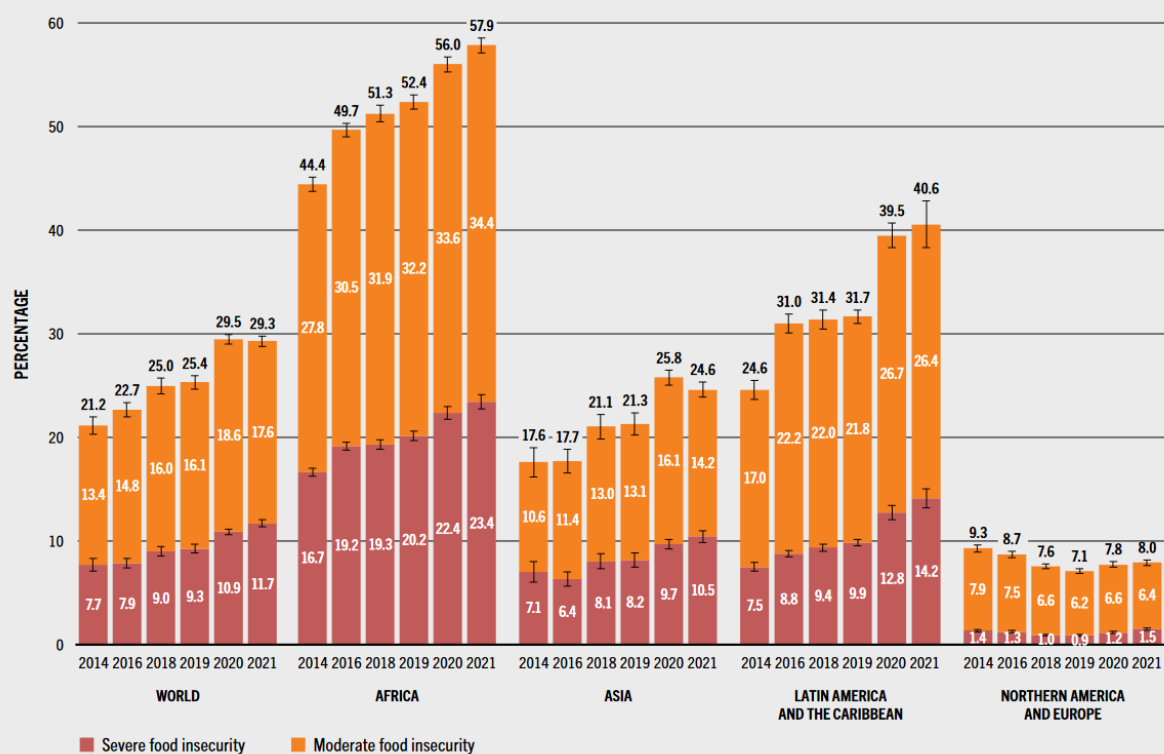
## Appendix 2a: Global severe and moderate food insecurity - FAO, 2022

**TABLE 4** NUMBER OF PEOPLE EXPERIENCING FOOD INSECURITY AT SEVERE LEVEL ONLY, AND AT MODERATE OR SEVERE LEVEL, BASED ON THE FOOD INSECURITY EXPERIENCE SCALE, 2014–2021

	Number of severely food insecure people (millions)						Number of moderately or severely food insecure people (millions)					
	2014	2016	2018	2019	2020	2021	2014	2016	2018	2019	2020	2021
<b>WORLD</b>	<b>564.9</b>	<b>588.5</b>	<b>687.4</b>	<b>716.9</b>	<b>850.1</b>	<b>923.7</b>	<b>1 543.9</b>	<b>1 693.4</b>	<b>1 905.4</b>	<b>1 955.9</b>	<b>2 297.8</b>	<b>2 308.5</b>
<b>AFRICA</b>	<b>192.1</b>	<b>232.7</b>	<b>246.8</b>	<b>264.2</b>	<b>300.5</b>	<b>322.0</b>	<b>512.0</b>	<b>602.8</b>	<b>654.1</b>	<b>685.0</b>	<b>750.9</b>	<b>794.7</b>
Northern Africa	22.4	23.7	22.0	21.1	23.4	28.3	65.1	68.6	73.7	69.8	74.4	85.3
Sub-Saharan Africa	169.7	209.1	224.8	243.0	277.1	293.8	446.9	534.2	580.4	615.2	676.4	709.4
Eastern Africa	81.6	101.7	102.5	108.6	125.3	131.2	213.6	253.1	264.8	276.1	296.8	306.0
Middle Africa	n.a.	n.a.	n.a.	n.a.	64.5	69.7	n.a.	n.a.	n.a.	n.a.	125.8	139.3
Southern Africa	5.5	5.8	6.0	6.2	7.4	7.5	13.3	13.9	14.4	14.6	16.6	16.8
Western Africa	35.1	47.1	56.8	65.1	79.9	85.4	123.6	158.9	184.5	202.4	237.2	247.4

## Appendix 2b: Global severe and moderate food insecurity

**FIGURE 7** MODERATE OR SEVERE FOOD INSECURITY REMAINED STABLE AT THE GLOBAL LEVEL DESPITE INCREASES IN EVERY REGION EXCEPT ASIA, WHEREAS SEVERE FOOD INSECURITY INCREASED GLOBALLY AND IN EVERY REGION



NOTE: Differences in totals are due to rounding of figures to the nearest decimal point.  
SOURCE: FAO.

### Appendix 3: Assumptions in qualitative and quantitative research

Assumptions	Questions	Quantitative	Qualitative
Ontological assumptions	What is the nature of reality	Reality is objective and singular, apart from the researcher.	Reality is subjective and multiple, as seen by participants in a study.
Epistemological Assumption	What is the relationship of the researcher and that researched?	Researcher researched. is independent from that being	Researcher interacts with that being researched.
Axiological Assumption	What is the role of values?	Value-free and unbiased.	Value-laden and biased.
Rhetorical Assumption	What is the language of research?	Formal. Based on set definitions. Impersonal voice. Use of accepted quantitative words.	Informal. Evolving decisions. Personal voice. Accepted qualitative words.
Methodological Assumption	What is the process of research?	Deductive process. Cause and effect. Static design categories isolated before study. Context-free. Generalisation leading to prediction, explanation, and understanding. Accurate and reliable through validity and reliability.	Inductive process. Mutual simultaneous shaping of factors. Emerging design-categories identified during  Research process. Context-bound. Patterns, developed theories for understanding.  Accurate and reliable through verification.

Creswell (1994:5); (Al-Ababneh, 2020)

## Appendix 4 – Quantitative survey

### DATA COLLECTION INSTRUMENT – QUESTIONNAIRE

**Section A:** Questions for Household Food Security Level using Household Food Insecurity Access Scale (HFIAS). A 30days recall of food access and frequency is required.

**Instruction:** select your response by entering 0, 1, 2, or 3 in the code column.

S/N	Question	Response option	Code
1.	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2)  1=Yes	
1.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
2.	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q3)  1=Yes	
2a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks)  2 = Sometimes (three to ten times in the past four weeks)  3 = Often (more than ten times in the past four weeks)	
3.	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q4)  1 = Yes	
3a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks)  2 = Sometimes (three to ten times in the	

		past four weeks) 3 = Often (more than ten times in the past four weeks)	
4.	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q5) 1 = Yes	
4a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
5.	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1 = Yes	
5a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
6.	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1 = Yes	
6a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the	

		past four weeks) 3 = Often (more than ten times in the past four weeks)	
7.	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1 = Yes	
7a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
8.	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q9) 1 = Yes	
8a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
9.	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (questionnaire is finished) 1 = Yes	
9a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	

**Section B:** Questions for Household Dietary Diversity using the Household Dietary Diversity scale (HDDS) 24 hours of food intake recall is required.

**Instruction:** below is a list of foods and their example. You are to enter 1 for “yes” if the food was consumed and 2 for “No” if the food was not consumed in the family in the last 24 hours. Only food cooked or bought and eaten by the whole family is required, it does not consider food eaten by one or some family members.

Question number	Food group	Examples	YES=1 NO=0
1	CEREALS	corn/maize, rice, wheat, sorghum, millet or any other grains or foods made from these (e.g. bread, noodles, porridge or other grain products)	
2	WHITE ROOTS AND TUBERS	white potatoes, white yam, white cassava, or other foods made from roots	
3	VITAMIN A RICH VEGETABLES AND TUBERS	pumpkin, carrot, squash, or sweet potato that are orange inside + <i>other locally available vitamin A rich vegetables (e.g. red sweet pepper)</i>	
4	DARK GREEN LEAFY VEGETABLES	dark green leafy vegetables, including wild forms + <i>locally available vitamin A rich leaves such as amaranth, cassava leaves, kale, spinach</i>	
5	OTHER VEGETABLES	other vegetables (e.g. tomato, onion, eggplant) + <i>other locally available vegetables</i>	
6	VITAMIN A RICH FRUITS	ripe mango, cantaloupe, apricot (fresh or dried), ripe papaya, dried peach, and 100% fruit juice made from these + <i>other locally available vitamin A rich fruits</i>	

7	OTHER FRUITS	other fruits, including wild fruits and 100% fruit juice made from these	
8	ORGAN MEAT	liver, kidney, heart, or other organ meats or blood-based foods	
9	FLESH MEATS	beef, pork, lamb, goat, rabbit, game, chicken, duck, other birds, insects	
10	EGGS	eggs from chicken, duck, guinea fowl or any other egg	
11	FISH AND SEAFOOD	fresh or dried fish or shellfish	
12	LEGUMES, NUTS AND SEEDS	dried beans, dried peas, lentils, nuts, seeds or foods made from these (eg. hummus, peanut butter)	
13	MILK AND MILK PRODUCTS	milk, cheese, yogurt, or other milk products	
14	OILS AND FATS	oil, fats, or butter added to food or used for cooking	
15	SWEETS	sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies, and cakes	
16	SPICES, CONDIMENTS, BEVERAGES	spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages	
17	Did you or anyone in your household eat anything (meal or snack) <b>OUTSIDE</b> the home yesterday?		



**Section C – Demographic Data and factor influencing food security**

**Instruction: Please tick as appropriate**

1	Age:	20 - 30 <input type="checkbox"/>	31 – 40 <input type="checkbox"/>	41 – 50 <input type="checkbox"/>	51 - Above <input type="checkbox"/>
2	Marital status	Married <input type="checkbox"/>	Divorced <input type="checkbox"/>	Widow <input type="checkbox"/>	Single parent <input type="checkbox"/>
3	Who is the family head	Man <input type="checkbox"/>	Woman <input type="checkbox"/>		
4	Family Size (number of people eating from the same pot)	2 – 4 <input type="checkbox"/>	5 – 7 <input type="checkbox"/>	8 – 10 <input type="checkbox"/>	11 and above <input type="checkbox"/>
5	Educational Level (woman)	None <input type="checkbox"/>	Primary school <input type="checkbox"/>	Secondary school <input type="checkbox"/>	Vocational training school <input type="checkbox"/>
					University, Polytechnic or Collage of Education <input type="checkbox"/>
6	Educational Level of husband if applicable	None <input type="checkbox"/>	Primary school <input type="checkbox"/>	Secondary school <input type="checkbox"/>	Vocational training school <input type="checkbox"/>
					University, Polytechnic or Collage of Education <input type="checkbox"/>
7	Work status	Farmer <input type="checkbox"/>	Civil servants <input type="checkbox"/>	Business <input type="checkbox"/>	

		Full time-House wife
8	If married Husband's work status	Farmer <input type="checkbox"/> Civil servants <input type="checkbox"/> Business <input type="checkbox"/> No job doing <input type="checkbox"/>
9	Family income (This is only the money all family members earn to contribute to Family food)	<b>Husband:</b> Below ₦18, 000 <input type="checkbox"/> ₦19,000 – 30,000 <input type="checkbox"/> ₦31,000 – 50,000 <input type="checkbox"/> ₦ 51,000 – 100, 000 <input type="checkbox"/> ₦101,000 – 200,000 <input type="checkbox"/> ₦200, 000 and above <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <b>Wife:</b> below ₦18, 000 <input type="checkbox"/> ₦19,000 – 30,000 <input type="checkbox"/> ₦31,000 – 50,000 <input type="checkbox"/> ₦51,000 – 100, 000 <input type="checkbox"/> ₦101,000 – 200,000 <input type="checkbox"/> ₦200, 000 and above <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <b>Any grown-up son or daughter:</b> Below ₦18, 000 <input type="checkbox"/> <input type="checkbox"/> ₦19,000 – 30,000 <input type="checkbox"/> ₦ 31,000 – 50,000 <input type="checkbox"/> ₦51,000 – 100, 000 <input type="checkbox"/> ₦ 101,000 – 200,000 <input type="checkbox"/> ₦200, 000 and above <input type="checkbox"/>
10	Number of income sources to the family	<b>1</b> <input type="checkbox"/> <input type="checkbox"/> <b>2 - 3</b> <b>More than 3</b> <input type="checkbox"/>
11	Other sources of income for family feeding (more than one choice is allowed)	Landed property <input type="checkbox"/> Farm produce <input type="checkbox"/> Gifts <input type="checkbox"/> Support from government, Church or Community <input type="checkbox"/>

	Access to credit facilities <input type="checkbox"/>
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**Appendix 4b**

Table 3.4.4: Cronbach reliability test

Research instrument	Cronbach reliability
HFIAS	.87
HDDS	.74
Household information and demographics	.72

**APPENDIX 5: FEEDBACK QUESTIONNAIRE ON SURVEY PILOT TEST**

This is a response to the survey you have taken. The essence is to rate the survey and give constructive feedback on its quality. Please fill out the following:

1. Where the questions simple? Yes  No
2. Where the questions easy to understand? Yes  No
3. How clear were the questions? Very clear  clear  not clear
4. Please indicate the unclear questions .....
5. How clear were the answer options? Very clear  clear  not clear
6. Please indicate the unclear answers.....
7. Were you confused at any point due to the structure of the questions asked or the answers provided? Yes  No
8. Were the instructions provided clear? Yes  No
9. Please indicate if there is any part of the questionnaire you were not comfortable to answer or that was offensive .....
10. Is there any question you think should have been asked which is not asked, or should not have been asked.....  
.....

11. Do you think these questions are relevant? Yes  No

12. Please rate this questionnaire. Excellent  Very good  Good   
Poor  Very poor

**THANK YOU**

## Appendix 6 Survey questionnaire – Igbo version

### Akwụkwọ ozi maka ndị so na sọvee

**Isiokwu Nchọcha:** Inyocha nchekwa nri n'oge e si na reseshon pụta n'odjida ọwụwa anyanwụ Najirja.

**Ọkpụkpọ oku isonye:** A na-akpọ gị ka i sonye na sọvee a. Biko guo akwụkwọ ozi a nke oma tupu ikpebie ma i ga-esonye ka o bu na i gaghị esonye. Ujọ atula gị iju ajuju ọbụla i nwere iju maobu gwa ndi ozọ maka sọvee a.

**Mbunuuche nchọcha:** Mbunuuche nchọcha a bu inyocha ogo nchekwa nri na ihe jma aka di na ya n'okpuru ọchichị Nsuka nakwa ileba anya n'otutu nri di iche iche otutu ezinulo na-eri n'oge a e si na reseshon puta. Nchọcha a ga-achoputa etu ezinulo si enweta ihe ha na-eri na otutu nri di iche iche ha na-eri n'ulo ha.

**Ihe mere e ji horo gi ka i sonye:** A horo gi ka i sonye na sọvee a n'ihu na i si n'ebe a na-eme nchọcha a ma burukwa nwunye n'otu sọvee a horo.

**Ọ burukwanu na mu achoghị isonye:** O bughị iwu na i ga-esonye. O bu gi ka o dijiri ikpebi nke ahụ. I nwere ike isi na i gaghị esonye ma o bu si na i gaghị esonyezi mgbe sọvee na-aga n'ihu ruo mgbe inyere onye nnyemaka na nchọcha njumaza gi. O buru na i choo isekpuru isi gi na nchọcha a, gwa onye nnyemaka na nchọcha maobu kpo Ijeoma Ukonu maobu Okankuzi Carol n'akara ndi e dere n'ala. I nwekwara ike isi na i gaghị aza otu ajuju di anaa. I nwekwara ike jmafe otu ajuju maobu ozọ.

**Ọ buru na m sonye, kedu ihe di na ya?** Onye nnyemaka na nchọcha ga-akwara ndi nsonye niile gbasara sọvee a nke gbadoro ukwu n'ihu i gurula n'akwukwo ozi a; ha ga-anokwa ya jza ajuju gi. Ha ga-enye gi akwukwo nnata ikike ebe i ga-egosiputa mmasi gi isonye. Ka i binyechara aka n'akwukwo a ma dee deeti, a ga-anara ya. Onye nnyemaka na nchọcha ga-enye gi ajuju sọvee ka i zaa. A turu anya na i ga-aza ajuju di na njumaza ahụ ma nyeghachi ya onye nnyemaka na nchọcha. Njumaza a nwere ike iwe gi nkeji iri abuo jza. Atula ujọ iju ajuju gbasara ihe ọbula na-edoghị gi anya na njumaza ahụ.

**Kedu uru maobu ihe ize ndu di n'isonye?**

A gaghị enwe uru ga-abjara gi ma o bu ezinulo gi kpomkwem maka isonye. Ka o sila di, enwere m olileanya na nchocha a ga-akowa n'uzo doro anya nchekwa nri n'okpuru ochichi Nsuka. E nweghi ihe ize ndu di na gi isonye na sovee a.

**Ozuzo osisa i nyere:**

Ana m ekwe gi nkwa na a ga-agbaso usoro keiwu na ezigbo ukpuru were hu na a ga-eji ezi okwukwe were hazie osisa gi. O nweghi onye ga-ama osisa i nyere n'ihi na a gaghị aju gi aha gi ma o bu ebe i bi na sovee a tinyekwara na data a ga-ebiputa agaghị ebu aha onye o bu.

**Etu a ga-esi were osisa gi ruo oru:**

A ga-edeputa etu okwe si gbaa na nchocha a n'ederede nzere Ph.D m ma biputakwa ya na jonal nchekwa nri. Ka o sila di, a gaghị aruturu gi aka maobu kpo gi aha n'ederede ndi a.

**Ozi ndi ozo**

Maka ihe ndi ozo i choro imata, biko kpoturu:

**Ijeoma Ukonu**, Mahadum **Central Lancashire**: Preston United Kingdom; **Ekwentji**: +447440260431, **akara ozi intanet**: [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

MA OBU

**Prof. Carol A. Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Okankuzi nke usoro nhazi na nchekwa nri

Onye so na-elekota Ulokwukwo nke Sayensi Oriri na-edozi ahu na Amumamu Ntinye Nchekwa Nri n'Oru,

Ulokwukwo Egwuregwu na ezigbo obibi ndu,

Mahadum **Central Lancashire**,

Preston

PRI 2HE.

**Ekwentji**: +44 (0) 1772 893657, **akara ozi intanet**: [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)

**Appendix 7: request letter for district executive women committee for quantitative survey**



University of Central Lancashire,  
School of Sports and Wellbeing,  
Preston, PR1 2HE  
United Kingdom  
19<sup>th</sup> March, 2019.

The Women executive committee,

.....

Women Association

Nsukka LGA, Enugu State.

Dear Ma,

**REQUEST TO ADMINISTER MY RESEARCH QUESTIONNAIRE TO YOUR WOMEN ASSOCIATION**

I am Ijeoma Ukonu, a Ph.D. student at the University of Central Lancashire United Kingdom. I am carrying out research on: AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY. I have chosen Nsukka local Government Area as my study area of which your community is one of the district areas. I wish to request permission in one of your general meetings to administer my questionnaire to some of your members (25 women).

Please find attached an information sheet that explains the survey and a consent form with which you may indicate your acceptance. Also attached is a copy of the participant's information sheet. The research Assistant who delivered this letter will come back to have a discussion on a date for the survey after you give your consent. For further inquiry contact the address below.

Thanks for Your usual corporation.

Yours Faithfully,



Ijeoma Ukonu

**Ijeoma Ukonu**, MSc

University of Central Lancashire, School of Sports and Wellbeing,

Preston, PR1 2HE, United Kingdom

**Tel:** +44 (0)7440260431 **email:** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

**OR**

**Prof Carol A Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Professor of Food Safety Management Systems; Co-Director, Institute of Nutritional Sciences and Applied Food Safety Studies.

School of Sport and Wellbeing, University of Central Lancashire

Preston, PR1 2HE

**Tel:** +44 (0)1772 893657 **email:** [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)



## Appendix 8: Executive women information sheet for quantitative survey



### Information sheet for Women group executive

**Title of research:** Investigating food security in post-economic recession period in South-Eastern Nigeria.

**The purpose of the study:** The purpose of this study is to investigate food security level and its challenging factors in Nsukka Local Government Area and to study the dietary diversity of households in post-economic recession time. The research will determine household accessibility to food and the diversity of food consumed in the homes.

**Why your women's group is chosen to participate:** Your group was chosen to participate in this survey because they are a group of family women in the selected area of study, and by this they fulfil the required condition for participation.

**What is involved in participating?** Participation in this research is voluntary; any member may choose to participate or not to participate. 25 Women are needed from your group to participate in this survey. You are requested to inform them at the meeting immediately before the agreed data collection date and you will be provided with participant information sheets that can be shared with the group. On one of your official meeting days (which will be agreed upon) these women will be selected from your attendance register in a random manner (that is every second person on the attendance list at the meeting will be selected). They will be briefed on the study and be given a copy of the participant information sheet that will explain what is involved in the survey. If they agree to participate, they will be given a consent form to read and sign. However, they have the freedom to opt-out of the survey at any time up to when they hand in their questionnaire to the Research Assistant.

**Benefits of the survey to the group:** There are no benefits directly to the group from this survey. However, it is expected that this research will give insight to the issues of food security, its challenges, and solutions in Nsukka Local Government. Also, findings from this research will be used to teach women about food security.

**Confidentiality of information:** Information collected will be held in high confidence; ethics and legal practices will be followed, and the data collected will be anonymous.

**What is expected of us as the women executives:** It is important your women are informed about this exercise ahead of time that is at a previous meeting. You will need to invite them all to be present at the meeting on the agreed date. Let them know it is a voluntary participation and they are at liberty to withdraw at any time during the survey up to when they hand in their survey to the Research Assistants.

#### **How your information will be used:**

The result of this study will be reported in my PhD thesis and be published in the food security journal. However, you will not be referred to or identified in any of these reports.

**Further Information:**

For further information, please contact the following address.

Ijeoma Ukonu, University of Central Lancashire Preston United Kingdom **Tel:**  
+447440260431, **email;** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

**Or**

**Prof Carol A Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Professor of Food Safety Management Systems

Co-Director, Institute of Nutritional Sciences and Applied Food Safety Studies

School of Sport and Wellbeing

University of Central Lancashire

Preston

PR1 2HE

**Tel:** +44 (0)1772 893657 email: [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)

## Appendix 9: Executive women consent form for quantitative survey



### Consent form for women executives

**Title of research:** Investigating food security in post-economic recession period in South-Eastern Nigeria.

**Researcher:** Ijeoma Ukonu, University of Central Lancashire Preston United Kingdom **Tel:** +447440260431, **email:** icukonu1@uclan.ac.uk

**Prof Carol A Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Professor of Food Safety Management Systems; Co-Director, Institute of Nutritional Sciences and Applied Food Safety Studies. School of Sport and Wellbeing, University of Central Lancashire

Preston, PR1 2HE; **Tel:** +44 (0)1772 893657 **email:** cawallace@uclan.ac.uk

**Instruction:** please read the following statements carefully and mark 'X' in the box provided beside to indicate your consent.

We confirm that we have read and understood the information sheet about the above study; we have considered the information and asked questions which have been satisfactorily answered.

We understand that our members' participation is voluntary; that they may wish to opt-out of the survey at any time before the end of the survey data collection exercise without giving any reason

We understand that data collected for this study will be presented as anonymous data and no data can be linked to any participant

We agree that our women's' group members can participate in this survey

-----  
Name of group president                      Date                      Signature

-----  
Name of Research Assistant                      Date                      Signature

## Appendix 10a: Survey participant information sheet



### **Information sheet for survey participants**

**Study title:** Investigating food security in post-economic recession period in South-Eastern Nigeria.

**Invitation to participate:** You are invited to participate in this survey. Please read through this information sheet carefully before taking the decision to participate or not to participate; it's important you understand the purpose of this survey. Feel free to ask any question you may have and to talk to other people about the survey.

**What is the purpose of the study?** The purpose of this study is to investigate food security level and its challenging factors in Nsukka Local Government Area and to study the dietary diversity of households in post-economic recession time. The research will determine household accessibility to food and the diversity of food consumed in the homes.

**Why I have been invited to participate?** You have been invited to participate in this survey because you are from the study area and a family woman belonging to the selected survey group. Twenty-five of you have been invited to participate from your women district meeting.

**Do I have to take part?** Your participation in this survey is voluntary, it is totally up to you to decide. You may wish not to take part or opt out at any point in time during the survey up to when you hand in your questionnaire to the Research Assistants. Due to anonymisation of the study, we may not be able to identify your copy of the study after you have submitted it. If you decide to withdraw from this study speak to the Research Assistant or call Ijeoma Ukonu or Professor Carol on the contacts given below. You may also wish not to answer or skip any question for any reason.

**What will happen to me if I take part?** A research assistant will introduce the survey to all the participants based on what you have read on this information sheet, and they will be available to answer your questions. They will hand a consent form to you to indicate your interest in participating. After you sign and date this form, it will be collected. A copy of the survey questions will be provided by the research assistant for your completion. You are anticipated to fill out the questionnaire and hand it back to the research assistant. The questionnaire should take you about 20 minutes to complete. Feel free to ask questions on any area of the questionnaire that is not clear to you.

**What are the benefits involved in taking part?** There will be no direct benefit to you or your family for participating. However, I hope this study will give insight on issues surrounding food security in Nsukka Local Government. There is no foreseeable risk associated with your participation in this survey.

**What is the risk involved in taking part?** There is no foreseen risk involved in taking part in this survey.

**Will what I say be kept confidential?** I assure you high confidentiality; ethics and legal practices will be followed. Privacy and anonymity will be ensured in the collection, storage and publication of research data. All information will remain anonymous as your name or address will not be needed in this survey and only anonymised data will be published. Data generated by this study will be retained in accordance with the University's policy on Academic Integrity. Data generated by this study will be kept securely in paper and electronic form for 3 years up to the end of this research programme.

**What will happen to the result of the research study?** The result of this study will be reported in my PhD thesis and be published in the food security journal. However, you will not be referred to or identified in any of these reports. The published result will be obtainable from the food security journal website.

**Who is organising and funding the research?** Ijeoma Ukonu is organising and funding this research as a student of University of Central Lancashire in the Department of Wellbeing, School of Sports and Wellbeing.

**Who has reviewed the study?**

The research has been approved by the University Research Ethics Committee (STEMH)

**Contact for Further Information:**

For further information, please contact the following address.

**Ijeoma Ukonu**, MSc, PGDE, MHATMAN

School of Sport and Wellbeing

University of Central Lancashire, Preston, PR1 2HE

**Tel:** +447440260431, **email:** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

**OR**

**Prof Carol A. Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Professor of Food Safety Management Systems

Co-Director, Institute of Nutritional Sciences and Applied Food Safety Studies

School of Sport and Wellbeing

University of Central Lancashire, Preston, PR1 2HE

**Tel:** +44 (0)1772 893657 **email:** [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)

**OR**

Nicola M Lowe - [nmlowe@uclan.ac.uk](mailto:nmlowe@uclan.ac.uk)

Karen Whittaker - [kwhittaker1@uclan.ac.uk](mailto:kwhittaker1@uclan.ac.uk)

Heather Ohly - [hohly1@uclan.ac.uk](mailto:hohly1@uclan.ac.uk)

**OR**

University Officer for Ethics at [OfficerforEthics@uclan.ac.uk](mailto:OfficerforEthics@uclan.ac.uk)

Thank You for your time.

**Date:** 28<sup>th</sup> March, 2019.

## Appendix 10b: Survey participant information sheet

### Akwụkwọ ozi maka ndị so na sọvee

**Isiokwu Nchọcha:** Inyocha nchekwa nri n'oge e si na reseshon pụta n'odjida ọwụwa anyanwụ Naijirja.

**Ọkpụkpọ oku isonye:** A na-akpọ gị ka i sonye na sọvee a. Biko guo akwụkwọ ozi a nke oma tupu ikpebie ma i ga-esonye ka o bu na i gaghị esonye. Ujọ atula gi iju ajuju obula i nwere iju maobu gwa ndi ozọ maka sọvee a.

**Mbunuuche nchọcha:** Mbunuuche nchọcha a bu inyocha ogo nchekwa nri na ihe ima aka di na ya n'okpuru ochichij Nsuka nakwa ileba anya n'otutu nri di iche iche otutu ezinulo na-eri n'oge a e si na reseshon puta. Nchọcha a ga-achoputa etu ezinulo si enweta ihe ha na-eri na otutu nri di iche iche ha na-eri n'ulo ha.

**Ihe mere e ji horo gi ka i sonye:** A horo gi ka i sonye na sọvee a n'ihi na i si n'ebe a na-eme nchọcha a ma burukwa nwunye n'otu sọvee a horo.

**Ọ burukwanu na mu achoghi isonye:** O bughị iwu na i ga-esonye. O bu gi ka o dijiri ikpebi nke ahụ. I nwere ike isi na i gaghị esonye ma o bu si na i gaghị esonyezi mgbe sọvee na-aga n'ihu ruo mgbe inyere onye nnyemaka na nchọcha njumaza gi. O buru na i choo isekpuru isi gi na nchọcha a, gwa onye nnyemaka na nchọcha maobu kpoo Ijeoma Ukonu maobu Okankuzi Carol n'akara ndi e dere n'ala. I nwekwara ike isi na i gaghị aza otu ajuju di anaa. I nwekwara ike imafe otu ajuju maobu ozọ.

**O buru na m sonye, kedu ihe di na ya?** Onye nnyemaka na nchọcha ga-akwara ndi nsonye niile gbasara sọvee a nke gbadoro ukwu n'ihe i gurula n'akwukwo ozi a; ha ga-anokwa ya ija ajuju gi. Ha ga-enye gi akwukwo nnata ikike ebe i ga-egosiputa mmasi gi isonye. Ka i binyechara aka n'akwukwo a ma dee deeti, a ga-anara ya. Onye nnyemaka na nchọcha ga-enye gi ajuju sọvee ka i zaa. A turu anya na i ga-aza ajuju di na njumaza ahụ ma nyeghachi ya onye nnyemaka na nchọcha. Njumaza a nwere ike iwe gi nkeji iri abuo ija. Atula ujọ iju ajuju gbasara ihe obula na-edoghi gi anya na njumaza ahụ.

**Kedu uru maobu ihe ize ndu di n'isonye?**

A gaghị enwe uru ga-abjara gi ma o bu ezinulo gi kpomkwem maka isonye. Ka o sila di, enwere m olileanya na nchocha a ga-akowa n'uzo doro anya nchekwa nri n'okpuru ochichj Nsuka. E nweghi ihe ize ndu di na gi isonye na sovee a.

**Ozuzo osisa i nyere:**

Ana m ekwe gi nkwa na a ga-agbaso usoro keiwu na ezigbo ukpuru were hu na a ga-eji ezi okwukwe were hazie osisa gi. O nweghi onye ga-ama osisa i nyere n'ihi na a gaghjaju gi aha gi ma o bu ebe i bi na sovee a tinyekwara na data a ga-ebiputa agaghjebu aha onye o bu.

**Etu a ga-esi were osisa gi ruo oru:**

A ga-edeputa etu okwe si gbaa na nchocha a n'ederede nzere Ph.D m ma biputakwa ya na jonal nchekwa nri. Ka o sila di, a gaghj aruturu gi aka maobu kpo gi aha n'ederede ndi a.

**Ozi ndi ozo**

Maka ihe ndi ozo i choro imata, biko kpoturu:

**Ijeoma Ukonu**, Mahadum Sentral Lankash, Preston United Kingdom; **Ekwentj:** +447440260431, **akara ozi intanet:** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

MA OBU

**Prof. Carol A. Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Okankuzi nke usoro nhazi na nchekwa nri

Onye so na-elekota Ulokwo nke Sayensi Oriri na-edozi ahụ na Amumamu Ntinye Nchekwa Nri n'Oru,

Ulokwo Egwuregwu na ezigbo obibi ndu,

Mahadum Sentral Lankash,

Preston

PRI 2HE.

**Ekwentj:** +44 (0) 1772 893657, **akara ozi intanet:** [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)



## Appendix 11a Quantitative survey participants consent form



### Participants survey consent form

**Title of research:** AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY

**Researcher:** Ijeoma Ukonu, University of Central Lancashire Preston United Kingdom **Tel:** +447440260431, **email:** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

**Director of studies:** Prof. Carol A. Wallace, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Professor of Food Safety Management Systems Co-Director, Institute of Nutritional Sciences and Applied Food Safety Studies. School of Sport and Wellbeing, University of Central Lancashire, Preston PR1 2HE. **Tel:** +44 (0)1772 893657, **email:** [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)

**Instruction:** please read the following statements carefully and mark 'X' in the box provided beside to indicate your consent.

I confirm that I have read and understood the information sheet about the above study; I have considered the information and asked questions which have been satisfactorily answered.

I understand that my participation is voluntary; that I may wish to opt-out of the survey at any time before I have handed in my questionnaire without giving any reason

I understand that data collected for this study will be anonymised and no data can be linked to any participant

I consent that my data collected for this research may be kept at the University of Central Lancashire in the UK and may be used for further research

I agree to participate in this survey

-----	-----	-----
Name of Participant	Date	Signature
-----	-----	-----
Name of Research assistant	Date	Signature

Appendix 11b Quantitative survey participants consent form – Igbo version

**Akwụkwọ nnata ikike maka isonye na sọvee**

**Isiokwu nchọcha:** Inyocha nchekwa nri n'oge e si na reseshon pụta n'odịda ọwụwa anyanwụ Naijirja.

**Ọchọcha:** Ijeoma Ukonu, Mahadum Sentral Lanকাশe. Preston United Kingdom; **Ekwentị:** +447440260431, **akara ozi intanet,** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

**Onye nlekọta ọmụmụ/nchọcha:** Prof. Carol A. Wallace, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

Profesọ nke usoro nhazi na nchekwa nri; Onye so na-elekọta Ufọakwụkwọ nke Sayensị Oriri na-edozi ahụ na Amụmamụ Ntinye Nchekwa Nri n'Oru, Ufọakwụkwọ Egwuregwu na ezigbo obibi ndu, Mahadum Sentral Lanকাশe, Preston PRI 2HE. **Ekwentị:** +44 (0) 1772 893657, **akara ozi intanet:** [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)

**Ntuzi aka:** biko guo ederede ndi a nke oma ma kanye akara 'X' n'igbe di n'akuku iji gosiputa na i choro.

Ekwetere m a mu aguola ma ghotu akwukwo ozi gbasara nchocha a di n'elu; Atuleela m ozi ahụ ma juo ajuju ole na ole nke a zara nke oma.

Aghotara m na o bughu iwu na m ga-esonye; na e nwere m ike isi na mu achoghizi iso na sovee a mgbe o bua tupu m enyefee njumaza na-ekwughu ihe kpatara m ji achoghizi m isonye.

Aghotara m na ozi (data) e nwetara maka nchocha a bu nke mmadu agaghj ama onye nyere ya bu ozi ma o bu osisa

Ekwetere m na osisa m e nwetere na nchocha a bu nke e nwere ike idowe na Mahadum Sentral Lanকাশe n'UK ma burukwa nke e nwere ike iji mee nchocha n'odinijihu.

O buru na m si na achoghizi m isonye na sovee a mgbe o bua, e nwere m obi anurj na e wetara m ozi/osisa nke onye nchocha dowere na nke o ji ruo oru.

Ekwetere m isonye na sovee a.

-----  
Aha osonye

-----  
Deeti

-----  
Mbinye aka

-----  
Aha onye nnyemaka na nchocha

-----  
Deeti

-----  
Mbinye aka

## **Appendix 12: Topic guide for qualitative interview**

**Introduction:** I am investigating household food insecurity experiences and coping strategies used to ensure household members have food to eat. With this we can learn more about household food security needs, their struggles, and the way forward. I will be asking you a couple of questions about your household food and experiences, please feel free to discuss with me.

### **Topic 1: Experiences of food insecurity:**

1. Tell me about your household and the number of people you feed.
2. Could you tell me what a mealtime looks like in your household? How is household food distributed during mealtime?
3. How do you source food for your household? And what difficulties do you encounter in sourcing food for your household?
4. Did you ever have to worry over what your household will eat? If you did, how did you feel?
  - How long have you worried over this?
  - Would you say the situation has affected your family relationship? If yes how?
  - How has lack of food affected anyone's health in your household?
  - How do your household members feel about the household feeding pattern?
  - What would you say is the cause of lack of food in your household?
5. Could you describe how balanced and nutritious your typical household meals are?
6. Mention some foods that are regularly eaten in your house.
7. Could you tell me about your experiences with household food during the covid-19 lockdown?
  - How did the lockdown affect your family feeding?
  - Did your household receive the COVID-19 palliative from the government?
  - What do you have to say about the COVID-19 palliative from the Nigerian government?
  - Since this Covid-19, would you say your household food situation has gone better or worse.

## **Topic 2: Food insecurity coping strategies:**

1. What do you do when your household does not have enough food /money to buy food? How do you increase short term household food availability?
2. Did you ever reduce the number of people in the house for others to have enough food?
3. Have you ever taken these steps to ensure you provide food for your household – sell valuables, borrow food/money (from friends, church, relatives, or association?), Have children drop out of school, buy on credit, etc.
4. When food is limited, how do you ration the available food?
5. Do you receive any support for household feeding such as from government, church, community, relatives, friends, and others? if yes
  - What type of support – financial, food, other material things
6. Do you belong to any association that help you save money or save food for your household e.g. “adache”, “asusu” corporative society? If yes, how has it helped you?
7. In what ways are you looking to improve your household food? (Your plans)

## **Topic 3: Recycling food and combating waste**

1. What type of food would normally be leftover in your household?
2. What do you do with leftovers food?
3. Where do you keep leftover foods?
4. When you reuse foods, how acceptable is it to your household members?
5. Do you cook to purposely have leftovers for another meal?
6. What would you say about leftover food?
7. What type of food would normal be wasted in your house and why?

## **Topic 4: Socio-demographics**

1. Marital status
2. Gender of household head (who is the household head)
3. Age of main household income earner
4. Occupation of all household food income earners
5. Estimated total monthly income from all household income earners
6. Household size (those who feed from the same income)

7. Do you have a farmland? If yes, do you farm for income or household food or lease it out? What type of crops do you farm?

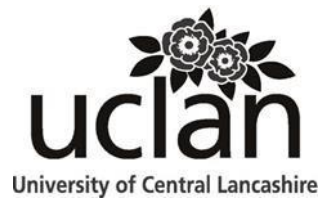
### Appendix 13: FEEDBACK QUESTIONNAIRE ON PILOT INTERVIEW

This is a response to the interview you have taken. The essence is to rate the interview questions and process and give constructive feedback on its quality. Please fill out the following:

1. Where the questions simple? Yes  No  Not sure
2. Where the questions easy to understand Yes  No  Not sure
3. How clear were the questions? Very clear  clear  not clear
4. Please indicate the unclear questions (if any).....
5. How clear were the wordings? Very clear  clear  not clear
6. Were you confused at any point due to the structure of the questions asked or the prompt questions provided? Yes  No  Not sure
7. Was the instruction provided clear? Yes  No
8. Please indicate if there is any part of the questions you were not comfortable to respond to or that was offensive  
.....
9. Is there any question you think should have been asked which is not asked, or should not have been asked.....  
.....
10. Do you think these questions are relevant? Yes  No
11. Please rate this questionnaire. Excellent  Very good  Good   
Poor  Very poor

**THANK YOU**

**Appendix 14: Interview request letter to district women executives**



University of Central Lancashire,  
School of Sports and Wellbeing,  
Preston, PR1 2HE  
United Kingdom  
10<sup>th</sup> August 2020.

The Women executive committee,

.....

Women Association

Nsukka LGA, Enugu State.

Dear Ma,

**REQUEST TO INTERVIEW TWO WOMEN FROM YOUR ASSOCIATION**

I am Ijeoma Ukonu, a Ph.D. student at the University of Central Lancashire United Kingdom. I am carrying out research on: AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY. I have chosen Nsukka local Government Area as my study area of which your community is one of the district areas. I wish to request permission to interview two women from your association.

Please find attached an information sheet that explains the interview process and a consent form with which you may indicate your acceptance. Also attached is a copy of the participant's information sheet. The research Assistant who delivered this letter will come back to have a discussion on selecting participants and a date for the interview after you give your consent. For further inquiry contact the address below.

Thanks for Your usual corporation.

Yours Faithfully,

A handwritten signature in black ink, appearing to read 'Ijeoma Ukonu', written in a cursive style.

Ijeoma Ukonu

**Ijeoma Ukonu**, MSc

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## Appendix 15: Interview information sheet for district women executives



### Interview Information sheet for Women group executive

**Title of research: AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY.**

**The purpose of the interview:** The purpose of this interview is to examine household food insecurity experiences and coping strategies in Nsukka Local Government Area. The study will reveal household struggles and food management in economic difficult times and the way forward.

**Why your women's group is chosen to participate:** Your group was chosen to participate in this interview because they are a group of family women in the selected area of study, and by this they fulfil the required condition for participation.

**What is involved in participating?** Participation in this interview is voluntary; any member may choose to participate or not to participate. Two Women are needed from your group to participate in this interview. You are requested to identify five (5) women whose households are struggling with food and are regarded to be less privileged with food sufficiency and to forward their names for random selection of two women. After selection, we will send the names of the selected women to you. You can then inform them about the interview before the agreed interview day and check that they are willing to participate. I will visit these women in their homes for the interview with one research assistant and will also confirm that they have agreed to participate. They will be briefed on the interview process and what we expect them to do. However, they have the freedom to opt-out of the interview at any time.

**Benefits of the interview to the group:** There are no benefits directly to the group from this interview. However, it is expected that this research will give insight to the issues of food security, its challenges, and solutions in Nsukka Local Government. Also, findings from this research will be used to teach women about household food security.

**Confidentiality of information:** Information collected will be held in high confidence; ethics and legal practices will be followed, and the data collected will be anonymous.

**What is expected of us as the women executives:** It is important you inform the selected women about this exercise ahead of time. You do not need to announce the event to your



larger women's group, let it be confidential to those identified and selected. Let them know it is a voluntary participation and they are at liberty to withdraw at any time during the interview.

**How your information will be used:**

The result of this study will be reported in my PhD thesis and be published in the food security journal. However, you and the participants will not be referred to or identified in any of these reports.

**Further Information:**

For further information, please contact the following address.

Ijeoma Ukonu, University of Central Lancashire Preston United Kingdom **Tel:** +447440260431, **email;** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

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## Appendix 16: Interview consent form for district women executives



### Interview consent form for women executives

**Title of research: AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY.**

**Researcher:** Ijeoma Ukonu, University of Central Lancashire Preston United Kingdom **Tel:** +447440260431, **email;** [icukonu1@uclan.ac.uk](mailto:icukonu1@uclan.ac.uk)

**Prof Carol A Wallace**, PhD, CSci, PGCE, FRSPH, FIFST, FHEA

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Preston, PR1 2HE; **Tel:** +44 (0)1772 893657 **email:** [cawallace@uclan.ac.uk](mailto:cawallace@uclan.ac.uk)

**Instruction:** please read the following statements carefully and mark 'X' in the box provided beside to indicate your consent.

We confirm that we have read and understood the information sheet about the above study; we have considered the information and asked questions which have been satisfactorily answered.

We understand that our members' participation is voluntary; that they may wish to opt-out of the interview at any time during the exercise without giving any reason

We understand that data collected for this study will be presented as anonymous data and no data can be linked to any participant

We agree that our members can participate in this interview

-----	-----	-----
Name of group president	Date	Signature
-----	-----	-----
Name of group secretary	Date	Signature

## Appendix 17: participants interview information sheet



**Title of study: AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY.**

Version number and date

**Invitation**

I am inviting you to take part in a research interview. It is important for you to understand the purpose of the research and what it involves before you decide. Please carefully read the following information on this sheet. Feel free to ask us for more information on this study and anything you do not understand. You may talk to anyone you wish about the interview. I would emphasise that you do not have to accept this invitation, only accept to participate if you want to.

Thank you.

**Purpose of the study:** the purpose of this study is to investigate the household food insecurity experience and coping strategies in Nsukka Local Government area and to assess combating food waste and recycling food in economic recession period.

**Do I have to take part?** Your participation in this interview is voluntary, it is totally up to you to decide. You may wish not to take part or opt out at any point in time during the interview. Due to anonymisation of the study, we may not be able to identify the record of your interview. If you decide to withdraw from this study speak to me or call Professor Carol on the contacts given below. You may also wish not to answer or skip any question for any reason.

**Why have I been invited to participate?** You have been invited to participate in this interview because you are from the study area and a family woman belonging to the selected group. Two of you have been invited to participate from your women district meeting.

**What will happen if I take part?** I will introduce the interview to you based on what you have read on this information sheet and will answer all your questions. I will hand a consent form to you to indicate your interest in participating. After you sign and date this form, it will be collected. A copy of the interview questions will be provided for you to glance through before the start of the interview. You are anticipated to discuss the topics stated on the interview guide as it relates to your family. The interview should take you about 20 minutes to finish. Feel free to ask questions on any area of the interview that is not clear to you.

**How will my data be used?** Data collected from this study will be reported in my PhD thesis and be published in the food security journal. However, you will not be referred to or

identified in any of these reports. The published result will be obtainable from the food security journal website.

**Contact for Further Information:**

For further information, please contact the following address.

**Ijeoma Ukonu**, MSc, PGDE, MHATMAN

School of Sport and Wellbeing

University of Central Lancashire, Preston, PR1 2HE

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## Appendix 18: participants interview consent form



### Participant interview consent form

Version number & date:

Research ethics approval number: - **Previous approval by UCLan STEMH 1007**

Title of the research project: **AN INVESTIGATION INTO FOOD SECURITY ACCESS AND DIETARY DIVERSITY IN SOUTHEAST NIGERIA: HOUSEHOLD EXPERIENCES AND RESPONSES TO FOOD INSECURITY.**

Name of researcher(s): **Ijeoma Chinyere Ukonu**

Please initial

box

1. I confirm that I have read and have understood the information sheet dated [DATE] for the above study, or it has been read to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that taking part in the study involves [an audio recording and jottings].
3. I understand that my participation is voluntary and that I am free to stop taking part and can withdraw from the study at any time without giving any reason and without my rights being affected. In addition, I understand that I am free to decline to answer any question or questions.
- Choose appropriate option**
4. a) I understand that if I withdraw from this study data collected prior to my withdrawal will be retained but no further data will be collected.
5. I understand and agree that my participation will be audio recorded and I am aware of and consent to use of these recordings for the following purposes research.

6. I understand that the information I provide will be held securely and in line with data protection requirements at the University of Central Lancashire.
7. I understand that signed consent forms and audio record will be retained at the University of Central Lancashire until 30<sup>th</sup> September 2021.
8. I agree to take part in the above study.

Participant name	Date	Signature

Name of person taking consent	Date	Signature
<b>Principal Investigator</b> [Carol Ann Wallace] [Work address] [telephone] [Work email]		<b>Student Investigator</b> [Ijeoma Ukonu] [Rm 246 Green bank] [07440260431] [icukonu1@uclan.ac.uk]

## Appendix 19: Summary of the interview transcript for all the respondents

### Experiences of food insecurity:

#### 1. Household structure, mealtime, and food distribution

- **EZ1:** In my household, I live only with my husband and my children. We are only four people in the house, and we feed from the same pot. Also, at every meal I send food to my Aunt who lives nearby although she doesn't contribute to feeding. Things are very difficult now; when things were better for us, I cook at times and give to my neighbour but not now anymore.

During meals, I eat with my children. My husband eats in the evening when he is back from work because he comes back late (between 6-7pm). I dish food for my older son first, then I dish for my little baby and me and equally dish my Aunt's. My eldest son (5 years old) gets extra portion, I also allow him to help himself with food from the pot, but he cannot cook anything for himself. On whom gets the bigger portion, my aunt gets the biggest portion because she is the oldest and takes medication because of health issues. So as the woman of the house, I eat half portion so that my aunt can get full/enough portion. After my aunt, my husband gets a big chunk of food too because he often eats only once a day.

- **EZ2:** The man I live with is not my husband because he did not pay my bride price. I have two children for him, but I have five children for another man. We all live together with my grandson and two of my partner's brothers. Three of my children are not living with us now so we are just nine.

I usually eat with my partner when he is around and when he is not around, I eat with the children. My brothers-in-law eat together from the same plate, while my remaining children eat together from a tray. My brothers-in-law eat the largest portion when food is prepared because they eat a lot. They do not wait for me when they are hungry and possibly, they patronise bucatarias, but they do not discuss it. However, they are permitted to prepare noodles or other foods when am not around and they are hungry. When my children are hungry, they usually wait for me to come back before they can eat, however, if they have money on them, they can buy biscuits and manage till I come back. When they do not have, they will have to starve and wait until my return.

- **NS1:** I live with my husband and two kids. Although things are hard, I thank God we are managing the little one we have. We all know how things are costly in Nigeria. well it's not too bad. With a thousand naira we can manage for a day or two depending on what I want to buy.

Okay, when it's time to eat we eat together in one plate I, my husband, and my children no matter how small or big it is we manage it like a family. If I notice that the food we have will not be enough for my children to take to school the following day I will forfeit my supper portion ( smiles placed her hands on her chest ), my children are more important to me - so that they can have food to take to school. if we have

enough, we eat in the morning, afternoon, and night. If we don't have enough, we will eat in the morning, skip afternoon then eat at night. The quantity of the food determines our feeding pattern.

- **NS2:** I am an orphan and a single mother catering for my only child. In the morning I start thinking of what I and my child will eat then start planning how to get something for us to eat. I eat with my child after cooking.
- **OP1:** I have two children; they are 8 and 6 years, so we are four. On the days I feel the food I prepared will be enough for the family, I serve the food on a tray and the entire family eats from there. But on days I prepared a smaller portion that will not be enough for the family, I will divide the food into portions for the family so nobody will be cheated. I give my husband the biggest portion, followed by my eldest son while my daughter takes the least amount. I will manage the remaining portion if everyone has eaten to their fill while on the days the food will not go-round, I will stay without food. I make sure my kids and my husband eat to their satisfaction and my husband eats a lot. For instance, this morning I had my breakfast around 11 am while my kids and husband requested food as early as 7 am. The reason I ate later than them was to ensure they are satisfied, and nobody will request for food again till the next meal. We ate rice this morning which is what I cooked last night, and it was served both as dinner and breakfast.
- **OP2:** Sometimes we eat once and some other time it might be twice and at times none depending. The kids get the biggest portion of food because they cannot endure hunger. Even with my mother's ill health, when food is limited, she instructs that the kids get the bigger portion so they can eat to their satisfaction while she takes the smaller portion.
- **OB1:** We feed from the money I get when I do paid jobs. We may cook rice with N600, cook it as jollof rice, we add Maggi seasoning cubes and salt. It is difficult for me as I work on different jobs before I could get a little food which are never enough. After cooking, (speaking a little bit low) I get plates and share the foods into the plates and each of the children come around to pick a plate.
- **OB2:** It's just I and my grandchild, so we eat together, and she is just six years old, she is still little. It's been up to 20 years my husband died. My husband's relative lives with me, but due to hardship, I told him to fend for himself, while I fend for myself and my grandchild.
- **EH1:** It is only I and my husband that feeds from the same pot as our kids are all married, and nobody is helping us. When I prepare food, I and my husband eat from the same plate, we do not eat separately except I am not around. My husband cannot make food by himself because of his health so he usually waits for my return before he can eat.
- **EH2:** My grandchildren who are orphans bring food for me from Nurse's house. Because am blind, a lady we call nurse helps us to cook, except when my daughter comes around. Nurse prepares the food in her house (though sometimes in my house) and sends it to me or serves me herself. Then my grandchildren would go to Nurses' house to eat theirs and come back at night to sleep at home.

## 2. Sources of household food



- **EZ1:** I buy all my household food from nearby stores and market. We do not have any farm where we cultivate any food crop because my husband's people do not have lands. (shouted lightly) my husband's relatives will not lend him any land, they rather watch him, and his family suffer. They denied him and his siblings a share of the family land.
  - **EZ2:** We buy from the market and cultivate some crops. I am very good at planting cassava; however, herdsmen invaded our community and their cattle destroyed the crops I planted. Hmm..., buying foodstuff is difficult for us, not because it is scarce or there are no places to buy them, rather, the lack of funds to purchase them.
  - **NS1:** I go to market depending on how much I have, and I also source from my farm.
  - **NS2:** I buy food from the market
  - **OP1:** We source our foodstuffs from the market; we also have a little farm we cultivate though the one we planted this season is yet to mature. Therefore, everything we eat is purchased from the market. We also have a problem of insufficient land, there are people as they are staying in the village, they will cultivate most of the things they consume but it is not so for us as we do not have enough land and this compound we are currently living in belongs to five brothers. For us to cultivate massively, we will have to borrow land from people.
  - **OP2:** We source our foodstuffs from the market. We tried cultivating this year as our condition got worse, though we could not plant many crops as we do not have money to buy many seeds to cultivate and cannot pay labourers to cultivate for us.
  - **OB1:** We buy our food from the market and from the farm.
  - **OB2:**
  - **EH1:** So, we get some of our foodstuffs from the farm when they mature and we also buy from the market.
  - **EH2:** We get food through my child who goes out to make money and then brings it for purchase of food items. She weed farms in another community where she lives, we rely on her to do the job, get paid, and send us some money.
3. Challenges to household food sourcing
- **EZ1:** (Hmmm...sighed and frowned) "You will not understand, our challenges are many". We struggle a lot to survive, without struggle you can't survive here. My husband is trying to meet up with the family demand as he is the only one providing for the family. If you marry a strong man who can work, then you will not go hungry. My husband did not allow me to work rather he told me to stay and nurse our children while he caters for the family. My husband is a tipper driver, but they collected the tipper from him and since then things have become more difficult for us, he went into the menial job of packing stones. Another difficulty we experience in getting food to eat is lack of land because my husband's family does not have any land, which if it was available, we could have cultivated some crops like cassava, maize, cocoyam, 'akidi' (kidney beans). Eziani people are very wicked and dangerous and cannot part with their things, they rather delight in seeing people suffer and die of hunger. No one would lend him a piece of land among his family members.
  - **EZ2:** before the harvest period, oh... things were very hard for us. Hmm... because it was planting season, we were spending money buying seeds and other planting

materials so before we get food to eat, it will be a very big struggle. We usually have only breakfast and dinner despite the hard labour we do. I buy food on credit, as much as 20,000 Naira, from my customers in different market for different foodstuffs and pay them during the harvest season. So, I maintain the same customer and keep to their terms, so that in the next planting season they can still give me credit. Things are a bit better for us now because we have started harvesting some of the produce like tomatoes. We have been able to get food because I sell some of the produce and buy foodstuffs. I struggle to ensure that food is enough for my large household

- **NS2:** I do menial jobs like clearing people's farms and working for people that bake peanuts. A times after work they don't pay me; I must go borrowing and pay them back when am paid. It is so difficult for me.
  - **OP1:** (In a higher tone), it is lack of money, because if there is sufficient money, I can go to the market and get as many foodstuffs as possible. I am currently unemployed, and my husband does not have a meaningful job, he was recently employed as security personnel. He has been out of a job for 3-4 years. So, what I do sometimes is to go to my parent's house to get food.
  - **OP2:** My mother is old and sick and am crippled, we cannot do much to source for food. The inability to sell off the pap I process, because there are high chances of not selling one today and it will make us resort to borrowing money and food from people so we can eat for the day. In situations where we are unable to pay back, it becomes difficult for us to go back to the person to borrow again. when we finally make some money from our sales, we will have to settle our bills taking us back to square one. sometimes when we go to buy foodstuffs on credit, some of the sellers will refuse to sell to us while the others will say they do not have what we want to buy because they know we do not have money and might find it difficult to pay back.
  - **OB1:** It is difficult for me as I work on different jobs before I could get some little food which are never enough.
  - **EH1:** I do not have money to buy foodstuff for my family. Also, the money I am being paid for the weeding is very small. (She gave an example), someone told me to weed her entire farm which will take me an average of 3 days for 800 naira. I refused the offer because it will affect my waist and instead of using the money for food, it will be spent on drugs.
  - **EH2:** A times I don't have any money to meet our food need, I always rely on peoples' support to eat. Also, my condition (blindness) has also limited me greatly. Yes, I have difficulties now, because we were rich and had a lot of properties, but people destroyed everything. My child that left has held everything.... My husband tried, just that our relatives have destroyed and sold everything we had.
4. Worry over household food
- **EZ1:** Yes, I worry about it constantly but there is nothing I can do. Though, I have not gone to bed without eating in attempt to make sure everyone eats; I manage to keep at least a little portion for myself no matter how small the meal for the day was.
  - **EZ2:** Definitely, I get worried and even lose sleep because of my long deep thoughts on what the family will eat.

- **NS1:** I worry, sometimes when I consider at the situation, but I leave everything in God's hands for he created us and he will provide.
  - **NS2:** Yes, I do get worried over food.
  - **OP1:** Yes, 'Ha...' I worry steadily and continuously, sometimes I think and get confused about what I will prepare for the family. Every day I worry. Another issue that worries me is that there are times we have little food we can manage but my son will say he is not eating that particular food and we have to start looking for what else to make for him. My son does not eat many foods and it worries me as we barely have enough to eat or can afford to cook different varieties of food for everyone in the household. The foods he likes eating are costly foods like rice, tea and he does not like local foods that are somewhat accessible. There is nothing else for me to do for him. Sometimes I will ask him to go to my parent's house which is close by to eat there and other times, he will drink 'garri' (fried cassava starch) and go to bed.
  - **OP2:** Yes, we get worried however we pray to God and rely on Him hoping that things will get better for us in the future.
  - **OB1:** Yes, I've been worrying over what my household will eat for over a year. (Getting emotional)
  - **EH1:** (With little exclamation), there are days I do not sleep till 3 am due to hunger, thinking of how we will eat in addition to my husband's ill health.
  - **EH2:** I don't worry, everyone gets hungry. It's only bad if it is prolonged.
5. Emotional/psychological reaction/effect of worry and lack of food
- **EZ1:** It makes me sad and unhappy and that the situation also makes my husband go into deep thoughts constantly. I however always try to encourage him. Yes, my children do cry because of lack of food but I cannot do anything because I don't have money. I can't buy any snacks for them; they must wait till I makes food later in the evening as we mostly skip lunch and the grocery shops will not sell on credit to me. So, the children will continue crying (this was witnessed by the interviewee). Even though I had prepared soup, it is for dinner the boy would manage with hunger till later in the evening.
  - **EZ2:** Psychological effect causing lack of sleep and deep thoughts
  - **NS1:** I decide to trust in God's providence. I don't have to worry much because I didn't create myself and I know that God knows everything.
  - **NS2:** I feel bad and sad any time I don't have food to eat.
  - **OP1:** it made me cry and makes me and my husband have issues/quarrels all the time. If I asked him to assist me with any chores he will scold me and say that am sending him because he doesn't have a job yet.
  - **OP2:** It makes us sad, but we are hopeful that God will turn our situation around. I don't cry, I get emotional and beg my children to be patient that very soon, our sufferings will be over. I was worried over sending my children to live with other families. However, I felt it was a better option so that I will have less mouth to worry about.
  - **OB1:** Sometimes I don't sleep while thinking of what we will eat. Like today, I came to church, we do not have the food to eat at home, so I am deeply troubled in my spirit

while thinking of how to get money to buy food for my children, and how to take care of their school fees.

- **OB2:** Yes, is it not possible for me not to be worried over it, from caring for my grandchild to her school fees which I do not have, to the food we eat which we lack.
- **EH1:** (With little exclamation), there are days I do not sleep till 3 am due to hunger, thinking of how we will eat in addition to my husband's ill health. Thinking about my condition and telling these stories makes me sad and brings tears to my eyes (she started sobbing). What I usually do is to pray my rosary and cry, because if not for my son's blindness, they would have at least been very helpful in feeding. My daughters in their respective households are also finding things very difficult. My first daughter gave birth to twins and she is the only one catering for them because her husband is a drunkard. If my daughter's husband was not a drunkard, they could have also been helpful to us. It causes me lack of sleep.
- **EH2:** I don't worry,

#### **6. Period of worry**

- **EZ1:** All through last week, I have been in deep thoughts concerning what we will eat. I went around begging for land but got none. Five people who promised to give me land disappointed me. It made me feel bad.
- **EZ2:** Through the planting season things were extremely tough for my household, so, I was worried all through.
- **NS1:** Hmm... I can't remember. I worry but I don't check for how long. About 2 days ago, I was very worried because I couldn't do anything in my shop to make money. Also, my husband wasn't feeling fine, so he didn't go to work.
- **NS2:** About two years now
- **OP1:** There is no day I am not worried about what my family will eat.
- **OP2:** I was worried the previous day which was our local market and there was no money in the house to give someone to help us buy foodstuffs in the market. I was so worried that I had to send my five-year-old child to go borrow 1,000 naira from our uncle which he turned down due to lack. Fortunately, a relative came by, hearing we have not eating, gave us Bambara nut flour, pepper, and plastic bags to make Bambara nut pudding (okpa) and that was what we had yesterday.
- **OB1:** For over one year
- **OB2:** Although not constantly, but sometimes.
- **EH2:** Not worrying

#### **7. Going to bed without food in attempt to have enough for others/other mealtime**

- **EZ1:** I have not gone to bed without eating in attempt to make sure everyone eats; I manages to keep at least a little portion for myself no matter how small the meal for the day was.
- **OP1:** It has happened uncountable times including the kids. For example, if we have late lunch, and there is little money for food, I do not bother making dinner rather I will preserve the money/food for the next day or still, I buy things like roasted corn which will serve as dinner then very early in the morning, I will make breakfast.
- **OP2:** there are days we will not have anything to eat and will have to go to bed on empty stomach.

- **EH1:** We also go to bed without eating and this affects our health especially my husband who is on drugs because of his ill health. For me, it weakens me and makes me unable to work the next day.
- 8. Effect of food insecurity on household relationship**
- **EZ1:** a times, due to frustrations he hurls insults at me saying am extravagant and unproductive but full of demands. That makes me angry, as the insult became too much, I decided to stop purchasing food stuffs or anything for the family rather he should purchase all the household foodstuffs. It would have been different if I had something doing to contribute to feeding, I would be respected more. I really want to work and contribute to the household expenses, but my husband wouldn't let me.
  - **EZ2:** Yes, but not directly, it happened when he wanted to be the sole provider of food in the house. I refused and insisted that I must work and farm, because feeding was becoming difficult and seeing how my kids were suffering. Also, because I hate to wait until he comes home before I could cook or eat. If my husband is not around or did not make money in a day, we will not eat or must wait till he comes back before we will cook. He is now happy because from my farm produce, we feed and selling some to buy more foodstuffs. No one feels bad over what we eat because they all know how difficult things are for the family.
  - **NS1:** Yes, it has affected my family relationship.
  - **NS2:** Yes, I had problems with my uncles' wives after the death of my parents, I had to start fending and cooking for myself and they never asked how I was faring.
  - **OP1:** The lack of food has constantly caused quarrels between me and my husband. It has caused major issues that have even led to fights between us. There are times he has asked me to go back to my parent's house as he is tired of the marriage. When I ask him for money, he will shout and yell, for instance, the previous day which was our village market, and I asked him for money to buy foodstuffs for the house. He yelled at me and asked me where I want him to get money from and if something is wrong with me, that, he does not have any money. I had to go borrow money from someone that day. Sometimes it is because my husband had not been paid and even if he was paid, his salary is very small. I borrow from my sister for us to have food in the house and I will pay back when I get the money. My daughter also feels sad and cries when there is no food, but my son is usually not concerned, especially when he is playing.
  - **OP2:** The lack of food usually causes issues between me and my mummy. For instance, I might make pap in the morning then mama will start yelling and questioning why I made the pap in little quantity. I will respond by asking her if she wants us to finish the whole pap we are supposed to sell, make a profit, and return the capital to the person we borrowed the maize from.
  - **OB1:** Yes, it has affected my family relationship. My household is not in unity because my husband is a drunk. His condition greatly troubles and affects me.
  - **EH1:** No, our situation has never caused a strain in the relationship between me and my husband. We take it as we see it, if there is food, we enjoy it together and if there is none, we console each other. We do not quarrel because we are wedded in the church and we are holding on to our vows.

- **EH2:** No, it doesn't affect our relationship.
- 9. Domestic violence due to food insecurity
  - **EZ1:** Yes, my husband has beaten me once because of our lack of food situation (becomes emotional and lowered voice tone), but I decided to let it go because it could lead to divorce if my family got to know. My major consideration is my children.
  - **EZ2:** No
  - **NS1:** No
  - **OP1:** Yes, the lack of food has constantly caused quarrels between me and my husband. It has caused major issues that have even led to fights between us. There are times he has asked me to go back to my parent's house as he is tired of the marriage. Once I ask him for money, he will shout and yell.
  - **OP2:** Lack of food does not result to fight, rather we just exchange words and insult each other.
  - **OB1:** After his drunken escapades, (starts sobbing lightly) he comes back to shout at me and beats me. I don't have food to give to my children, if I ask him for money for food, he says he doesn't have any money.
  - **EH1:** No
  - **EH2:** No

#### 10. Effect of food insecurity on the health of household members

- **EZ1:** Our food insecurity condition has not affected any one's health.
- **EZ2:** No, it has not happened, and I am grateful for that
- **NS1:** Yes
- **OP1:** Yes, my husband has ulcer and it is due to lack of food because when we were living in the north and the husband was running a business, he was not suffering from it. Since the hardship started, he also started fasting and praying too to know if things will get better.
- **OP2:** The lack of food is affecting my mother's health as she is old, unlike me that is still a bit younger. She is not eating what her body requires.
- **OB1:** One of my children has received blood transfusion in Bishop Shanahan Hospital, my child became sick with fever because she was not eating good food. People helped me to pay the hospital bills. I didn't have the money to pay her hospital bill. She would have died but for people's help.
- **OB2:** No, Lack of food is not the cause of my ailment, since the death of my children, I have not been my normal self.
- **EH1:** What my husband is suffering from is low sugar. The hospital we visited in Nsukka told us that my husband is lacking starch and sugar, that he is not eating enough. So, from then, I have been preparing sugar dense foods for him to increase his sugar level. This made me struggle to work more even under the rains so I can buy the required foods for my husband.
- **EH2:** None

#### 11. Household feeding pattern and its acceptability

- **EZ1:** We eat twice a day and my husband eats only once a day.

- **EZ2:** They understand, as they have seen the situation of things in the country but sometimes, they are angry and complain about food.
- **NS1:** If we have enough, we eat three meals a day, when we don't have enough, we eat twice by skipping lunch. We are okay with it; we are comfortable with it. It's not too bad.
- **NS2:** We eat twice a day – breakfast and dinner and is well accepted
- **OP1:** The only person that cries because of lack of food is my daughter as she is always hungry and she eats all kinds of foods cooked in the house, but my son does not mind as he is very playful and can do that all day.
- **OP2:** Sometimes we eat once and some other time it might be twice and at times none depending, there are days we will not have anything to eat and will have to go to bed on empty stomach. The kids as they cry uncontrollably when they are hungry My little child of five years is now used to it and sometimes, she will go and plucks/picks fruits from the trees in a nearby compound. Well, we understand and accept it.
- **OB2:** We eat three times a day
- **EH1:** Usually, we eat in the morning, skip lunch, and then have dinner so we will not go to bed hungry which is not good (twice a day).
- **EH2:** When there is food we eat, like today I've eaten breakfast it remains supper but when food is not enough, we eat just breakfast and supper. If they eat in the morning our mother would have kept their lunch before they come back from school, even if it's not there then arrangements would be made for the supper. It's the night food that is of utmost importance.

## 12. Causes of lack of food in the household

- **EZ1:** I would say hardship, problems, lack of money and lack of land to cultivate. There is abundance of varieties of food items here in the local market and shops around our premises but for lack of funds to purchase them, that is the issue.
- **EZ2:** The major cause is herdsmen who bring their cows to eat up our crops; because I am very good in cassava cultivation and garri production, I sell them and use the money to buy food for my household. However, I had to abandon my cassava farm and went into stone packing because the cows destroyed all the crops we cultivated. We have a place called 'ugwu mkpume' (mountain of stones) where the villagers can go to gather stones, sieve, and sell them to tippers and trucks drivers. We do this business in groups and share the profit. With this profit I can buy some food for my family.
- **NS1:** Lack of money. if there was money, we can afford food in the quantity that we need.
- **NS2:** I am an orphan and a single mother; I have no help from family. I am the only one providing for myself and child. No one to help me.
- **OP1:** It was the riot that happened sometime in the north which leads to the killing and deaths of many. So, we came back empty-handed and unprepared leaving our business behind, we were running a grocery business. Since then we are struggling with household food. Secondly, Lack of money and being unemployed, because if I am working, I am sure that at the end of the month I will receive a salary which will

be used to purchase food items for the family. Lack of land is another issue that is limiting food in my household.

- **OP2:** I am a widow; I am ill and cannot do much again. My daughter living with me is crippled not from birth, but it happened in her childhood when I took her for immunisation. If she was not crippled, things could have been a little better for us because she can hustle to provide food for us. So, with my sickness coupled with my daughter's conditions, made things very tough for us and it disturbs me a lot. We do not have any tangible business or job, so, we do to earn money to buy the food of our choice.
- **OB1:** The sins of the ancestors are part of the reasons why there is no progress in this land. People fail in what they do. They were not united, things don't move the way they are supposed to, all your struggles and hustles come to nought. There is no progress. People who go to learn a trade as an apprentice, come back without succeeding. This my child, (voice waivers, becomes teary) that came back recently, this is his third time of leaving and coming back without any success. I cry, I have come out in front of the alter in church crying to God because of him. I have no one helping me.
- **OB2:** hmm... (amused) What causes it other than lack of money to buy food
- **EH1:** Money is the major reason why we lack food because I am paid peanuts from my employers. My husband's health is also a contributing factor because he is unable to work living the whole burden to me.
- **EH2:** it's because there is no money or that the person supposed to bring the money have not sent it yet.

### **13. The balance and nutritious nature of a typical household meal**

- **EZ1:** The nutritious foods I prepare for the family are fufu with soups and local foods such as ayaraya oka, achicha, vegetable soup. I cook them just as one of our foods. Not particularly for any nutrient that am aware of. I do not train my kids with meat, so, on the days I cooks with meat, I will not give them. The meat is only consumed by my husband, myself, and my aunt. The reason is that I do not want my son to embarrass himself and the family when he goes to visit people or attend ceremonies. It is not advisable to give kids meat at a tender age until the child is grown and matured. Since their birth, they have not tasted meat but only gets to eat fish or egg when available. The children are not missing out on the benefits associated with meat consumption, they get the benefits from fish which is what I give them on the day I cook with meat.
- **EZ2:** cassava meal (akpu) and rice. My family likes rice a lot, but we do not cook it every day. However, what we enjoy is cassava meal (akpu) and soups especially "egusi soup". I also make achicha, ayaraya oka, igbangwu and Utara oka. There is no segregation concerning eating of meat as everyone eats meat and chicken when it is used to cook nonetheless, it is usually divided into smaller pieces for the younger kids.
- **NS1:** Hmm... yes, though not really balanced because we may take carbohydrate today and tomorrow, we will still take it. To tell you the truth we may take carbohydrate for about three to four days before changing to protein or others. For



instance, I may cook rice today, that rice we may eat it for the next day's breakfast. Then in the night we might take something like garri or semo. The following day may be spaghetti, sometimes with meat sometimes without meat, things are costly we go for the cheaper ones.

- **NS2:** Our meals are balanced

- **OPI:** Since the emergence of COVID 19, things have been really difficult for us so when cooking for the family, I do not consider whether it is balanced, delicious or nutritious, the only thing I put into consideration is if the food will be sufficient for us and if I can afford it. What my children like eating is rice and tea and if I am going to prepare rice, it will cost me up to 2,000 naira (\$4.86) and it will be consumed once. But I can use that same 2,000 naira to buy local foods, even 500-1,000 naira (1.22 - 2.43 dollars) which will be enough to purchase foodstuffs for local delicacy and it will be more than enough for us.

when I cook with meat (which is not often, only when there is money), I share it to every member of the family but if the meat will not go round, I will divide a piece of meat into two for the kids while I and my husband takes the remaining. Egg, heeee... Do not even mention it as I cannot remember the last time, we ate egg in our family. If I had money, I would prepare rice for the kids, but my husband prefers cassava meal and soup, so if I have money, I will be preparing pounded yam/cassava meal with rich soup for him. 'Ayaraya', 'otipiri' are also very nutritious and balance because it is prepared with vegetables, African oil bean seed (ugba), pigeon pea (fio fio) and I also cook it for my household, although, not always. I might cook it for the family the next day.

- **OP2:** We know balance diet, like moi-moi (bean cake), tea, pap with milk and chocolate, well-prepared soups, beans (they both laughed) We do not even remember meat/egg as we are struggling to feed. (They continued laughing), we have not seen food to eat and you are talking about egg and meat. Our meals are not balanced because we do not have money to make such food if there was money, we know the food that is good for us. But for now, we eat whatever is available to stay alive.

- **OB1:** No, we don't eat balanced diet, what I do is to use crayfish to cook, I don't use meat, I don't have money for meat. So, we manage what we have and add salt and Maggi seasoning cube. We use palm oil; I don't have money to buy groundnut oil and tomato. We eat vegetables and avocado pear.

- **OB2:** We eat vegetables, (Ugu-fluted pumpkin and – mgborodi-pumpkin, amaranthus ) which we buy when we do not have food. By God's grace during rainy season I usually have pumpkin leave. Is it not money? (Laughs) if there is money we buy from the market when we do not have money, we cannot eat any balanced diet.

- **EH1:** The balanced food I cook in my house is beans, semovita (which I normally purchase on credit), cassava meal, ugwuta and achicha (cocoyam meal).

- **EH2:** Whenever we see meat and fish we eat, whenever we see food we eat.

#### 14. Types of food regularly eaten in the household

- **EZ1:** The meal we eat very often is semolina and okra soup. Initially, we eat the soup with akpu (cassava meal) but it is now very expensive, and we cannot afford it. So, I buy 1 kg of semolina for 550 Naira (\$1.34). The family finishes it at a sitting. Other

foods we consume often are rice, and ayaraya oka. I makes okpa too, but things are now very expensive, so I am limited to prepare only rice and semolina with soup for the family then occasionally I make other meals such as achicha and ayaraya oka once a while. One of my child does not really like eating the soup and its accompaniment since he was birthed, so I usually wait for my husband to return and bring money so that I can get noodles or beans for him for dinner.

- **EZ2:** We majorly prepare cassava meal with soup and rice too.
- **NS1:** Hmm... (Chuckles) Hey...We eat rice, beans, spaghetti, garri or semo, indomie, sometimes we cook yam or local food like Ayaraya azuzu (a local delicacy), the main ones are rice and beans garri and semo and others.
- **NS2:** Rice, moi- moi, spaghetti, ogbonno soup.
- **OP1:** The only meal I prepare now is the ones I can afford and cheap since the emergence of COVID and not what I prefer to eat. As things are very expensive, the commonly prepared foods in my household are maize, ayaraya oka, otipiri because it is cooked without meat, fish, or crayfish and I can afford it.
- **OP2:** We were eating cassava meal (akpu) regularly but it is now very expensive. So, we are currently eating cornmeal with either egusi soup or okro, okacha, igbangwu oka.
- **OB1:** mmm
- **OB2:** We eat rice, okpa, moi- moi, we can eat variety only if we have the money.
- **EH1:** The foods we regularly eat in the house are cornmeal, rice. Also due to my husband's ill health, the doctors advised I make pasta (spaghetti) and noodles for him. We buy bread and groundnut with a bottle of soft drink to have as dinner on days there is no food or money to prepare a proper meal and we cannot borrow again because we already owe a lot and have not paid back.
- **EH2:** If I may say its ayaraya oka (local delicacy of pigeon pea and maize), akpu even rice and beans occasionally. we eat ayaraya oka, akpu, rice and ogede

#### **15. Household food experience during the COVID-19 lockdown**

- **EZ1:** Things were hard for us during the COVID season because we were all indoors and there was no way of getting income. He had to leave his job of packing stones as tippers don't carry the stones due to road blockages. So, he resorted to doing odd jobs (working as a labourer on people's farm) for meagre amount so that we can feed as everywhere was blocked. During normal times, even now, we feed at least twice a day but with the emergence of COVID we fed only once which we are even grateful to God.
- **EZ2:** when COVID lockdown started, as God would have it, was during the period when we harvested some of the things we planted. Additionally, it was also at the period it was my turn to take the money we contributed in our meeting group.
- **NS1:** It was very tough. It was hard for us to survive, if not because of God. Hahaha... Yes, we experienced a lot because Covid19 started like a joke then it became reality. The lockdown progressed from a week to two weeks then a month...I went to a friend and explained everything to her. I told her that I don't know what to do, pleaded with her not to allow us (me and my family) die of hunger and she lent me some things on credit and allowed me to payback whenever I got the money.

- **NS2:** We experienced food problems during the lockdown too much, we didn't go to the market, schools and there was no paid job to do, so I used the money I had before the lockdown?
- **OP1:** It affected us badly as it restricted a lot of things, even when I go to the market to buy stuff, the price keeps changing on daily basis and sometimes some foodstuff becomes scarce and unavailable for purchase. For instance, the price of a measure of garri doubled from 500 naira – 1,000/1500 naira and this is just for the soup accompaniment excluding the cost of soup materials.
- **OP2:** It affected us so badly, the hunger was intense, and it felt like we were going to die (mama shouted). We have not started making pap then. So, throughout the pandemic period, we resorted to begging neighbours/relatives doing better than us on different days. During the COVID period, when some food crops were yet to be harvested like cocoyam, so we went to people that still had some crops on their farm, and pleaded with them to allow us to harvest a portion so we can have food to eat. These were the things we did to survive the COVID period.
- **OB1:** We didn't have food, some people helped me out with food, the Pastor and his wife helped me with food. My kids were also doing some menial jobs in building constructions sites, carrying concrete blocks to make money for our feeding.
- **OB2:** The thought of how to go out and get food, it is worrisome when you do not have any stock/food in the house, so it was difficult. We were not eating enough, the most important for me was my grandchild's feeding. I moved out to fend for us. Yes o, if I did not come out during the period, how would I have coped.
- **EH1:** During the COVID-19 pandemic, my husband was healthy and working in a palm oil processing engine. So, with that, we were able to feed with the money he realises, and it continued like this till the termination of the lockdown. My husband told me not to work during the pandemic.
- **EH2:** For us that don't see anything by the grace of God we were able to see what we ate. No one was spared the effect of COVID-19. Covid-19 came with hunger. We stayed well (in a thankful tone) we had food to eat ... We didn't have much problems

#### **16. Effect of lockdown on household feeding**

- **EZ1:** At that period, we sleep sometimes without food. (with high tone) 'well... well', it was indeed a very difficult time for us. It was my husband's meagre savings during pre-COVID time that helped us survive. He usually gets a thousand 1000 Naira (\$2.43) daily from the money which we use to buy food stuff.
- **EZ2:** The lockdown did not affect us so much as it was my turn to take the contribution we do in our women's meeting, though my father's death that period gulped some part of the money. So, at the dawn of each day during the COVID lockdown, I carry my children to the stone site, and we will pack stone from morning to night to enable us to see what we will eat for the day. Some people were not indoors within our locality.
- **NS1:** It affected my family feeding because, we ate once and sometimes twice a day. During that COVID-19 lockdown, some family members joined us. We were many in the house at that time, my sister in-law and her children, and my sister that came back from school were all in my house. So, we were many about 9 people, the house was

full, and feeding was so difficult for us. We would drink garri (cassava starch) in the afternoon and eat normal food at night.

- **NS2:** It affected my family feeding, nothing was available, no more work because there was lockdown, no movement.
- **OP1:** We reduced the number of times we eat from thrice to twice and sometimes even once including the children. Some other time, we will drink fried cassava starch (garri) and have it as dinner. What I did was to cook mostly okra soup as it is cheaper than other types of soup and I prepare it without meat or fish.
- **OP2:** So, throughout the pandemic period, we resorted to begging neighbours/relatives doing better than us on different days. We begged to harvest peoples' crops from their farm. the hunger was intense, and it felt like we were going to die.
- **OB1:** We didn't have food
- **OB2:** We were not eating enough, it was worrisome as we didn't have any stock/food in the house, so it was difficult.
- **EH1:** It was not hard for us to feed during the pandemic because my husband sometimes takes loan advance from the people he processes oil for. He gave the money to me to buy foodstuffs for the house.
- **EH2:** None

#### **17. Household recipient of Nigerian government COVID-19 palliative**

- **EZ1:** No, we did not receive any form of palliative from the government
- **EZ2:** No, I did not gain anything from the government during the COVID period
- **NS1:** We didn't receive anything from the government, not at all. We got help from my friends and relatives.
- **NS2:** No
- **OP1:** None
- **OP2:** Our household got noodles, pasta, maize and garri when they were sharing the palliative.
- **OB1:** No, I didn't get palliative from the government, No one except the vicar gave me any palliative.
- **OB2:** Mm... Mm... No. There was a time we went for a garthing (woman for woman). We waited for their palliative, but it was not forth coming so we stopped waiting.
- **EH1:** My family received four packets of noodles and rice
- **EH2:** Yes, a small bag of rice, a tuber of yam, (akpa ego ise) ₦, cloth, onions.

#### **18. Opinions about the Nigerian government COVID-19 palliative**

- **EZ1:** The sharing pattern/format was unjust and very unfair as they were partial. It is possible the government meant to give it to the needy but the community heads of Eziani will give only few people who are their relations and keep the rest for themselves. For the palliative reach those that truly needs it, the palliative should be sheared through the king and not the village politicians.
- **EZ2:** I do not have any advice; however, the government should plan and decide on better ways to share the palliative so it will reach everybody. As for me, I believe in

hard work and will not fold my hands and wait for palliative while my whole family is hungry.

- **NS1:** The thing is that people received but we did not. There was a day our neighbours came to our place to say that items would be shared to them. Though later it turned out to be those whose name were on the list the elderly men and women in our village were the only ones they considered eligible for the items. So, I asked, if the rest of us are not human beings and suffering from the same Covid-19 lockdown. Why should they discriminate? But as God will have it, we still managed.
- **NS2:** I don't have much to say but I suggest that government should make things available for us to help ourselves.
- **OP1:** They should devise better means of sharing the palliatives as it hurts to hear and see others getting bags of rice while we got none. People that got were mostly those that were members of a political party.
- **OP2:** The government did well however we were given hope that we will receive more foodstuff and they even told us to put down their names, but up until now, they have not gotten back to us thereby dashing our hopes.
- **OB1:** What I would say is that I didn't get any palliative. Some Widows got palliative, but those of us whose husbands are still alive, didn't get any palliative.
- **OB2:** No one got the promised palliative.
- **EH1:** The government should give the citizens more because what they shared was not enough and did not go around.
- **EH2:** They gave some people, it didn't go round

#### **19. Household food condition since the COVID-19 Pandemic**

- **EZ1:** things are a bit better now because lock down has been removed and there is movement so my husband can go out, hustle, and get some money. But, (Sighed) Since the current administration came into power things have been very difficult, even with the relaxation/complete removal of lockdown before one can earn a thousand naira (2.43 dollars), the person will suffer.
- **EZ2:** The COVID period was worse for us due to movement restriction as I could not sell the things I harvested, so I had to abandon them and delve into stone packing to survive. In other words, things are a bit better now.
- **NS1:** My dear, I will say it has gone worse (laughs a little). Because before the covid-19 we know how we were feeding but after COVID -19, things have gone worse.
- **NS2:** Things have grown worse for me
- **OP1:** It is a bit better now because movement restrictions have been lifted and crops planted are now being harvested gradually. Things like maize which can serve as a full meal and the lift of the ban on movement also helped a great deal as I can now go to church and after hearing the word of God, it will strengthen me and help reduce my worries. Also, the kids have started going to school, and the stress of constant demands and hunger cries that came with their stay at home during COVID has reduced.
- **OP2:** Things are a bit better now because no one is scared or worried about getting sick again. The only thing we are worried about currently is hunger unlike the COVID period when we were worried about both contracting the virus and hunger.

- **OB1:** Its worse, food prices are high, there is no food, it is not getting better. You cannot use a thousand naira to buy food for your family.
- **OB2:** it is worse because the prices of everything increased and there was no money. Prices of food have doubled, and we lack money to buy them.
- **EH1:** I prefer the COVID period because my husband was very healthy and provided for the family. The lockdown did not affect him because the palm oil processing engine is located within the village and does not require any means of transportation. So, when there is work, he goes, collects his money, and comes back to the house. However, now that he is very sick and cannot work again to provide food, things have become very difficult for us. I am now left with the sole responsibility of providing for the family with the little money I make from weeding.
- **EH2:** We still have food to eat, we may not have much, but we have food

### **Food insecurity coping strategies:**

- 1. Household response to lack of food/resources to buy food and food increase for short term food availability**
  - **EZ1:** I do nothing when there is no food in the house. I wait for my husband to get back and provide what we will eat. However, for my husband, when there is no food for the family, and there are no stones to pack which is his major work, he goes to do odd jobs such as cultivating farms for other people. But if there is nothing he could come up with, we will go to bed without eating. But recently, I have gone out to source for land that I can borrow to cultivate crops to supplement what we have.
  - **EZ2:** I diversify into other occupations to make money. I am a farmer but if my farm work is not doing well, I will quit it and go into stone packing to be able to provide food for the family. I also borrow money from people when there is a food shortage or no food at all. I go to my very good friend and explains to her the situation of things in the house and asks her to lend me some money so the family can eat.
  - **NS1:** I will call my friends or sisters to help me if they have. By the time I call at least two or three people I will get help. I get food and clothing from them.
  - **NS2:** When I don't have enough money in the house. I gather the one I have then asked for help from people.
  - **OP1:** I go into thinking, and if I have a little thing to give the children to manage for the meantime I will. If my kids disturb me so much, I will give them the last money I have, like 100 naira to get bread and manage as dinner, some other time it will be just 'pap' (maize custard). If not, I will just console them and assure them they will not die

of hunger. I also go to borrow money from people which we will use to purchase foodstuff for that moment; I just remembered that I am yet to pay back the last money I borrowed. A times when I have not paid what I borrowed; we will go to bed without eating.

- **OP2:** We borrow from people and buy on credit when we do not have. Yes, there are days we will not have anything to eat and will have to go to bed on empty stomach.
- **OB1:** When I don't have enough money, I meet food sellers and ask them to help me with the promise to pay when I work and get paid. The food seller will agree to sell on credit to me, when I am paid, I will pay the food seller as promised. That's how I feed my children.
- **OB2:** We keep on patching life (laughs). If I see a job of de-husking melon to make money to buy food I will do, even making brooms from palm fronds.
- **EH1:** I borrow from a woman who sells foodstuff in my village. I pleaded with her to either lend me some money or buy some foodstuffs from her on credit and I will gradually pay her back when I work. The foodstuff I usually buy on credit is rice, cornmeal, palm oil, magi, pepper. Sometimes the woman asks me not to pay her back or give me some of the foodstuffs on credit.

## 2. Steps taken to ensure enough food for the household

- **EZ1:** My child has stopped going to school before due to lack of food, as we used the money meant for his fees to buy food, so he stayed at home that period. I have also borrowed money from my aunt that is leaving close to our house and paid her back. It was my husband that told me to borrow from her. She is the only person we have borrowed from. I just returned the 2000 naira (4.86 dollars) I borrowed from her which we used to purchase food items.
- **EZ2:** I buy food items on credit and pay when I have money. I also borrow money to buy food for the family.
- **NS1:** I Borrowed food/money from friends and relatives, I also buy food on credit.
- **NS2:** I buy things on credit, but my mind does not...I don't like it. I have sold my sandals before to a friend to feed my child. I borrow food and money from friends and relative (Uncle).
- **OP1:** It is someone that has valuables that will sell. I do not have wrappers; it is my sister that gives me the one I use.

I have asked my kids to stay at home and not attend school due to lack of funds. My children came home from school and said they were flogged and asked to go back home because they have not paid their school fees. I asked them to stay at home till we can raise the fees. My kids were formerly attending private school, but I had to

withdraw them to attend public schools where we will pay smaller fees, but it is still difficult for us to pay up.

I also buy food on credit from my customers. The cassava meal we are currently eating, my husband bought it on credit he is yet to pay.

I send my kids to my parent's house to eat at times when we do not have food to eat.

- **OP2:** We sent two of my grandchildren to live with my son and the other person with her biological father as things were so tough. It is because of our condition that we decided to send my grandchildren to go live with other people as we cannot afford to cater for them and still pay for their school fees. People were asking us why we sent the children out since we need help in running errands in the house, I usually reply them that it is because the children were being underfed and because I and my daughter can endure but the kids cannot. I did not have money to train my own children in school, so I sent them to become apprentices and from there they started their businesses. When our situation became critical; we had to sell the tank we use to store water for 6,000 naira (14.58 dollars). We buy food on credit and we borrow food and money from relatives.
- **OB1:** Yes, I sent my first daughter to live with other people she is not with us, she is in Port-Harcourt because I couldn't feed her or pay her school fees. I have sent two of my children out before, one is back but the other one, my first daughter is in Port-Harcourt she is being trained in school. , my children has had to drop out of school, I have told them to stay at home to sort the issue of food first. I also advise them to help me out in their own ways that I am their mother. We also borrow money and buy food on credit.
- **OB2:** I have received help from the church and the neighbours
- **EH1:** We do not have anything of value to sell in the house to realise funds for food including chairs. I have taken foodstuff on credit and borrow money from people so I can cook food for myself and my husband. Currently, I borrowed foodstuff from people, I owe money one 4 packs of semolina sold at 650 naira per pack. I also owe another person I bought beans on credit 2,000 naira which we used to prepare beans pudding (moi-moi). I keep pleading with them to give me some time to pay gradually till I offset them, as God will have it; they understand my situation and are very patient with me including accepting for me to borrow/buy on credit even with the debt.



- **EH2:** What I do is to divide my things into two and take one part to the market to make money. Then when I get money, I go to the market to get the things I don't have, no one has everything. There is no money now but it's little by little. Before now people bring money from different quarters. It's just this lack of sight, apart from that, I am capable.

### 3. Ways of rationing the limited food

- **EZ1:** I share the food out at once. For instance, a pack of semolina gives me 5 wraps in all after preparing it. I give my aunt one wrap which she hardly finishes, my husband eats two wraps as he does not eat in the morning before going to work, I eat the remaining wraps and use any remnant for breakfast the next day. My children don't eat semo. When I cook rice, I measure it with cups to cook the amount just enough for us.
- **EZ2:** I don't like rationing food because my children may get angry and my brothers-in-law may feel maltreated if their food is rationed. I would rather augment our food with some local items or borrow money to buy more food. So, in sharing food, I give according to the portion a person can finish.
- **NS1:** We manage, for instance, in the morning if we were to eat three or four spoons, we eat two or one so it will remain the one we would ... eat and drink water and fill our stomach. A times we drink garri (cassava starch) and wait for the real food the next meal.
- **NS2:** I will cook the little quantity I have, and we will eat little portions out of the meal and drink water so that it would be enough.
- **OP1:** When food is limited; I divide it amongst us instead of serving it in a tray. I do it because the kids might be cheated, they will not eat to their satisfaction. My husband complains when I ration food, but I do it because the food is small and if it is served on the tray when not enough also leads to fight, quarrels, and arguments that someone is eating more than others.
- **OP2:** We would consider my little granddaughter first, she gets a good portion to her satisfaction, then we can have what is remaining. She is considered more because she cannot bear the hunger as adults would.
- **OB1:** I share it from the youngest to the eldest child because their feeding is more crucial especially, the younger ones. I put smaller quantity for the older children and

more for the younger ones. Sometimes when I see that there is no food, I won't take breakfast. I will share the food for them and still go out to work.

- **EH1:** I do not ration food in the house; we eat from the same plate.
  - **EH2:** I don't share, they bring my own portion to me. If you are satisfied with your portion fine, if you are not satisfied and the meal remains, they put another share for you. Food does not cause quarrel. They give me my own portion then they eat their own together in one plate. If one gets filled/ satisfied, he/she stops eating.
4. Recipient of support to household food
- **EZ1:** I have not received any type of help from the church, government, family, and friends including neighbours except my aunt that lends us money sometimes.
  - **EZ2:** Yes, from the church but not during COVID-19
  - **NS1:** Yes, from friends and family
  - **NS2:** Yes, from friends and relatives
  - **OP1:** I have not received any form of help either from the government, church, or community rather; it is the church that is demanding a lot of contribution from us which I am yet to meet up with. It is majorly my younger sister that helps me out with money, foodstuffs, clothes that she brings for our mum and I will take some.
  - **OP2:** Yes, we receive support from the church during the festive seasons. Also, from relative, neighbours, and friends.
  - **OB1:** No, no one helps me
  - **OB2:** yes, from church and neighbours
  - **EH1:** I have not received any form of support from the government even though I am a member of the People's Democratic Party (PDP) and I attend virtually all the functions organised in my locality. During harvest and bazaar in my church, the mothers usually buy cloth for me while individuals gift me other things however, this did not happen recently as the country is very hard now and things are tight. My children hardly help because they are not also finding it easy in their respective homes. I get help from individuals in the community and relatives who give me money sometimes, foodstuffs, lends me money and allows me to buy foodstuff of credit.
  - **EH2:** Yes
5. Type of support received
- **EZ1:** None
  - **EZ2:** Clothes and foodstuffs

- **NS1:** Food items, cloths, and shoes.
  - **NS2:** food and material things like cloths
  - **OP1:** Food items, cloths, money.
  - **OP2:** food, clothing, money
  - **OB1:** None
  - **EH1:** Food, cloths
  - **EH2:** Food, support with child's training at school
6. Membership to a co-operative society, or financial group "adache" or "asusu" group
- **EZ1:** None
  - **EZ2:** Yes, I belong to an "asusu" group where we contribute a little money every week and take turns to take the contribution.
  - **NS1:** No
  - **NS2:** No
  - **OP1:** No
  - **OP2:** No, since we do not have money to contribute
  - **OB1:** I don't belong to any association that does contribution because I don't have money.
  - **OB2:** No
  - **EH1:** I belong to the Iyom di group, but I do not make any contributions whatsoever because I do not have money. Nevertheless, I try to attend all the functions, meetings, and gatherings in the village since I cannot contribute financially which is acceptable in the group.
  - **EH2:** yes
7. **Benefits of belonging to the above groups**
- **EZ1:** None
  - **EZ2:** the contribution has helped me to buy food in big quantities that will last for a while in the household since we are many.
  - **NS1:** None
  - **NS2:** None
  - **OP1:** None
  - **OP2:** None
  - **OB1:** None
  - **OB2:** None
  - **EH1:** Not a contributing member

- **EH2:** We contribute money once we bought properties for hire services. When the income from the hire purchase gets to a certain amount, we then share the money, they give me my own share.

## **8. Existing plans towards increasing household food**

- **EZ1:** I would need some financial assistance to start a petty food stuff trading (at this point, the child started crying and saying he is hungry and wants food) to support my husband. This will make us to have enough income to purchase food that will be enough for our family.
- **EZ2:** I also want to start selling foodstuffs in wholesale which will increase my income and afford me to prepare different varieties of food for my family. I want some money to get more foods in bags example bags of rice instead of going to the market to buy in cups every other day we want to cook rice.
- **NS1:** I am not doing anything now to improve our income. However, I will diversify my income sources because my husband does not go to work always. Knowing the situation of Nigeria, I will fix myself in one or two other places to have more income because my sewing business is not moving but for now, I have nothing extra that am doing. People are hungry so they don't have money for sewing.
- **NS2:** I plan to improve it by working hard to get paid to increase/ add to whatever food in the house.
- **OP1:** I hope to get money to start up a business or get employed by the government as I schooled at College of Education Eha-Amufu. With the money I will make, I can now start cooking balanced meals for my household instead of eating just what we can afford to satisfy our hunger. I would like to give my kids food that children are supposed to eat, my son likes taking chocolate tea, but I have not been able to provide that since this year.
- **OP2:** I need support and empowerment from the government as I am disabled, and my mother is old. The empowerment from the government (vocational aspects) will help us to make money and stop borrowing from people. With the money, we can now buy foodstuffs in bigger quantities and not daily purchases like we currently do.
- **OB1:** I have no plans yet, presently, I go out in the morning to look for work to provide food for my family. I don't stay at home; I also have no time for idle gossip. What I am more interested in is food for my family.

- **OB2:** Hmm...If I have a land, I can clear it and plants, then God helping, it will grow well. Also, from my jobs of making and selling of broom and weeding of the farm. After sales I go to the market to buy food and keep.
- **EH1:** I pray my husband gets back to his feet and work as he usually does, this will reduce the hunger condition in the house. I also want to stop the weeding as age is no longer on my side, I wish I can start trading different foodstuffs, I will realise bigger money from it which I will use to buy varieties of food for us to eat.

## Household food recycling

### 1. Types of household leftover foods

- **EZ1:** Ayaraya oka and achicha are usually remained in the family and can last for 2-3 days not because it is not liked in the family, but it can be warmed over time without people getting tired of eating it.
- **EZ2:** If I make ayaraya oka, it will always remain because the kids do not like it. I bought ukpaka three days ago so we can cook it, but they refused because they do not like it, they rather prefer igbangwu oka. Other leftover foods are cassava meal and rice.
- **NS1:** Almost all kind of food because I cook, and we eat it within two days.
- **NS2:** Spaghetti, beans
- **OP1:** None except okra soup, Moi-Moi (beans pudding) as my son does not enjoy eating it.
- **OP2:** Cassava meal (akpu) we make it in bigger quantities than other foods.
- **OB1:** Its fufu, ayaraya azuzu (pigeon pea and corn), and rice.
- **OB2:** Hmm... all the foods we cook remain to the next day so that my child will eat before going to school, like Maize and pigeon pea. It lasts till the next day and in the night, we cook a fresh one.
- **EH1:** There is hardly any leftover food in my house because I cook what I and my husband can finish since it is just both of us. However, cassava meal is the commonly leftover food which is intentional. For example, I bought 500 naira cassava meals the previous day; we had it for dinner and this morning for breakfast which was remaining just one portion for my husband. So, he had to eat it to take his drugs while I bought bread and groundnut. For dinner, I will go to one of my customers and buy beans on credit. She told me I can always buy on credit and pay gradually.
- **EH2:** Sometimes it remains sometimes it doesn't

### 2. Utilisation of household leftover food

- **EZ1:** Leftover foods are stored and warmed up the next day for consumption

- **EZ2:** When food remains, we eat it the next day. For cassava meal, I make the one that will last for three days and cook enough soup. At times if these foods are warmed for too many times (up to 3 days) it loses its taste and we give it to the goats to eat.
- **NS1:** We will warm it and eat it again.
- **NS2:** Consumption

**OP1:** I warm it the next day to serve as breakfast for the family

- **OP2:** WE consume it for another meal
- **OB1:** consumption
- **OB2:** for consumption
- **EH1:** I warm the leftover food the next day using the stove that someone bought for me on Mother's Day. The only problem is money for kerosene which I manage to beg and get.
- **EH2:** If there is any food remaining, we can use it for breakfast or the next meal, they combine them and take them to Nurses house to warm in her house and then bring mine here

### 3. Storage and preservation of leftover food

- **EZ1:** I store/preserve semolina wrapped in plastic bags inside a cooler, and rice, soups and stews, ayaraaya oka, and achicha in pots, etc and then keep them inside my room overnight since my kitchen is located outside the house. We do not have fridge or freezer to store them.
- **EZ2:** Cassava meal is kept in cooler and taken inside the room while the other foods are kept in the pot inside the house and brought out to be reheated whenever we want to eat it.
- **NS1:** I will leave it in my pot because our fridge spoilt, so I don't have a fridge anymore. So, if I cook today in the afternoon, I will warm it in the night and still warm it the next morning. I will keep warming it until it finishes.
- **NS2:** (smiling) I will keep warming it and I leave it in the pot. I don't have a fridge.
- **OP1:** I keep the leftover food in my room, well covered in a pot because our kitchen is outside and there is no fridge to preserve it.
- **OP2:** We keep warming the food until we finish it. In the case of cassava meal (akpu), we keep it inside the cooler while we warm the soup in the pot. I keep the leftover food in the house well covered inside my room because our kitchen is outside, and we do not have a fridge to preserve it.
- **OB1:** I store the food (fufu) in the cooler, and it can stay for 2days.

- **EH1:** I keep the leftover foods inside the house
  - **EH2:** In the cooler, we store fufu in the cooler
4. Acceptability of leftover foods by household members
- **EZ1:** My husband and aunt do not grumble while eating the leftover food because they know there is no food and are fully aware of the situation of things in the country.
  - **EZ2:** They eat it with joy and accept it especially the cassava meal and soup, except when it has been reheated several days, or it is the food they don't like.
  - **NS1:** Leftovers are well accepted by my family, no complains.
  - **NS2:** (makes a face) I feel bad because the taste is affected, it becomes tasteless. My baby can't complain because she is too young
  - **OP1:** Haaa..., we are grateful and happy to have what to eat
  - **OP2:** We do not mind if we have food to eat, that is the ultimate blessing. We do not care if it was leftover or not.
  - **OB1:** They don't have any problem with the food because the cooler retains the heat of the food. I warm up the food when it's cold before we eat again. No, my children do not grumble over left over food. It's what they see that they eat. They already know that their parents are not wealthy. They are even happy that there's food to eat, even the one that lasts for 2 days.
  - **OB2:** She is not happy when we cook certain food like fufu and had to eat it for more than 2 days
  - **EH1:** We are happy to see what to eat
  - **EH2:** Yes, why not, they eat all food with cheerful hearts.
5. Deliberately cooking food in excess to have leftovers
- **EZ1:** Yes, I intentionally prepare food and ensures there is leftover
  - **EZ2:** Yes, I intentionally prepare food for it to remain so it can be consumed for some other time especially cassava meal.
  - **NS1:** Yes, I cook to have leftovers
  - **NS2:** Yes, I do
  - **OP1:** Yes, I purposely make food to have leftovers so it can be consumed the next day.
  - **OP2:** Yes, we purposely make food to have leftovers so it will be consumed some other time.
  - **OB1:** Yes, I cook intentionally for the food to remain, at least to last for 2 days

- **OB2:** Hmm...we cook that it remains for the next day's breakfast and lunch since things are difficult for us.

- **EH1:** I intentionally prepare food so that there will be leftovers

#### 6. Reasons for having leftover foods

- **EZ1:** So that we can eat it as breakfast the next day and in some cases over a period, so we do not have to worry about what to eat at that time.

- **EZ2:** So that it can be consumed for another meal.

- **NS1:** Leftover foods are helpful in these hard times

- **OP1:** If I do not do so, I will start looking for what the family will have for breakfast the next day which is usually difficult as the foodstuff sold in local shops around this area is expensive. For instance, the rice I cooked for dinner last night, I intentionally made extra so there will be leftover which was eaten this morning; it is cheaper for me that way.

- **OP2:** To be sure of the next meal at that time

- **OB2:** To utilise it for the next day breakfast and lunch

- **EH1:** We can use it as a meal the next day

#### 7. Opinions on leftover food

- **EZ1:** I do not think there is anything wrong with leftover food as long it is kept well.

- **EZ2:** There is nothing wrong with leftover food if it is kept well and warmed the next day.

- **NS1:** Leftover food is good in this situation, everyone knows how things are, except if one has enough (food). I personally don't complain about leftover food. Yeah, I am comfortable with it.

- **NS2:** I don't like leftover foods because warming makes the food too soft with a queer smell as you warm it, and I must warm it twice a day.

- **OP1:** It is good for us as we have no choice; we can even eat a meal for three days. We eat two times (morning and night) and sometimes once a day.

- **OP2:** There is nothing wrong with it if it is not left to sour and we are even grateful to have food.

- **OB1:** We don't have any problem with leftover foods

- **OB2:** It is good, and gives us assurance of the next meal

- **EH1:** There is nothing wrong with it



- **EH2:** Left over foods should be warmed in the morning. Whatever food it is, I tell them to warm food in the morning. I don't even like foods that are not warmed in the morning

### **Socio-demographics**

1. Marital status
  - **EZ1:** Married
  - **EZ2:** Married
  - **NS1:** Married
  - **NS2:** Single mother
  - **OP1:** Married
  - **OP2:** Widow (with a single mother – daughter)
  - **OB1:** Married
  - **OB2:** Widow
  - **EH1:** Married
  - **EH2:** Widow
2. Gender of household head
  - **EZ1:** Male
  - **EZ2:** Male
  - **NS1:** Male
  - **NS2:** Female
  - **OP1:** Male
  - **OP2:** Female
  - **OB1:** Male
  - **OB2:** Female
  - **EH1:** male
  - **EH2:** female
3. Age of household main income earner
  - **EZ1:** 37 years
  - **EZ2:** 40 (the woman), 60 (the man)
  - **NS1:** 36 years
  - **NS2:** 22 years
  - **OP1:** 57 years
  - **OP2:** 70 years

- **OB1:** 47
  - **OB2:** Unknown
  - **EH1:** 66 years
  - **EH2:** 56
4. Occupation of all household food income earners
- **EZ1:** Packs stones and labourer
  - **EZ2:** Well digger(man), Stone packing and farmer (woman)
  - **NS1:** Technician (electrical)
  - **NS2:** Menial jobs and selling local spice (ogiri)
  - **OP1:** Security Personnel
  - **OP2:** Processing pap (maize custard)
  - **OB1:** Paid jobs like weeding people's farms, processing cassava starch (garri) and rearing pigs
  - **BO2: Paid jobs:** weeding farms, processing peoples' palm oil fruit, making brooms, rearing animals.
  - **EH1:** I weed farms and wash bitter leaf while my husband use to be a palm oil processor before he took ill.
  - **EH2:** A farmer, it's just that Hausa (meaning Fulani Herders) have disrupted her farming activities. Before now she sends me a bag full of fufu, after sharing to those she wants me to give then I take the rest, just that herders have made farming difficult. Destroying crops such as cassava, cocoyam, or yam.
5. **Estimated total monthly income from all household income earners**
- **EZ1:** My husband's job is seasonal. In dry season he makes 5,500 Naira (\$13.7) in rainy season he makes 750 Naira (\$1.82) because all he can do is to pack the stones into the tipper.
  - **EZ2:** on average ₦30,000
  - **NS1:** On average ₦5000
  - **NS2:** On average ₦1,200
  - **OP1:** Approximately ₦10,000 (24.31 dollars) per month
  - **OP2:** Approximately ₦3000
  - **OB1:** ₦5000
  - **OB2:** Unknown
  - **EH1:** I am not sure because the work is not constant. I make an average of ₦1000/1500 naira when I weed which can be for three days. When I process bitter leaf during dry season, in a day I can make between ₦500/1000 naira. I work every

day except Sundays. Sometimes, my employers give me extra money to support me due to my condition.

- **EH2: Unknown**

#### **6. Household size (those who feed from the same income)**

- **EZ1: 5**

- **EZ2: 9**

- **NS1: 4**

- **NS2: 2**

- **OP1: 4**

- **OP2: 4**

- **OB1: 10**

- **OB2: 2**

- **EH1: 2**

- **EH2: 4**

#### **7. Possession of a farmland**

- **EZ1:** No, the people I hoped on to borrow a land to cultivate this cropping season disappointed me, but I will continue searching.

- **EZ2:** No, we borrowed the land we are currently using. Sometimes I beg for land with a bottle of wine to plead with the person, as we cannot afford to pay for it.

- **NS1:** No, we borrowed the farm we cultivate now

- **NS2:** No, because I am female, and my uncles cultivates on the land. If I ask my uncle to allow me to cultivate on the land it would cause problems, so I decided to leave it.

- **OP1:** No, we borrowed at the cost of 2000 Naira for this planting season. Also, a little portion in our compound where I cultivated vegetables such as garden-egg, ugu, and spinach.

- **OP2:** We have land, but we do not cultivate much because my mother is old and ill while I cannot walk, and we also cannot afford to pay labourers to cultivate for us. However, due to hardship, mama tried to cultivate a little portion this season.

- **OB1:** Yes, I have a farm

- **OB2:** No but I borrowed from someone

- **EH1:** We have a small piece of farmland in front of our compound where I cultivated cassava and ji-abala (water yam)

- **EH2:** Yes

#### **8. Utilisation of household farmland**

- **EZ1:** We have none
- **EZ2:** We farm crops both for consumption and commercial purposes
- **NS1:** We farm crops for household consumption
- **NS2:** I have none
- **OP1:** They are all for consumption and not for sale as we do not cultivate so much.
- **OP2:** The crops she planted are basically for consumption not for sale.
- **OB1:** The farm produce is for family consumption
- **OB2:** Cultivation of farm produce for household consumption
- **EH2:** We do not sell the crops we plant; they are majorly for consumption as they are barely enough for us.

#### **9. Types of crops farmed by households**

- **EZ1:** We have none
- **EZ2:** We cultivate pepper, garden egg, tomatoes, cassava, and maize.
- **NS1:** Cassava, potatoes then some maize
- **NS2:** I have none
- **OP1:** We planted cassava and maize in that portion.
- **OP2:** cassava, maize, and little cocoyam.
- **OB1:** I planted cocoyam, water yam, cassava
- **OB2:** cocoyam, okpakara
- **EH1:** cassava and water yam (ji-abala).
- **EH2:** We planted maize just that animals have refused to let it rest, cassava and yam

## Appendix 20: UCLAN STEM quantitative study ethics approval



22 May 2019

Carol A Wallace / Ijeoma Ukonu  
School of Sport and Wellbeing  
University of Central Lancashire

Dear Carol / Ijeoma

Re: STEMH Ethics Committee Application

Unique Reference Number: STEMH 1007

The STEMH ethics committee has granted approval of your proposal application 'Investigating Food Security in Post- Economic Recession period in South-Eastern Nigeria'. Approval is granted up to the end of project date\*.

It is your responsibility to ensure that

- the project is carried out in line with the information provided in the forms you have submitted
- you regularly re-consider the ethical issues that may be raised in generating and analysing your data
- any proposed amendments/changes to the project are raised with, and approved, by Committee
- you notify [EthicsInfo@uclan.ac.uk](mailto:EthicsInfo@uclan.ac.uk) if the end date changes or the project does not start
- serious adverse events that occur from the project are reported to Committee

- a closure report is submitted to complete the ethics governance procedures (Existing paperwork can be used for these purposes e.g., funder's end of grant report; abstract for student award or NRES final report. If none of these are available, use e-Ethics Closure Report Proforma).

Yours sincerely



Jean Duckworth

Deputy Vice Chair

STEMH Ethics Committee

\* for research degree students this will be the final lapse date

*NB - Ethical approval is contingent on any health and safety checklists having been completed and necessary approvals gained as a result*

## Appendix 21: UCLAN STEM qualitative study ethics approval



University of Central Lancashire

Preston PR1 2HE

01772 201201

uclan.ac.uk

16 July 2021

Carol Wallace / Ijeoma Ukonu  
School of Sport and Health Science  
University of Central Lancashire

Dear Carol and Ijeoma

### **Re: STEMH Ethics Review Panel Application**

**Unique Reference Number:** STEMH 1007 Phase 2

The STEMH Ethics Review Panel has approved your proposed amendment to your application 'Investigating food security in post-economic recession period in South-Eastern Nigeria'.

Yours sincerely

A handwritten signature in black ink, appearing to read 'S Alford'.

Simon Alford  
Deputy Vice-Chair  
STEMH Ethics Review Pane

**Appendix 22: Nsukka LGA women organisation research approval letter**

**NSUKKA LOCAL GOVERNMENT WOMEN ORGANIZATION  
ENUGU STATE, NIGERIA, WEST AFRICA**

*Your Ref:*..... *Our Ref:*...NWAN/LP/001... *Date:*..... 10<sup>th</sup> May, 2019


Dear Madam,

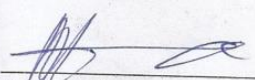
**LETTER OF PERMISSION  
RE: MRS IJEOMA UKONU**

You are permitted to distribute your research questionnaire to Women in the 20 districts of Nsukka Local Government Area of Enugu State of Nigeria.

We shall help you to share it to women in Nsukka Local Government Area.

Wishing you a successful research.

  
\_\_\_\_\_  
*Lady Cecilia Ugwuokpe*  
Chairlady  
Nwannedinmba Women Asso.

  
\_\_\_\_\_  
*Mrs. Anthonia Ugwuja*  
Secretary  
Nwannedinmba Women Asso.



### **Appendix 23: List of research conferences attended during the study period**

- 1 Nutrition and Nurture in Infancy and Childhood: Bio-Cultural Perspectives, international, interdisciplinary conference (**oral presentation**) 19<sup>th</sup> – 21<sup>st</sup> April 2023.
- 2 International conference on building resilience in tropical agroecosystems (BRITAE) Sri-Lanka (**oral presentation - Virtual**) 15<sup>th</sup> – 16<sup>th</sup> March 2023.
- 3 The Global Food Security Conference (**poster presentation - Virtual**) 7<sup>th</sup> – 8<sup>th</sup> December 2020.
- 4 The UCLAN Thrive Research Centre Celebration Event, Seminar & Workshop UK (**oral presentation**) 13<sup>th</sup> September 2020.
- 5 Annual postgraduate research conference (**oral presentation**) 23<sup>rd</sup> – 24<sup>th</sup> July 2020.
- 6 The 6th International Health and Wellbeing Research with Real Impact Conference (**oral presentation**) 18<sup>th</sup> February 2020.
- 7 The 5th International Health and Wellbeing with Real Impact Conference. Faculty of Health and Wellbeing at the University of Central Lancashire (**poster presentation**) 15<sup>th</sup> March 2019.