



## Prospects of Hausa Indigenous Leafy Vegetables on Curtailing Food Security (A Case Study of Katsina Metropolis, Katsina State, Nigeria)

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### ABSTRACT

The study focused on determining the prospects of Hausa indigenous leafy vegetables on curtailing food security. Vegetables used as brunch are believed to be used by many people in different parts of the world, but in many countries where people are in hunger, they are used to reduce its menace as such serves as a means of food security. Katsina metropolis was used as the study area and six categories of leafy vegetables used as brunch including, Moringa, Jute, Mistletoe, Poke, Leptadenia and Roselle, and excluding those normally used in the preparation of soup were selected for the study. Cross-sectional type of survey was used in conducting the study and 8993 respondents (which comprises of the whole household of 328 (297 male, 31 female) customers who patronizes vegetable sellers at Kofar Kwaya, Kofar Marusa, Kofar Durbi, Katsina Central Market and Chake Market) forms the total population of the study. Purposive and proportionate random sampling methods were adopted in sampling 381 respondents regarded as the sample size for the study. Structured close-ended questionnaire was used to retrieve data from the target respondents who can read and write, while scheduled interview based on the questions on the questionnaire was used for those who cannot read and write. It was identified that majority of those who consume brunch vegetables are female 289 despite the fact that male also consume the vegetable. The result further indicated that Moringa is the vegetable eaten more than its counterparts, followed by mistletoe and roselle with 183, 60 and 52 respectively. People are also using it to curtail hunger (171), and as a separate meal (231) with their choice form of slurry. It was concluded that brunch vegetables are one part of human diet that is used in curtailing the menace of food insecurity in the study area and it was recommended based on the findings that, government and other stakeholders should do everything possible to tackle menace of all those factors that brings about food insecurity.

**Keywords:** Prospects, Hausa, Vegetables, Food, Security

### INTRODUCTION

Food consumed by human being for growth, development and medicine are generally obtained from animal and plant sources. These can be wild (those obtained from the forest) or domesticated (those reared or grown at home). According to 7ESI (2023), vegetables are group of items categorized under the plant category of human food. The name vegetable is generally applied when referral to all edible plant matters such as fruits, stems, leaves, seeds, roots and sometimes flowers. But in culinary and sometimes traditional terms, vegetable is defined contrary to the general term as certain parts of a plant such as flowers, cereals and nuts are excluded while items such as broccoli, pulses, tomatoes, edible mushroom, edible seaweed etc. are included. This culinary definition also contradict the botanical definition, as food items such as tomatoes, bell peppers, egg plants are botanically referred to as fruits as they all developed from the ovary of a flowering plant. Adeleke (2015) opined that fleshy seed-bearing part of plant is termed as fruit while tomatoes even though included is termed as vegetable, and all other parts of plant are vegetables. In culinary term according to him, fruits are sweet by their nature or even sweetened during production while vegetables are savoury by their nature or salt is added to them during production for them to have a salty taste.

For several decades vegetables have been part of human diet both in the urban and rural areas. Some vegetables are eaten as a dish on their own while some are served as accompaniment to other dishes, and some are used in the preparation of soup (Asaduzzaman and Toshiki, 2018). Vegetables are classified based on their lifespan as perennials (those that comes back year after year i.e. they are grown for several years or even decades, examples are; lavender, moringa, lemon balm, rosemary etc.), some annuals (those that are grown on yearly base as such they complete their life cycle within a year, examples include lettuce) and some are biennials (they are grown within two years) (Hoagland and Ximenes et al, 2018). Demand for healthier menu and increased number of vegetarians as well as Mediterranean diets are now on the rise by different classes of individuals as such many chefs are now incorporating more vegetables into their menus in order to satisfy the needs of their clients (Asaduzzaman and Toshiki, 2018).

Food security on the other hand is termed as a condition when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (World Bank, 2021). While household food security is a condition

when members of a particular household have access to enough food for an active and healthy life at all times (USDA, 2019). Society, community, household and individuals who are food secure do not live in hunger or starvation (FAO, 2012). Food insecurity however is a condition characterized by scarce, uncertain or limited availability of nutritionally adequate and safe food or scarce, limited or uncertain means to acquire acceptable foods in socially acceptable ways due to conditions such as economic instability, shipping disruptions, fuel shortage, wars, drought etc. (USDA, 2019). For any nation, society, community, or even individual to claim food security, four pillars according to (FAO, 2012) which are availability of the food stuff, access to it, its utilization and stability have to be realized.

Katsina is one of the states in the North-Western part of Nigeria suffering from insecurity situation such as banditry, kidnapping, cattle rustling, farmers/herders clashes etc. which is bedeviling the economic situation of the state and the country in general. This is because people find it difficult to get access to their farms, markets and even offices in some parts of the state. This condition coupled with the economic situation brought about by fuel subsidy removal the whole country is in led people into food insecurity, as many household cannot afford three square meals. People are therefore looking for what they are to use in order to sustain their lives, as such local vegetables are used to curtail the menace brought about by the afore mentioned conditions. This paper therefore tends to look into the prospects of Hausa indigenous local leafy vegetables as a means of curtailing the menace of food insecurity in katsina metropolis through achieving these objectives:

- i. To identify the types of local leafy vegetables used in the study area.
- ii. To determine the major reason of using these vegetables by people in the study area.
- iii. To explore how these vegetables are eaten by people in the study area.

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## Brief About Vegetables

Vegetable were believed to first be identified and collected from the forest by hunter-gatherers several years of human history. It was during 7,000 to 10,000 BC when a new Agricultural way of life started to develop that its cultivation started in many parts of the world. Vegetables are grown in almost all parts of the world either through raining season or via irrigation farming. They are purposely grown for house hold consumption or for commercial purpose which may require automation and technology and it can be using conventional method or organic farming (7ESL, 2023). Vegetables are in most cases planted by their seeds in a nursery and transplanted to the field or the seeds are planted directly in the field. To limit or eliminate damage by insects, weeds or other diseases, vegetables are spread with synthetic or organic herbicides, pesticides or fungicides. Vegetables are harvested using hand system in a small-scale farming or using mechanized system in large farming operation and in developed countries (Aramrueang, Asavasanti, and Khanunthong, 2019).

Before the advent of globally recognized fruits like oranges, mangoes and the likes are readily available in the market, wild plants were used as additional sources of food. Many of these plants have now been retreated to remote areas and are replaced by trees planted near a community where people can get access to them at ease (Rockwood, Anderson and Casamatta, 2013). These near to be forgotten plants were known for their contribution to food during famine and starvation as they are easier to be eaten after little processing without requiring to undergo long cooking processes (Hoagland and Ximenes et al, 2018). New development of food relief is contributing a lot to lose of knowledge about such categories of wild plants (Adeleke, 2015).

However, according to Kohli and Pawanexh (2020), do to their nature much emphasis is given to their postharvest storage. As such they may be washed, sorted, graded, cut and package for sale fresh products. But some (leafy vegetables in most cases) are sold directly to the wholesalers/retailers or consumers after their harvest without undergoing all such preparation methods (Hui and Ghazala, et al., 2013). Do to their short life span and quick spoilage they are subjected to many preservation processes such as dehydration, canning, pickling, freezing or fermentation in order to keep them wholesome. Vegetables are subjected to different cooking methods in order to develop texture, flavour/aroma, and colour. These cooking methods are applied in cooking vegetables based on the desired result. Some are subjected to only one cooking method while some two or even three before they are ready for consumption (Asaduzzaman and Toshiki, 2018).

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## Leafy Vegetables

These are otherwise known as vegetable greens, potherbs, leafy greens as well as salad greens. They are leaves obtained from plants which are eaten on their own as vegetables or sometimes accompanied with their petioles and shoots (Lalas and Tasaknis, 2002). Despite being obtained from varieties of plants, most of these vegetables shares common nutritional components and cooking methods. There are as many as over a thousand of known plants with edible leaves which are fit for human consumption (LakshmiPriya, Kruthi and Davarai, 2016). Many of the leafy vegetables are mostly obtained from herbaceous plants like spinach and lettuce, but some such as Adansonia, Moringa, Aralia, Morus, Toona etc. are also obtained from woody plants whose leaves are eaten by humans (National Research Council (U.S.), 2015). The Leaf vegetables are usually harvested before flowers, fruits, roots, or other non-edible plant parts. They can be eaten raw or by the application of some cooking methods such as stir-fry, boiling, steaming, blanching etc. they are also more nutritious than many other forms of vegetables as they nourishes the body with many nutrients required for protection and other metabolic functions (Chang, Wang, et al., 2014)

Leafy vegetables are less popular in the western world as they are very rare being used as toppings to savories and other snacks, however they are eaten by many cultures around the world either as a course on their own or as accompaniment to other dishes (Yao and Liu, (2021). In order to have a balance diet, in many parts of the world leaf vegetables are eaten with fruits or roots. Leaf vegetables are in abundance during rainy season and found at farmer's

markets to be purchase wholesale or retail. They are normally processed and packaged to be kept available all year round. But some of them (e.g, Moringa, Spinach, Jute etc.) are grown at home garden for use all year round while some (e.g, Mistletoe, poke, spurge, leptadenia, garlic pear etc.) are found only during their season in the forest (Hoagland and Ximenes et al, 2018).

### **Food Security**

The food security as a term related to condition where individual, community, society or nation is unable to secure or afford adequate safe and nutritious food stuff for their livelihood irrespective of religion, gender or class. The food security situation in Nigeria is alarming as an estimated 25 million Nigerians were food insecure between June and August of the year 2023 (Thomas, 2022). Factors that contributes to this menace among others are; armed banditry, kidnapping and cattle rustling propelling in the Northwestern region, violent conflicts among tribes as well as insurgency in the North Eastern region, Farmer-harder conflicts in the South West and North Central part of the country as well as Biafra separation agenda in the South East (World Bank, 2021).

According to USDA (2013), However, rising unemployment, rising in price inflation, rising level of poverty, engendering and compounding cost of living as well as lack of means for accessing food are other contributing factors to food insecurity in the country. Natural disaster such as flood that led to the destruction and washing away of thousands of hectares of land meant for farming, and climate change that continue to affect food production and its affordability in different parts of the country are other factors to look into regarding food security. According to Mekonnen et al (2021), Using the September 2018 to October 2019 household survey of expenditures, the cost of achieving 2251 calories per day (age-weighted caloric need for food security), is about 82,000 naira per person per year. Adetomiwa and Kolapo (2021) opined that, based on a survey, about 40 percent of the Nigerian population is identified as food insecure. In Nigeria, food inflation rose to 23 percent in September 2022. Unlike better-off households who can afford a wider range of foods, the poor have very few substitutes for staples, which make up nearly two-thirds of their daily diet. Data from the World Food Program (WFP) in November 2022 for 26 states in Nigeria and the Federal Capital Territory (FCT) show that the share of those in stressed food security situations with minimally adequate food consumption is at 34 percent of the population.

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### **Methodology**

The study was conducted within Katsina Metropolis as the state capital of Katsina State, Nigeria. 6 categories of leaf vegetables used for brunch (Moringa, Jute, Mistletoe, Poke, Leptadenia and Roselle) and excluding those normally used in the preparation of soup were selected for the study because they are the majority in all the leaf vegetable market. Cross-sectional type of survey was adopted in conducting the study and the total population was 8993 (which comprises of the whole household of 328 (297 male, 31 female) customers who patronizes vegetable sellers at Kofar Kwaya, Kofar Marusa, Kofar Durbi, Katsina Central Market and Chake Market). Purposive sampling was used to select all the customers who patronize the vegetable sellers on the days of collecting the data (Monday, Wednesday, Friday for the first week; Tuesday, Thursday for the second week and Saturday and Sunday for the third week). The addresses of the selected customers were collected and they were met in their various houses. A total of 127 respondents whom were met when visited at their houses were also purposively selected. The same method was used to select all the heads of the houses (for the 31 female, 17 were represented by their husbands also the wives were selected). Proportionate random sampling was used to select one matured member from each house which gave a total of 3 respondents from each house. This gave a total of 381 respondents regarded as the sample size for the study.

Structured close-ended type of questionnaire was used to retrieve data from the selected respondents. It was given to those who can read and write to fill the information required while structured scheduled interview based on the questions in the questionnaire was individually conducted with those whom were not able to fill the questionnaire. The data collected was subjected to descriptive statistics of bar and pie charts for the analysis.

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### **Data Presentation and Analysis**

The data collected from the survey is presented, analysed and discussed here based on the objectives of the study.

Figure 1: Gender of the Respondents

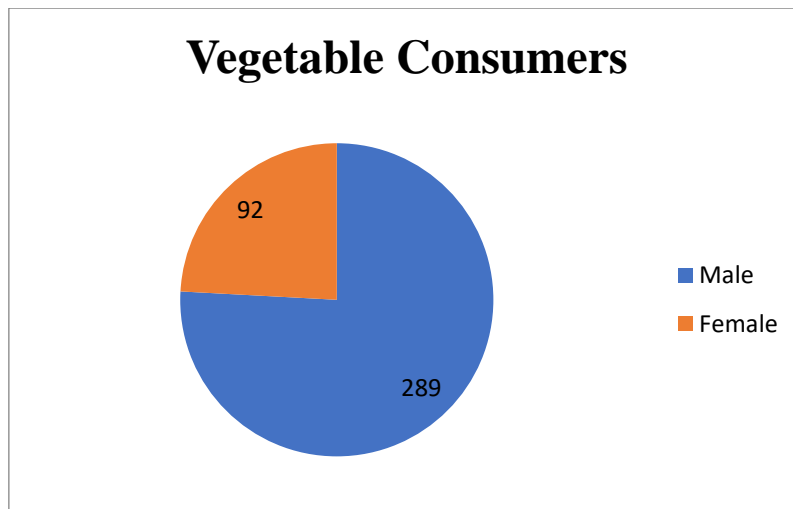


Figure 1: Gender of the Respondents

Figure 1 above shows the gender of vegetable consumers in the study area and it was clearly indicated that with 289 female are the major consumer of the brunch form of vegetables in the study. This is despite the fact that male also eating the vegetable. This finding supported the views of Asaduzzaman and Toshiki (2018) that, Demand for healthier menu and increased number of vegetarians as well as Mediterranean diets are now on the rise by different classes of individuals as such many chefs are now incorporating more vegetables into their menus in order to satisfy the needs of their clients

Figure 1: Types of Local Leaf Vegetables used in the Study Area

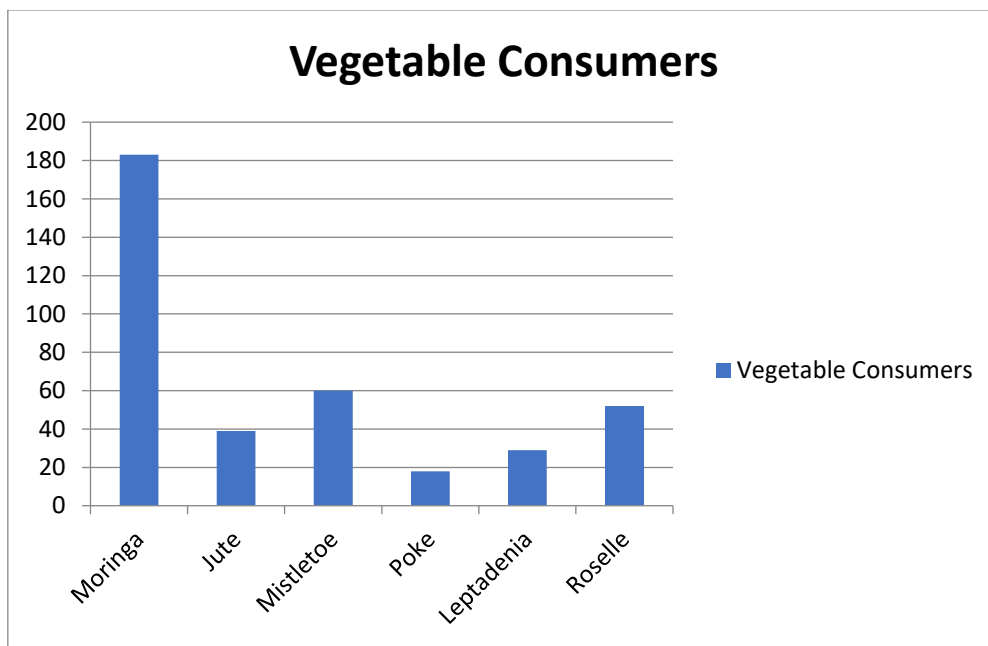


Figure 1: Types of Leaf Vegetables used in the Study Area

The data in figure 1 presented the result obtained from the respondents when asked to indicate the types of leaf vegetables used for brunch in the study area. Based on the retrieved data, it was indicated that Moringa, jute, Mistletoe, Poke, Leptadenia and Roselle are all used in the study area by different categories of individuals irrespective of gender, religion or ethnic group. The data further assert that, 183 respondents indicated Moringa as one of the vegetables, which is a clear indication that they are using it more than any other type of vegetable. This was followed by Mistletoe, Roselle, Jute, Leptadenia and poke with 60, 52, 39, 29 and 18 respectively. This shows that vegetables are now regarded among the daily food used by different individuals in the study area.

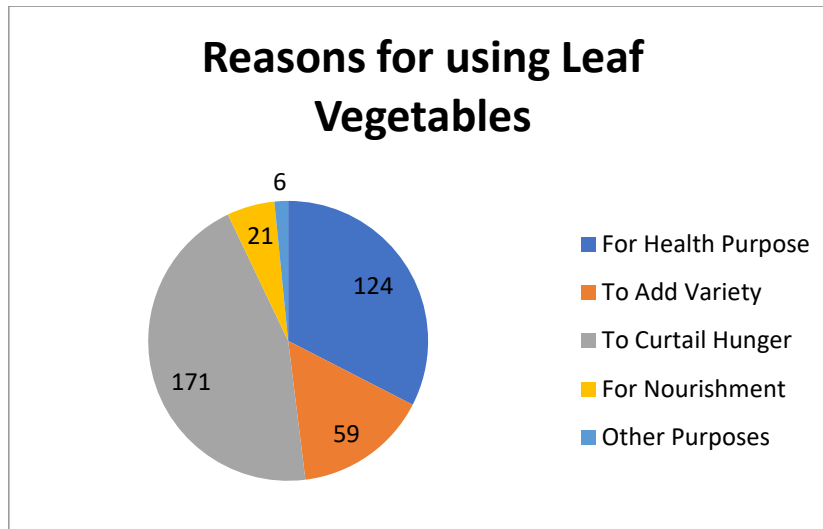
**Figure 2: Reasons for using the Vegetables in the Study Area**

Figure 2: Reasons of using Leaf Vegetables

When respondents were asked to indicate the reasons why they are using these vegetables, the statistics in figure 2 presented the results obtained. It was indicated that majority of the respondents 171 are of the view that they are using the vegetables to curtail the hunger menace as the food they are getting is not sufficient to cater for their daily requirements. This corroborates with Adetomiwa and Kolapo (2021) who assert that, based on a survey, about 40 percent of the Nigerian population is identified as food insecure. In Nigeria, food inflation rose to 23 percent in September 2022. Unlike better-off households who can afford a wider range of foods, the poor have very few substitutes for staples, which make up nearly two-thirds of their daily diet. This was followed by 124 respondents who indicated that they are using the vegetables for medicinal purposes based on the prescriptions by health professionals. This corroborate with Chang, Wang, et al., (2014), who asserts that leaf vegetables are more nutritious than many other forms of vegetables as they nourished the body with many nutrients required for protection and other metabolic functions.

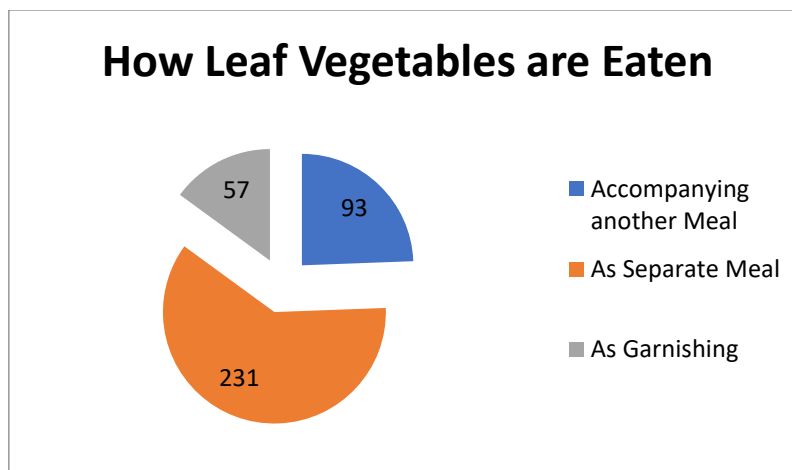
**Figure 3: How the Leaf Vegetables are Eaten**

Figure 3: How the Leaf Vegetables are eaten

The data in figure 3 above indicated the responses collected from the respondents when they were asked to explain how they are using leaf vegetables. Majority of the respondents 231 indicated that they are using leaf vegetable as a separate meal (brunch) with groundnut cake, locust beans or millet slurry/sauce. This is similar to the findings Thayer (2017) who stated that, leaf vegetables are less popular in the western world as they are very rare being used as toppings to savories and other snacks, however they are eaten by many cultures around the world either as a course on their own or as accompaniment to other dishes. This was followed by 93 respondents who are of the view that they are using it as an accompaniment to other dishes, while 53 respondents indicated they are using it just as garnishing to another dish. This corroborate with the findings of Asaduzzaman and Toshiki (2018) who opined that some vegetables are eaten as a dish on their own while some are served as accompaniment to other dishes.

## Conclusion and Recommendations

With the rising food insecurity in many parts of the world leafy vegetables are proved to be one of the ways many people are using to reduce the menace of the food shortage. They are consumed by different categories of people of various classes in both urban and rural areas for different purposes but majority are using the bunch categories of vegetables to curtail hunger. This is because it was estimated that about 25 million Nigerians were food insecure between the months of June and August, 2023. Based on the conclusion, it is recommended that:

- i. Government and other stakeholders responsible should try to do everything possible to overcome the factors identified to be causing food insecurity.
- ii. They should try to train people with new ideas on how to grow these vegetables within their easy reach so that they can be available all year round.
- iii. People should also be highlighted on the risk factors associated with eating vegetables affected by pathogenic microorganisms most especially when obtained from forest.
- iv. They should also be trained on the best cooking methods that should be applied to each category of vegetable in order to retain its nutrients.

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