Influence of Market Access on Household Food Consumption Pattern in Imo State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

Aim: Improving access to variety of food items and healthy food consumption pattern at the household level is a sure strategy to eradicating chronic hunger and improving food and nutrition security situation of a country. The present study assessed the influence of market access on food consumption pattern of households in Imo State, Nigeria. Specifically, the socioeconomic

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characteristics, food consumption and purchasing patterns of selected households in the study area were analyzed.

Study Design: Multi-stage and cluster sampling techniques were adopted to select 792 households across the three senatorial (Owerri, Okigwe and Orlu) districts in Imo State.

Methodology: A well-structure questionnaire was used to obtain information on socio-economic status, market access and food consumption pattern of selected households.

Results: Result revealed low household monthly income of ₦60,000-₦80,000, monthly food expenditure of 37-45% of income and household size of 4-6 members (47%). Regular access to market reflected on the daily (42.37%) and weekly (41.22%) food purchasing habits observed among the households. Starchy-root food products constituted regular breakfast (40.8%) and dinner (55.7%) of households while legume-based food products were minimally consumed as breakfast (9.92%), lunch (14.63%) and dinner (9.03%). Traditional green leafy vegetables (58.52%) and citrus fruits (48.6%) were found to be commonly consumed by the households studied. The food consumption patterns of households predominantly consisted of carbohydrate-rich foods, possibly, due to financial constraints, as indicated by over forty percent (46.44%) of households. The analysis revealed that monthly income did not affect households' market access but significantly (P=0.004) influenced their food expenditure, negatively.

Conclusion: Generally, the study reveals low-income level, regular market access to staple foods and poor food consumption pattern among the households analyzed.

Recommendation: The government urgently needs to support the trading and farming occupation of household heads in Imo State to improve income status and access to variety of food items at household level.

1. INTRODUCTION

According to the United Nations [1], a household is defined as a group of persons who make common provisions of food, shelter and other essentials of life. Similarly, household is considered on the basis of arrangements people make, individually, or in groups to provide themselves with food and other essentials [2]. From business point of view, a household is social unit of people who live and share resources together under one roof, but not related to each other (Corporate Finance Institution (CFI), 2022). There are different definitions and interpretations of household, comprehensively, a household could be defined as group of persons living in an accommodation, related by blood (family), legal ties or otherwise, and may be sharing similar cultural and religious background. A household may consist of one or more of the following group of people; adult, children, adolescent, elderly or just an individual (usually an adult living alone). Habits such as morals, food preparation and consumption are acquired at the household level.

Food being an essential need for every mankind requires that populations are food secured and should be a top priority in the developmental issues of every government. Sadly, individuals are persistently denied the right to adequate food despite the fact that everyone deserves access to healthy, affordable food and quality nutrition care [3]. Food and nutrition security exists when all people at all times have physical, social and economic access to safe food, consumed in sufficient quantity and quality to meet their dietary needs and food preferences, supported by an adequate environmental sanitation, health services and care, for an active healthy life (CFS, 2012), cited by [4]. In other words, household food and nutrition security exist when every member of the household (young and old) has sustained physical, economic and social access to sufficient quality and quantity of adequate diet at all times to meet their body requirements, including functional and accessible health care facilities. Physical access involves the ability of household to make right food choices from available food materials, this pillar is influenced by the knowledge about nutrition and food preparation skills of the household head. Social access to food at the household is greatly influenced by cultural belief and practices restricting people from accessing available food varieties. Economic access to food implies level of income to purchase sufficient quantity and quality of foods for household members, which is reliant on the occupation of household heads.

However, the prevalence of food and nutrition insecurity on a global scale, particularly in developing nations, is significantly impacted by various drivers within the food system. These drivers encompass aspects like production, distribution, market accessibility, conflicts, and climate variability, among others, thereby impeding the progression towards achieving the second goal of the UN Sustainable Development Goals (SDGs) - zero hunger [5]. In other words, the establishment of a sustainable food system is imperative to ensure food and nutrition security presently and for future generations, irrespective of economic, social, and environmental obstacles (High Level Panel of Experts (HLPE, 2014). Research indicates that a multitude of factors, ranging from limited food availability and poverty to inadequate infrastructure, family size, gender, age, and household education levels, have contributed to household food insecurity, particularly in developing nations [6,7,8,9,10,11], with Asian and Sub-Saharan African countries bearing the brunt of these challenges. Wang et al. [12] revealed that in 2020, over 66% of the population in Sub-Saharan Africa experienced moderate to severe food insecurity, a figure projected to rise to 70.4% in 2021.

Nigeria is among the African countries experiencing persistent increase in hunger and poverty. According to the global poverty and hunger index (GHI, 2014), Nigeria ranked 38th out of 76 hungry countries in the world with 24% death rate from malnutrition and diet related non-communicable diseases [13]. In 2020, 83 million Nigerians was reported to be living below ₦137,430 ($381.75) annually [14], since then, Nigeria has been on top list of countries facing critical hunger [15,16]. Recent report of the Integrated Food Security Phase Classification (1PC) (2023) revealed that 18.56 million Nigerians are facing acute food insecurity representing 9% of the population analyzed. And the situation is projected to affect 26.37 million (12%) people between June and August 2024 [17].

Food and nutrition insecurity in Nigeria is prevalent in all regions, with the South eastern states facing potential greater risks due to prolonged sit-at-home orders. The region has experienced economic setbacks for more than three years as individuals are prohibited from engaging in work, farming, trading, and other activities on specific days. Imo State, often referred to as the Eastern heartland, may be confronting more severe levels of hunger and starvation than initially perceived. A study by Obasi [18] highlighted chronic poverty as a significant factor contributing to food insecurity in Imo State, particularly among households led by females, back in 1990. Data from the National Bureau of Statistics [19] and Knoema [20] showed that between 2009 and 2010, monthly household food expenses in Imo State were 10% higher than the national average. Research by Ikem and Ozo [21] indicated a high prevalence of food insecurity and hunger in Imo State, particularly among female-headed households, reaching 51.6% in 2013. Presently, Maduka, Amadi, Nlem, and Okafor [22] attribute the limited access to food in Imo State to the ongoing Covid-19 pandemic. This challenge is exacerbated by the substantial population of over 5,459,300 residents in the state as reported by Chidiebere-Mark, Ahaneku, and Oluwaseun [23]. The primary occupation and main source of income for a majority of Imo State's population, which is farming, as highlighted by Knoema [20] and Obasi [18] might face significant obstacles due to the prevailing insecurity in the region.

Nevertheless, the achievement of goal 2 (zero hunger) of the global Sustainable Development Goals (SDGs) [24] hinges on the sustainable physical, social, and economic access to nutritious food by households. The accessibility of adequate food items in the market, coupled with consumer behaviour, particularly a healthy consumption pattern, plays a pivotal role in enhancing household food and nutrition security. Markets are anticipated to provide a wider variety of foods compared to what a single household can cultivate [25], thereby influencing the pricing of agricultural produce and the income of farmers, consequently impacting household food expenditure [26]. Factors like limited market access and poor purchasing practices may potentially impede household food intake. Previous studies have predominantly concentrated on the Household Dietary Diversity Score (HDDs) and the determinants of household food insecurity. There appears to be a dearth of research on household market access, food purchasing, and consumption behaviours in Imo State. This study is geared towards evaluating the socio-economic status, market access, and food consumption habits among households in Imo State, Nigeria. Additionally, it seeks to establish the correlation between household income, food expenditure, and market access to foods.

2. METHODOLOGY

Study area: The study was conducted in Imo State, located at the South-East geopolitical region of Nigeria, bordered by the states of Anambra to the north, Abia to the east, and Rivers to the south and west [27]. The state has 27 local government areas (LGAs) distributed among three senatorial districts (Owerri, Okigwe and Orlu). Imo state is mainly inhabited by the Igbo speaking group, the third smallest in the area but fourteenth most populated in Nigeria, with an estimated population of over 5.4 million in 2016 [28]. The population is mostly farmers and traders, and oil palm has remained the main cash crop. The "Eastern Heartland", as the state is popularly known, takes its name from the Imo River which flows along the state's eastern border, and the state capital is Owerri [29].

Study design: Descriptive research design was adopted to evaluate the socio-economic status, market access to variety of food items and food consumption pattern across households in Imo State, Nigeria.

Population of study: Households located in the 27 local government areas of the state constituted the total population of the study. The region is made up urban, semi-urban and rural settings.

Sample size: Households located in the case study are large, a minimum sample size of 792 was obtained from the unknown number of households, using the method described by Scott [30]. Thus:

Sample Size = (Z-score)^2 x Std Dev x (1-StdDev) / (margin of error)^2

Where Z-score = 3.22 (99% confidence level)

StdDev = 0.5

Margin of error =0.06

$(3.22)^2$ x 0.5(1-0.5)/$(0.06)^2$ = 10.3684 x 0.25/0.0036 = 2.5921 / 0.0036 = 720

10% non-response error = 720 x10/100 = 72

Estimated sample size = 720 + 72 = 792

Sampling technique: Multi-stage (three-stage) sampling and cluster sampling procedures were adopted [31]. First, 6 local government areas were randomly selected using simple balloting from the 27 local government areas, 2 from each senatorial district. Second, was random (balloting) selection of 18 wards, 3 from each of the 6 local government areas. Third, was random selection of 36 communities from the 18 wards. Finally, probability proportional sampling procedure was used to select 792 households, from the various clusters (urban, semi-urban and rural communities), to ensure better representation of households in the selected communities. Data collection was not completed in 6 households, 786 households fully participated in the study. There was no specific criterion for selection of households, all categories of household were recognized and captured.

2.1 Data Collection

A well-structured questionnaire was used to collect information on the socio-economic status, market access and food consumption pattern from household heads or representatives. Uneducated household members were assisted through oral questioning. The questionnaires were pre-tested with three communities that are not selected for the study. Hence, identified errors relating to survey implementation and interpretation of questionnaire were corrected before the study commenced. Undergraduates from the Nutrition and Dietetics Department, Imo State Polytechnic were trained to assist in administration of questionnaire and oral interview, under the strict supervision of the researchers. Data collection lasted for four (4) months (September - December, 2022). Data analysis lasted for two (2) months (February-March, 2023) coordinated by Agugo, Modestus Chizimibe.

2.2 Statistical Analysis

Statistical Package for Social Science (SPSS) version 20 was used to summarize the socio-economic status, market access and food consumption pattern of households, using the data generated from the questionnaire. Results were expressed in percentages in tables and charts. Person correlation analysis (2 tailed) was used to determine the relationship between variables.

3. RESULTS

Fig. 1 showed that more than fifty per cent (53.7%) of households were headed by men. The education level of household heads was

majorly First School Leaving Certificate (FSLC) (30.2%) and Senior School Certificate (SSCE) (32.3%). More women headed households (11.8%) do not have any formal education. It was observed that majority (70.5%) of household members are self-employed, either into trading or farming (majorly cassava) as their major occupation. Greater percentage of women (20.5%) were involved in farming and sale of food materials, while more men (23.4%) were into trading (non-food materials). Monthly income of most households (38.3%) was found to be within 60-80 thousand naira. Others falls within ₦90,000-₦110,000 (29%), ₦30,000-₦50,000 (17.1%), <₦30,000 (8.2%) ≥₦120,000 (7.4%) monthly income level. The Number of household members was observed to range from 4-6(47%), 2-3(30%), 7-10 members (20%) and >11 (3%). Monthly food expenditure ranging from ₦20,000-₦50,000, representing 37-45 % of monthly income was found in 81% of the households studied (Fig. 1).

Access to variety of foods, including animal-source protein, fruits and vegetables by household was not influenced by market location (Table 1). Though, only 33.3% of the households live at a trekking distance (20-30 minutes) to the market, affordable food items sold at these markets are mostly staples (79.39%). On the other hand, market structure may have influenced market access as observed among households, more than fifty (54.07%) of markets within the reach of households operated at 4-7 days intervals, giving rise to regular weekly (41.22%) and daily (42.37%) food purchasing habit. The regular food purchasing habit would have benefited the households if perishable (fruits, vegetables, meat and fish) food items were accessed. But this was not the case, it was found that major food items purchased by the households studied were staples (41.6%) and the reason for food purchasing habit was greatly based on lack of money (70.74%). This is an indication that the observed low monthly income level may have influenced household access to variety of food items.

Fig. 1. Socio-economic Characteristics of Households

Table 1. Household market access to available foods

Variables	Frequency	Percentage
Market location		
20–30-minute walk	261	33.21
20-30 minutes drive	103	19.47
40-60 minutes walk	207	39.06
1 hour drive	215	8.27
Structure of nearest market		
4-7 days market interval	425	54.07
Grocery stores	138	17.56
Modern market	105	13.36
Super market	118	15.01
Available food Items sold at the nearest market		
Staples (cereals, root and tuber, beans, bread, noodles, plantain)	624	79.39
Fish and meat groups	106	13.49
Fruits and vegetables	33	4.2
All food items	23	2.93
Household food purchasing habit		
4-7 days interval	324	41.22
Monthly	116	14.76
Daily	333	42.37
On demand	13	1.65
Reasons for food purchasing habit		
Easy access to market	120	15.27
Lack of money	556	70.74
Busy schedule	23	2.93
Market structure	87	11.07
Food items targeted by this habit		
Staples	327	41.60
Fish and meat groups	121	15.40
Fruits and vegetables	86	10.94
All food type	252	32.06

Greater access to market is expected to improve households' access to variety of foods outside the ones they produce as well as improve household's income. Unfortunately, this was not the situation among the households studied, similar staple food items were purchase at each visit to the market.

Food consumption pattern of households is presented in Table 2. Consumption of animal-based protein sources was found as follows, once a day (45.42%), twice a day (37.28%), 2-5 times a week (9.41%) and not sure (7.89%) among households analysed. Consumption of starchy-root food products from cassava, yam and sweet potato dominated regular breakfast (40.8%) and dinner (55.7%) of households while cereals such as rice and noodles were consumed more as lunch. Legume-based food products were minimally consumed for breakfast (9.92%), lunch (14.63%) and dinner (9.03%) among the households studied. Green leafy vegetable like *ugu, ukazi, oha, utazi*, (traditional) was mostly (58.5%) consumed by the households. Moderate (19.75%) consumption of root and tuber vegetable such as beetroot, radish, cucumber, and carrot were found and the least consumed vegetable was pumpkin (4.96%). Citric fruits such as oranges, grapes, tangerine, pineapple and lemon were the mostly (48.6%) consumed fruits followed by seasonal fruits (30.1%) like mangoes, paw-paw and avocado. Orange coloured non-citric fruits (13.61%) and vegetables (16.54%) were consumed moderately at the households studied. Households' snacks were found to be mostly soaked *garri* (40.59%) a cassava-based food followed by pastries and sweetened beverages (31.3%), others include plant-based (13.49%) (E.g. cucumber & groundnut, banana & groundnut and carrot) and legume-based (14.63%) snack product such as *moi-moi, okpa,* and *odudu*. The reason for household choice of regular meals, snacks, and fruits is based on the

taste (36.01%), affordability (46.44%), ease of preparation (13.49%), and personal reasons (13.5%).

Table 3 shows no relationship between monthly income and market access; monthly food expenditure and market access. On the other hand, there was strong relationship (P=0.004) between monthly food expenditure and monthly income. In order words, households' income status affected food expenditure.

Table 2. Household food consumption pattern

Variables	Frequency (n)	Percentage (%)
Consumption of animal source protein		
Once a day	357	45.42
Twice a day	293	37.28
Twice a week	74	9.41
Not sure	62	7.89
Major constituents of breakfast		
Cereal-based food products	231	29.39
Legume-based food products	78	9.92
Tuber-based food products	156	19.85
Starchy-root food products	321	40.84
Major constituents of lunch		
Cereal-based food products	235	29.9
Legume-based food products	115	14.63
Tuber-based food products	213	27.1
Starchy-root food products	223	28.37
Major constituents of dinner		
Cereal-based food products	196	24.94
Legume-based food products	71	9.03
Tuber-based food products	80	10.18
Starchy-root food products	439	55.85
Favourite Vegetables		
Green leafy vegetables (traditional)	460	58.52
Root and tuber vegetables	157	19.97
Pumpkins	39	4.96
Orange-colour vegetables	130	16.54
Favourite Fruits		
Local fruits in season	237	30.15
Orange-colour non-citric fruits	107	13.61
Exotic fruits	60	7.63
Citric fruits	382	48.6
Favourite snacks		
Pastry and sweetened drink	246	31.3
Traditional legume-based snacks	115	14.63
Fruit/veg.	106	13.49
Soaked *garri*	319	40.59
Reason for household choice of food		
Tasty	283	36.01
Affordable	365	46.44
Easy to prepare	106	13.49
Personal	32	4.07

Table 3. Correlation between monthly income, market access and monthly food expenditure

Variable 1	Variable 2	Pearson Correlation	Sig. (2-tailed)
Monthly Income	Market Access	.020	0.575
Market Access	Monthly Food Expenditure	-.021	0.558
Monthly Food Expenditure	Monthly Income	.103**	0.004

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

4. DISCUSSION

The present study revealed more male (53.7%) headed households. This finding is similar to the report of Zakari, Ying, and Song [32] on factors influencing household food security in southern Niger, but in contrast with higher female headed households reported by Kassy, Ndu, Okeke, and Aniwada [33] on food security status and factors affecting household food security, in Enugu state, Nigeria and Khanam et al. [34] on factors affecting food security in women enrolled in a Program for vulnerable group development, in Bangladeshi. Large household size of 4-6 members was found among 47% of households studied. This finding approximately conforms to the 2010 report on household's size (3.7 persons) in Imo State [20]. Similarly, Kassy et al. [33] reported household size of 5.2 members in Enugu state. The income level of majority (38.3%) of households analyzed was within ₦60,000 ($41.42) to ₦80,000 ($55.23) monthly income level to 4-6 household members (47%). This finding conforms to previous research reports on the economic status and household size in Imo State [20,18]. Monthly food expenditure found among 45% of the households studied, ranged from ₦20,000 to ₦30,000, representing 33.33%-37.5% of household monthly income. Contrarily, higher monthly food expenditure of more than sixty percent (67.5%) of household Imo State has been reported [20].

The education level of most of the household heads was FSLC and SSCE, with male (36.6%) having more formal education than female (25.9%). This finding agrees with most research reports in African and Asian countries [35,34,33,36].

Households were found to fall within the lower social class that toils so much to put food on table on regular basis as their major occupation was farming (36%) and trading (35.4%) for both male and female. The busy schedule of mother and father could possibly affect children upbringing, on the contrary, the children need to eat food to be alive. What a dicey situation. Starchy-food products and cereal-based food products were found to dominate the breakfast, lunch and dinner of the households in the study area. This conforms to the report that some rural households in Ekiti State Nigeria, largely consume starchy foods with little protein and vitamin [37]. It was found that more than 60% of households access the market for food purchase

on weekly (36.4%) and daily (29.6%) basis. Frequent consumption of animal-base protein as much as three times daily (27.4%) and daily from soup (33.2%) was found among the households in the study area, but the quantity was less than 10 g. And ice fish was the major animal source protein consumed. The minimal consumption of legume-based food products found at the households could be attributed to the long cooking time of legumes or possibly due to the flatulence effect of legumes, while high consumption of traditional vegetables could be linked to availability of the vegetables. The observed food consumption pattern was found to be greatly dependents on, culture, affordability and sensory demand (taste). Food access was also found to be greatly dependent on income as food items were purchased whenever the resources are available, basically, on weekly and daily basis. Similarly, lack of money and increase in prices of food items have been reported to greatly affect household access to nutritious food and food generally [33]. All these factors imply that households in the study area are not nutrition secured due to inadequate consumption of all food groups, which may affect their nutritional status. Maintaining normal nutritional status requires adequate intake of protein, energy, vitamins and minerals for all household members at all times (Graem *et al.*, 2015)

The weekly and daily food purchasing habit found among households could be attributed to the strong (P=0.004) relationship between monthly income and food expenditure. This practice is best described as "eating from hand to mouth". According to Abbasi, Ghoochani, Ghanian, and Kitterlin [38], the most common form of food insecurity occurs when food is unavailable for consumption due to inadequate resources. Furthermore, the percentage monthly food expenditure was between 33%-66% of household monthly income. This finding agreed with the 2010 report that households in Imo State spend 65.7% of their monthly income on foods [20] and with the 64.7% household food expenditure reported in Nigeria [19]. According to CIAT [39], it may be difficult to achieve food security if households must spend most of their income in obtaining food. The fact remains that, even with the high amount spend on food, households are not able to provide enough food for its members. Moreover, with the current rate of inflation, monthly income of ₦60,000-₦80,000 for 4-6 household members is grossly insufficient to provide the essential needs including

adequate quantity and quality of diet for all the members [40-44].

5. CONCLUSION

The major occupation of household heads in Imo state is trading for males and faming for females. Most male and female headed households are within low-income group with large family size of 4-6 members. Low education background of household heads, which was basically, primary/secondary certificate, affected physical and economic access to variety of foods at the households studied. The scenario also reflected on the observed inadequate food consumption pattern, predominantly cereal and starchy-root-based food products. Notwithstanding, more than thirty percent of households monthly income was spent on food, yet they are not able to access more varieties of foods. Generally, the observed low access to sufficient varieties of foods adversely affected food consumption pattern at most of the households analysed.

6. RECOMMENDATION

Based on the findings of this study, Imo state government is advised to:

- Support mechanized farming practices in the state to assist households that are into farming
- Support expansion of household trading businesses with soft loan.
- Provide enabling environment (especially, security) for farming and trading occupation to thrive in the state
- Financially support more research on assessing household nutritional status and well-being
- Promote nutrition sensitive intervention programmes to improve household access to variety of foods.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that generative AI technology, SCISPACE (free version) was used during editing of manuscripts.

Details of the AI usage is given below:

1. Paraphrasing of two paragraphs in the introduction

CONSENT

The community leaders were duly informed and consent of the household members (heads) secured before commencement of the study.

The rural households were given incentives to gain their full participation after detail briefing on the objectives of the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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