# HOUSEHOLD FOOD SECURITY IN IMO STATE: A REFLECTION OF NIGERIAN SITUATION

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## ABSTRACT

*The main objectives of the study were to evaluate the food security status of households in Owerri agricultural area of Imo state, isolate the determinants of household food security and ascertain the coping strategies adopted by the people against food insecurity in the area. Six Local government councils in the area were surveyed. The sample size comprised 90 households who were randomly selected and interviewed. Analysis of the data showed that the main determinants of household food security in the area are income, household size, education, price of staple food, and sex of household head. The results of the analysis further showed that the per capita calorie intake of the people is 1990 kcal/day while the average household size and dependency ratio were found to be 9 persons and 0.77 respectively. As a result, it was concluded that there is food insecurity in the area.*

***Key words: household, food security,***

## INTRODUCTION

Before the oil boom of the 1970's agriculture was the mainstay of the Nigerian economy and contributed well over 90% to the GDP (Norton, 1983). But with the inception of the oil boom emphasis shifted from the agricultural sector to the oil sector with the result that the total real output of agricultural export crops declined steadily. As a result, the

total value of agricultural commodity imports for the first time rose from ₦126m in 1973 to over ₦200m in 1982 (Norton, 1983). Furthermore, there was an upsurge in food prices and food importation. For instance, the average price of beans, cassava tubers and paddy rice per metric ton for all states in Nigeria increased between 1985 – 1987 from ₦1,992 to ₦2,373; ₦178 to ₦309; and ₦1,013 to ₦1,311 respectively (CBN, 1987). In spite of the fact that there was a quantum jump in food importation, the country has hardly ever provided enough food for her teeming population.

In its most basic form, food security is defined as access by all people at all times to the food required for a healthy life (Von Braun *et al;* 1996; FAO, 1995). Following Maxwell (1990), a country and its people are food secure when production, markets, and social systems work in such a way that food consumption needs are always met. According to Von Braun *et al* (1996), two types of food insecurity have been identified. These are chronic and transitory food insecurity. Chronic food insecurity is a persistent inadequate diet caused by the continual inability of households to acquire needed food, either through market purchases or through production (Von Braun *et al,* 1996). Transitory food insecurity on the other hand, is a temporary decline in a household's access to needed food due to factors such as instability in food prices, production or incomes (World Bank, 1986).

Between 1970 to 1979 the average annual deficits in per capita calorie intake was 24.4% relative to the recommended minimum average, and between 1980 and 1989, and 1990-1996 it became 23.58% and 8.28% respectively (ADB, 1996). In addition, there has also been a serious deficit in per capita protein intake. For example, while the overall demand for protein foods in 1984 was put at 331,000 metric

tones, only about 289,000 metric tones was available thus leaving a deficit of 42,000 metric tones (FLD, 1981). This situation does not portray food security as the majority of the population can not have access to enough food for active and healthy life at all times of the year (World Bank, 1988). The minimum per capita daily calorie intake recommended by Food and Agriculture Organization (FAO) and World Health Organization (WHO) for maintaining the human body is 2500 kcal/day (FAO, 1995; World Bank, 1994).

The main objectives of the study were:

(i) to evaluate the food security status of households in the study area,

(ii) to estimate the daily per capita calorie intake of the households,

(iii) to isolate the determinants of household food security in the area,

(iv) to ascertain the coping strategies adopted by the people against food insecurity.

## MATERIALS AND METHODS

### Sampling and Data Collection

The study was conducted in Owerri agricultural zone of Imo State. Six local government councils (LGCs) were randomly chosen from the eleven that make-up the Owerri agricultural zone of the state. The six LGC's are Aboh Mbaise, Ahiazu Mbaise, Ezinihitte Mbaise, Owerri West, Owerri North and Owerri Municipal. From these LGC's, the following urban, peri-urban and rural areas were randomly selected and surveyed. The urban area here is Owerri Municipal, while the peri-urban areas are Amakohia, Akwakuma, Aboh, Egbu, Naze, Nekede,

Emii, Uratta and Azaraegbelu. The rural areas included Uvuru, Amuzi, Okwuato, Enyiogugu, Ekwereazu, Obodo-ahiara, Chokoneze, Ife, Okpofe, Ihiagwa and Eziobodo.

Data used for the study were collected from a sample of 90 households randomly selected from the list of farmers supplied by the Imo State ADP. The sample size was limited to 90 in order to permit recall interviews to be conducted. This is in consonance with Bouis (1993) which suggests that in food consumption studies, the sample size should be limited to a few households with the interviews recalled. As a result, the interviews were recalled twice with an interval of one month between recall. Data collection lasted between October 1998 and May 1999. The variables on which data were collected include monthly and annual incomes, income sources, quantities of food items prepared and consumed per day, household food expenditure and expenditure patterns, prices of food items consumed, household size and number of dependants, ages of children and adult members of family, farm inputs and outputs and their prices, number of meals per day, educational level of household members, sex, marital status, and weight of household members. Weight of household members was collected using the "Hanson" scale (an instrument for ascertaining weights of individuals). Data were also collected on household copying strategies against food insecurity. The energy output of the various food items was calculated using the caloric output of food commodities. Conventionally, 1g of carbohydrate provides 3.75 kcal, 1g of fat provides 9 kcal, while 1g of protein provides 4 kcal of energy respectively (Gaman and Sherrington, 1977).

**Analytical Technique**

To determine and isolate the main factors that affect the food security status of the households, an equation adapted from Alderman and Garcia (1993) was estimated. The model is specified as:

$Z = f(X_1, X_2, X3, X4, X_5, e)$ ..... (1)

Where

$Z$ = **difference between per capita daily household calorie intake and the recommended minimum average (kcal)**

$X_1$ = household monthly income (farm and non-farm) (₦)

$X_2$ = household size (persons)

$X_3$ = household head education (years of schooling).

$X_4$ = Price of household staple food (₦)

$X_5$ = Sex of household head (dummy, 1 = male, 0 = female).

On *a priori*, it is expected that low household monthly income, high household sizes, low level of household head education, high prices of staple food, and large number of female controlled households suggest food insecurity. The double-log, semi-log, exponential and linear functional forms were estimated

## RESULTS AND DISCUSSION

### Socio-economic characteristics of respondents

### Income distribution

Table1 shows that 7% of the respondents (men) earn monthly income of less than or equal to N1500, and between N7501 – N9000. The table also reveals that 31% of the men have monthly income ranging between N3001 – N4500, while 17%, 16% and 11% have monthly income ranging between N4501 – N6000, N1501 – N3000, and N6001 – N7500

respectively. In addition to these, 4% of the men have monthly income ranging between N9001 – N10,500 and above N12,000. The mean monthly income among the men was computed to be N5117.13.

With regard to the women (wives), table1 shows that 40% of the women earn monthly incomes ranging between N1501 – N3000. However, 24% of the women earn less than or equal to N1500, while 21% have monthly incomes ranging between N3001 – N4500. The remaining 7%, 6% and 2% earn monthly incomes ranging between N4501 – N6000, N6001 – N7500 and above N7500 respectively. The mean monthly income among the women was found to be N2800.38

**Table 1: Distribution of households by income and gender1998/99(n=90)**

| Monthly Income (Class) | Men(husbands) Frequency (f) | Percent (%)( | Women(wives) Frequency f) | Percent (%) |
|---|---|---|---|---|
| ≤ 1500 | 06 | 07 | 22 | 24 |
| 1501 – 3000 | 14 | 06 | 36 | 40 |
| 3001 – 4500 | 28 | 31 | 19 | 21 |
| 4501 – 6000 | 15 | 17 | 06 | 07 |
| 6001 – 7500 | 10 | 11 | 05 | 06 |
| 7501 – 9000 | 06 | 07 | 02 | 02 |
| 9001 – 10500 | 04 | 04 | - | - |
| 10501– 12000 | 03 | 03 | - | - |
| > 12000 | 04 | 04 | - | - |
| **Total** | **90** | **100** | **90** | **100** |

Mean monthly income among men = N5117.13

Mean monthly income among women = N2800.38

**Household size**

The frequency distribution of respondents according to size of household is presented in Table 2.

About (41%) of the respondents have household sizes of between 7 to 9 persons. However, 30%, 23% and 6% of the respondents have household sizes of between 10 – 12 persons, 4 – 6 persons, and 13 – 15 persons respectively. The mean household size is 9 persons.

**Table 2: Distribution of respondents by size of household, 1998/99(n=90).**

| Household size | Frequency | Percent |
|---|---|---|
| ≤ 3 | 00 | 00 |
| 4 – 6 | 21 | 23 |
| 7 – 9 | 37 | 41 |
| 10 – 12 | 27 | 30 |
| 13 – 15 | 05 | 06 |
| **Total** | **90** | **100** |

Mean household size = 9 persons

**Dependency ratio**

The frequency distribution of respondents according to number of dependants is shown in Table 3. Table 3 reveals that the highest percent (27%) have between 9-10 dependants per household. However, 24%, 22% and 18% have between 7 - 8, 5 – 6 and 3 – 4 dependants per household respectively. The mean number of dependants per household is 7 persons, while the dependency ratio is 0.77. A dependency ratio of 0.77 may suggest food insecurity among the households.

**Table 3: Frequency distribution of respondents by dependency, 1998/99(n=90)**

| Number of dependants | Frequency | Percentage |
|---|---|---|
| ≤ 2 | 05 | 06 |
| 3 – 4 | 16 | 18 |
| 5 – 6 | 20 | 22 |
| 7 – 8 | 22 | 24 |
| 9 – 10 | 24 | 27 |
| 11 – 12 | 03 | 03 |
| **Total** | **90** | **100** |

**Educational attainment**

The distribution of respondents (men and women) by level of education is presented in Table 4. Table4 shows that 30% of the men (household heads) had only secondary education, 19% of the men had no formal education, while the least (1%) had incomplete primary education. With regard to the women (wives), the highest percentage (30%) had only primary education, while 26%, 21% and 20% respectively had no formal education, had post secondary education, had only secondary education.

**Table 4: Frequency distribution of households by level of Education, 1998/99(n=90)**

| Educational level | Frequency | Percentage |
|---|---|---|
| **Men (household heads)** | | |
| No formal education | 17 | 19 |
| Primary education | 24 | 27 |
| Incomplete primary education | 01 | 01 |
| Incomplete secondary education | 03 | 03 |
| Secondary education | 27 | 30 |
| Post secondary education | 18 | 20 |
| **Total** | **90** | **100** |

| | | |
|---|---|---|
| **Women (wives)** | | |
| No formal education | 23 | 26 |
| Primary education | 27 | 30 |
| Incomplete primary education | 01 | 01 |
| Incomplete secondary education | 02 | 02 |
| Secondary education | 18 | 20 |
| Post secondary education | 19 | 21 |
| **Total** | **90** | **100** |

**Determinants of household food security**

The results of the multiple regression analysis on the determinants of household food security are presented in Table 5. The results of the analysis show that all the variables are statistically significant in the double-log model. The value of the $R^2$ in this model is 0.85. On the basis of the coefficient of multiple determination ($R^2$), the signs and statistical significance of the variables as they aid in the economic interpretation of the results (Olayemi and Olayide, 1981), the double-log model was chosen as the lead equation. The results of this model show that income, household size, educational attainment, and sex of household head are positively correlated with household food security, while price of staple foods is negatively correlated with it. Household food security in this study is measured by the difference between daily household calorie intake and WHO recommended minimum. All the variables are statistically significant at 1% level. The

value of the $R^2$ shows that 85% of the variations in household food security are explained by household income, household size, educational attainment of household heads, price of staple food, and sex of household head. The results associated with these variables with the exception of that associated with household size are in accordance with *a priori* expectation.

The results obtained for income, household size, educational attainment, and sex of household head may suggest that increase in income, higher household sizes, higher levels of education, and increase in male-headed households enhance food security in the area. The result for household size was never expected and contrasts with earlier studies. For instance, Reardon (1991) found that food insecure households in the Sahelian zone of Burkina-Faso had an average household size of 11, and a dependency ratio of 0.55 compared with a size of 8 persons and a dependency ratio of 0.40 for food secure households. Statistical analysis of the data used for this study showed that the average household size and dependency ratio in the area are 9 persons and 0.77 respectively. These show that the households surveyed in this study are food insecure. The result obtained for household size in this study can be accepted if it is interpreted to imply that higher household sizes provide adequate farm labour for increased food production. However, household food security requires that the household should be able to produce enough food to feed her members, and earn adequate incomes for other basic needs of the family.

The result obtained for sex of household head may suggest that an increase in number of male – headed households increases food security in the area. This is in conformity with earlier studies. For

instance, Ghana household budget survey (GHBS) indicates that female-headed households accounted for disproportionately high levels of food insecurity (kyereme and Thorbecke, 1987). Similarly, the results obtained for educational attainment may imply that higher levels of education enhance food security. This result has important policy implication because, education as a labour quality indicator enhances labour productivity.

Furthermore, the average per capita calorie intake of households in the state was computed to be 1990 kcal. The difference between this value (1990 kcal) and WHO recommended minimum (2500 kcal) is 510 kcal. This suggests the existence of food insecurity problem among the people of the state. The World Bank (1991) had observed that Nigeria is among the countries with high-level food insecurity problems. Using three different indicators, World Bank (1991) noted that the average food energy consumption in Nigeria in 1989 was below 2100 kcal per capita. The average per capita food energy consumption estimated for Nigeria (2100 kcal) by World Bank (1991) is by far lower than the value (2300 kcal) estimated for Cameroon, Ivory Coast, Morocco, Algeria and Rwanda. Both figures are less than the recommended average of 2500 kcal for non-industrialized nations.

**Table5. Multiple regression analysis results on the determinants of household food security in Imo State, 1998/99(n=90)**

| Variables | Functional Forms | | | |
|---|---|---|---|---|
| | double-log Function | Semi-Log Function | Exponential Function | Linear Function |
| Income | 0.0201*** | 40.735*** | -0.069 | -0.002* |
| | (4.603) | (3.867) | (-0.235) | (-2.209) |
| Household Size | 0.0089*** | 11.652*** | 0.0032*** | 1.320*** |
| | (5.320) | (2.723) | (4.653) | (4.012) |
| Education | 0.0165*** | 40.010 | 0.004*** | 9.722** |
| | (9.170) | (1.109) | (4.284) | (2.551) |
| Price of staple food | -0.2550*** | -458.74*** | -0.002*** | -3.250*** |
| | (-3.776) | (-3.223) | (-2.867) | (-2.843) |
| Sex (dummy) | 0.0140*** | 52.553 | 0.005 | 37.538 |
| | (8.150) | (0.329) | (0.090) | (0.268) |
| Constant | 8.975 | 5025.6 | 7.80 | 2480.4 |
| $R^2$ | 0.85 | 0.60 | 0.69 | 0.78 |
| F- Value | 95.24 | 25.21 | 37.40 | 59.54 |
| N | 90 | 90 | 90 | 90 |

*** Significant at 1%; ** Significant at 5%; * Significant at 10%

t– ratios are in parentheses.

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t– ratios are in parentheses.

**Household Coping Strategies against food insecurity.**

The various coping strategies adopted by the households against food insecurity are presented in Table 6.

Table 6 shows that all the households engage in one form of income diversification or the other as a coping strategy. Income diversification measurers adopted by the households include hawking, food vendor, and house-to-house packing of refuse.

The next in importance to income diversification is reduction of number of meals per day. About 95% of the households surveyed do cut-down on the number of meals provided for their members as a coping strategy. Some households provide two regular unwholesome meals per day for their members, others provide only once, while some go without food on a particular day when there is nothing to eat.

Third in importance is the sale of valuable items as a coping strategy. The type of valuable items that can be disposed of in times of extreme need include moveable items like bicycles, motor-cycles and motor cars, clothing and foot wears. About 80% of the respondents adopted this measure.

Following these, are, borrowing from friends and money lenders (78%), begging for food or starvation (70%), and withdrawal of children from school (66%). The results show that 78% of the households do

borrow from close friends and moneylenders to enable them survive, while 70% preferred begging for food to dying of starvation. However, about 30% would rather die of starvation than to beg for food. Finally, 66% of the households surveyed withdrew their children from school as a coping strategy.

**Table 6: household coping strategies against food insecurity, 1998/99(n=90)**

| Coping strategies | Percentage |
|---|---|
| Income diversification | 100 |
| Reduction on number of meals per day | 95 |
| Sale of valuable items | 80 |
| Borrowing from friends and money lenders | 78 |
| Begging for food/starvation | 70 |
| Withdrawal of children from school | 66 |

## CONCLUSION AND POLICY RECOMMENDATION

Based on the findings of this study, we conclude that there is food insecurity in Owerri agricultural area of Imo state. As a consequence, we recommend as follows.

1. That measures be taken to assist the people to enhance and stabilize their incomes and thereby improve their food security status. This is because the results of the study show that increase in income increase food security. One such measure recommended here is the establishment of micro- credit schemes in the state to grant soft loans to the people. Other measures that can be adopted to enhance and stabilize incomes include the employment guarantee scheme, labour intensive public works program, and the social investment funds and programs.

2. Another measure that can be adopted to improve household food security in the state is the stabilization of food prices. The results of the study revealed that lower prices of staple foods increase food security. One measure through which lower food prices can be achieved is through increased food production in the area. Increased food production can be realized through the provision of affordable high yielding farm inputs such as fertilizers, improved cassava stems, yam sets, and seedlings.

3. Finally, the provision of qualitative education at all levels can go a long way in improving household food security in the state. The UBE program should be made functional, with the necessary reading and writing materials made available to the pupils. At the secondary and tertiary levels, the teachers and lecturers should be encouraged to give their best, while the laboratories and classroom facilities are adequately equipped and furnished. These are important because, education as a labour quality indicator is a veritable instrument for enhanced labour productivity.

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