

## The Food Insecurity Profile among the Rural and Low-Income Urban Dwellers in Nigeria

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**Abstract:** The study assessed the degree of food insecurity in Nigeria by examining the food insecurity profile among the rural and low-income urban population in the country. Primary data used for the study were derived from a survey of 90 randomly selected households (made up of 384 household members) in two Local Government Areas (LGAs) in Edo State of Nigeria-Orhionmwon (representing the rural) and Ikpoba-Okha (representing the low-income urban area). Using a 48-hour recall method, each household member was asked about the type and quantity of food he/she consumed the previous day and a day after per meal and per day. The protein and calorific content in each of the food items consumed were determined and used in estimating the quality of food intake. Three food insecurity measures, the incidence ( $F_0$ ), depth ( $F_1$ ) and severity ( $F_2$ ) were used in analyzing the magnitude of food insecurity between locations, sex and age groups. The study identified three classes of persons, the pre-schoolers (less than 6 years), the male inhabitants and the low-income urban households are more severely affected by food insecurity. Scores of 75% and 65% incidence of food insecurity was recorded for the pre-schoolers in the low-income urban and rural areas respectively. For gender, 47% of the male inhabitants were food insecure as against 34% recorded for the female. The study recommends the government setting up a machinery to make food cheaper and more affordable in addition to improved nutrition education.

**Key words:** Food Insecurity • Profile • Rural and urban population • Nigeria

### INTRODUCTION

With the exception of shelter and clothing as the basic necessities of life, food remains the most vital because of its centrality to human existence. But unfortunately today man's existence is being threatened by the problems of widespread hunger and malnutrition. In addition, it is becoming clearer that hidden hunger due to micro-nutrient deficiencies is widespread (Table 1).

Globally over 900 million people are said to be chronically hungry out of which 800 million are from the developing countries representing about 18 per cent of the world's population [1, 2]. One out of five persons in the developing countries is unable to meet his or her basic daily needs of life [3]. Millions more are exposed to contaminated food and water, while access to sufficient supplies of variety of safe, good quality food is a serious problem in many countries even where food supplies are adequate at the national level. More recently media reports have blamed the deteriorating food security situations of households and individuals around the

globe on the rising soaring food prices. However the recent FAO report [4] revealed that the soaring food prices (which has had tremendous negative impact on the food security situation) is traceable to four factors:

- the decline in the production of cereals and major food commodity groups by major exporting countries, which beginning in 2005 and continuing in 2006, declined annually by 4 and 7 percent respectively.
- The gradual reduction in the level of stocks mainly of cereals since the mid-1990's. Since the previous high-price event in 1995, the global stock levels have declined on average by 3.4 percent per year.
- The increases in fuel prices which have also raised the costs of producing agricultural commodities, particularly with respect to inputs used and
- The emerging biofuels market which has constituted a significant source of demand for some agricultural commodities such as sugar, maize (and some other cereals), cassava, oilseeds sugar-cane and palm oil.

Table 1: Old and New Global Food and Nutrition Problems

Type	Causes	People Affected
Hunger	Deficiency of calorie and protein	0.9 billion
Underweight children	Inadequate Intake of food and frequent disease	126 million
Micro-nutrition deficiency	Deficiency of vitamins and minerals	More than 2 billion
Over-weight to chronic disease	Unhealthy diets, lifestyle	Increasing also among the poor.

Source: Braun, J.V [1] "The World Food situation: An Overview". International Food Policy Research Institute.

Table 2: Food Price Indices in Nigeria

Food Items	1999 (N)	2008 (N)
-Yam (10 tubers)	1,000.00	4,000.00
-Rice (1 bag)	2000-2,500.00	7,500-8,000.00 (depending on the type)
-Beans (derica)	20.00	100.00
-Garri (1 bag)	350.00	12,000.00
-Red oil (25 litres)	400.00	4,500-5,000.00
-Vegetable oil (1 bottle)	40.00	450.-500.00
-Iced Fish (1kg)	50.00	450.00
-Smoked Fish (5)	200.00	1,500.-2,000.0
-Stock Fish head (5)	30.00	500.00
-Bunch of Banana	1.00	80-400.00
-Tomatoes (1 basket)	100.00	3,000-3,500.00
-Onions (1 bulb)	10-20 kobo	10.00

Source: culled from Foodbusiness International Vol 1, No 8, 2008. p 13.

The increase in demand for these latter commodities has been, one of the leading factors behind the increase in their prices in world markets which in turn has led to higher food prices [4]. These commodities which had predominantly been used as food and/or feed are now grown as raw material for producing biofuels.

Nigeria's present food price hikes (as reflected in Table 2) and the food insecurity situation, cannot be blamed totally on the four factors highlighted earlier in the FAO. [4] report. In year 2008, the country reported a 25 percent drop in the 2007 food production and the Minister of Agriculture and Water Resources, DR Abba Ruma, listed seasonal element and low rain as the major factors responsible for the short-fall in production and therefore food supply. Economic analysts however blamed the situation to misguided policy, poor commitment to implementation of agricultural policies and irresponsible spending of successive governments [5, 6]. The activities in the oil industry takes up much of the country's human and other resources yet it has not brought much in the way of economic benefits to other sectors of the economy [7].

Nigeria has abundant land resource for agricultural production (presently in use and still available for use) yet the country presently is unable to produce sufficient

food, to adequately feed her population. Over \$3 billion is spent annually on food importation [8]. Just recently, N80 billion was released by the Federal Government for the importation of 500,000 metric tons of rice and 11,000 metric tons of grains to meet local food demands which had resulted in soaring food prices in the local market [6]. The appraisal of the past shows that successive administrations in the country initiated programmes towards ensuring that food is available, accessible and adequate for the teaming population. Some of them include the National Accelerated Food Production Programme (1973), the Agricultural Development Programme (1975), Operation Feed the Nation (1976), Green Revolution (1987), National Fadama Development Project (1992), etc, all aimed at increasing and sustaining food production. However because of inconsistency in some of the agriculture policies, administrative over-lap, poor funding and improper implementation among others, these programmes did not yield the much acclaimed goals and objectives of food security for Nigerians and Nigerian households. Moreover, it is becoming increasingly clear that having adequate food at the national level does not guarantee food security at the household or individual level [9]. Food insecurity according to Foster [10], goes beyond overall global, regional or even national shortfalls in supply to shortfalls at local, household and individual levels.

A number of studies in Nigeria have confirmed that calories and protein consumed by household members fall short of the recommended daily intake or allowance. However not much has been done to determine the degree (in terms of depth and severity of food insecurity, among individuals within households in Nigeria. The purpose of this study is to determine the food insecurity profile among individuals living in rural and low-income urban areas of Nigeria.

#### Specifically the Study Tried To:

- Determine the degree of food insecurity among the rural and low-income urban dwellers in Nigeria.
- Present a profile of the severity of the food insecurity among them.
- Identify members of the population that are more affected by food insecurity.

#### METHOD

**Data Collection and Analysis:** Primary data was used for this study. They were collected between July and October 2005 from two local government areas (LGAs) in Edo State-Orhionmwon and Ikpoba-Okha. Personal interviews and structured questionnaire were used for the data collection.

The study was divided along the current political wards to form strata. Twelve strata (wards) out of the thirty strata (wards) in the study area (14 in Ikpoba-Okha and 16 in Orhionmwon Local Government Areas) were randomly selected. The communities in Orhionmwon LGA represent the rural area, while those of Ikpoba-Okha LGA represent the low-income urban area. A total of 120 households (60 from each LGA) were initially randomly selected for the study but only 90 household questionnaire (46 from Orhionmwon and 44 from Ikpoba-Okha) were used for the analyses.

A total of 460 individuals within the 90 households were interviewed on their daily food intake using a 48-hour recall method. However, data from three hundred and eighty four (384) members out of the initial 460 were used for the analysis. Children below the age of one year (10 in number) were excluded from the analysis because they were still breast-fed and the breast milk intake could not be adequately quantified.

Each household member was asked the food he/she consumed the previous day and a day after. The data collected included type of food and quantity consumed per meal/day. One grain of rice cannot however

be equated to a gram of yam except both are converted to gram equivalent before the proportion of each (and other food items) can be estimated from the total food intake. The calorific and protein content in each food item consumed were used in estimating the quality of the total food intake. The data thus collected were subjected to the food insecurity index assessment in determining the degree of food insecurity among members.

**Assessment of the Degree of Food Insecurity:** Three food insecurity measures were used to assess the degree of insecurity among the sampled members. This same procedure was adopted by Aromolaran [11, 12]. These were:

- The incidence of food insecurity ( $F_0$ ): This measures the percentage of individuals within a household or community whose calorie intake level is below the minimum required.
- The depth of food insecurity ( $F_1$ ): This gives the mean shortfall of calorie intake below the food insecurity line as a proportion of the food insecurity line.
- The severity of food insecurity ( $F_2$ ): Rather than adopting equal weighting system for the food insecure, this measure applies greater weights for the more insecure in determining the depth of food insecurity. In other words more weights are given to individuals with greater falls from the food insecurity line.

To achieve this, a modified FGT poverty index developed by Foster, Greer and Thorbecke [13] was used. This modified FGT index by Aromolaran [11, 12] was also applied by Appleton [14], Ayinde [15] to estimate the FGT food insecurity index. The modified index is given by the general formula:

$$f\alpha = 1/N \sum_{i=1}^p \{FL - C_i\} a$$

Where:  $F\alpha$  or food Insecurity Index (FISI) is a measure of food insecurity level

When  $\alpha = 0$ , it measures the incidence;

When  $\alpha = 1$ , it measures the depth;

When  $\alpha = 2$ , it measures the severity.  $a$  is a measure of inequality aversion.

$P$  = Number of individuals within a household whose calorie intake fall below the minimum recommended level.

$N$  = Number of individuals in a household or households in the community.

FL = Food security line, i.e the minimum recommended level of calorie intake for the individual. The FAO/WHO (1985) minimum Recommended Daily Allowance (RDA) of 2,400 Kcal and 44.4g per capita calorie and protein intake respectively were used as the food insecurity line.

$C_i$  = The calorie intake level of the individual household member. When  $\alpha = 0$ , the formula becomes  $F_0 = P/N$

## RESULTS AND DISCUSSION

### Degree of Food Insecurity in the Study Area:

The degree of food insecurity among household members was assessed using the three food insecurity indices- incidence of food insecurity ( $F_0$ ), depth of food insecurity ( $F_1$ ) and severity of food insecurity ( $F_2$ ). The results of the analyses are presented in Tables 3 through to 6.

### Food Insecurity Profile among the Individual Respondents with the Households in the Study Area:

The true food insecurity situation among the individuals within households was assessed based on location, sex and age. This gives the picture of where and who within the household is actually or more food insecure. The result for the rural and low-income urban areas is presented in Table 3.

The result showed that about 41 percent (0.407 incidence) of the respondents at both locations were food insecure. The food insecurity incidence was 39.4 percent for rural dwellers and 42.1 percent for the low-income urban area. Also in terms of depth ( $F_1$ ) and severity ( $F_2$ ) the urban dwellers are more affected-10% and 4% as against 9% and 3% respectively for the rural dwellers. This shows that the urban poor are worse hit by food insecurity relative to the rural poor.

The food insecurity analysis based on gender is presented in Table 4.

With the head count ratio of 0.465 and 0.337 for male and female respectively, it implies that 46.5 percent of the male respondents are food insecure requiring about 9.9 percent of the RDA to meet up with the recommended minimum calorie intake. On the other hand, the female were less affected with 33.7 percent being food insecure and requiring 8.2 percent of the RDA to meet up with the recommended minimum calorie intake.

The food insecurity profile data collected was further disaggregated and analysed by location and sex. The results obtained are presented in Table 5.

The result of the analysis revealed that the males in the low-income urban area were more food insecure

(48.5%) as compared to their counterpart in the rural area (44.4%). The same goes for the females though with a slight margin of 0.9 percent (in terms of incidence,  $F_0$ ) which may not be significant if subjected to statistical test.

Also the males in each of the locations were more affected by the food security problem than their female counterpart. The consideration of  $F_1$  and  $F_2$  values based on gender at the two locations further buttresses this fact, as the males in the low-income urban and rural areas require 10 percent and 9.7 percent of the RDA respectively to meet the recommended level as against 8.8 percent and 7.6 percent respectively for the females. These results support Aromolaran [12] findings from a similar study conducted in South Western Nigeria.

The degree of food insecurity among individuals at both locations was also assessed a long age groups. The results are presented in Table 6.

The result from table 6 showed that the pre-schoolers (ages < 6 years) are most affected with scores of 75 percent and 65 percent incidence of food insecurity in the low-income urban and rural areas respectively. This result supports Addo's findings [16] from a similar study conducted in South-West, North-West and North-East of Nigeria which revealed that only 26.6% of under 5 year old children met their recommended dietary allowance for energy.

The next group with high incidence of food insecurity are the adolescents (11-18 years) in the low-income urban area and school children (6-10 years) in the rural area with about 60 and 45 percent incidence of food insecurity respectively. The general trend noticed in both locations is the gradual decrease in food insecurity down the age group with the older ones being better fed than the younger ones. The  $F_1$  (depth) and  $F_2$  (severity) values further confirmed this fact. The  $F_1$  values showed that food insecurity was higher among the pre-schoolers requiring more calorie food intake of 24.1 and 17.7 percent of RDA in the low-income urban and rural areas respectively, to meet up with the recommended minimum level specified by the FAO. These figures are over twice the additional calorie intake requirement of the aged (which range between 1 and 7 percent) to meet the FAO standard calorie intake. Those over 60 years require the least percentage of RDA to measure up to the food security line. This is with the exception of those in the rural area whose additional daily calorie requirement is more compared to rural dwellers within the age groups of 11-18 and 19-59 years.

Table 3: Food Insecurity Profile among Individual Respondents by Location

Location	Incidence	Depth	Severity	Head Count
Low-income Urban Area	0.421	0.095	0.035	210
Rural Area	0.394	0.087	0.028	174
Aggregate	0.407	0.091	0.031	384

Source: Computed from field survey data, July-October, 2005.

Table 4: Food Insecurity Profile among Individual Respondents by Gender

Gender	Incidence	Depth	Severity	Head Count
Male	0.465	0.099	0.033	208
Female	0.337	0.082	0.029	176
All	0.407	0.091	0.031	384

Source: Computed from Field Survey data, July-Oct 2005.

Table 5: Food Insecurity Profile among Individual Respondents by Location and Sex

Location	Incidence		Depth		Severity		Head Count	
	Male	Female	Male	Female	Male	Female	Male	Female
Low-income urban	0.485	0.339	0.100	0.088	0.034	0.035	112	98
Rural	0.444	0.333	0.097	0.070	0.032	0.024	96	78
All	0.460	0.330	0.080	0.080	0.030	0.029	208	176

Source: Computed from field survey data, July-October 2005.

Table 6: Food Insecurity Profile among Individual respondents by Location and Age

Age groups (in years)	Urban-Low Income				Rural			
	F <sub>0</sub> (Incidence)	F <sub>1</sub> (Depth)	F <sub>2</sub> (severity)	Head Count	F <sub>0</sub> (Incidence)	F <sub>1</sub> (Depth)	F <sub>2</sub> (severity)	Head Count
< 6	0.75	0.241	0.113	26	0.65	0.177	0.066	26
6-10	0.58	0.174	0.063	41	0.45	0.106	0.032	46
11-18	0.60	0.094	0.030	43	0.35	0.060	0.017	22
19-59	0.26	0.043	0.012	66	0.30	0.056	0.016	66
> 60	0.12	0.016	0.004	34	0.31	0.078	0.026	14
Total				210				174

Source: Computed from field survey data, July-October, 2005.

**The foregoing analysis revealed three major facts:**

- That food insecurity poses more problem among individuals with the low-income urban households than those in the rural area. This result is not unexpected because the urban populations are less likely to produce a significant share of their own food or produce for sale. Also urban populations are more exposed to the consequences of rising food prices (one of which is reduction in food intake) as they are more likely to consume staple foods derived from tradable commodities (rice, wheat, etc) while rural populations (particularly in African and Latin America) tend to consume more traditional staples such as roots and tubers [4].

- Food insecurity poses more problems among the males in the households than among the females.
- Food insecurity poses more problems among the pre-schoolers and those within the age range of 6-18 years.

**Some Policy Implications:** Though the findings from this study were obtained from a limited study area, other similar previous studies [11, 12, 16] conducted in Nigeria over wider areas have also highlighted some of the facts revealed by this study. The fact that the younger age groups are more severely affected by food insecurity points to two major serious consequences:

- that Nigeria will face serious health problems in the future including high death rates, increase in the number of children with low IQ, high incidence of disease and consequently increased investment in the health sector and low average life expectancy which is presently estimated to be 46.5 years.
- A higher incidence and more severe food insecurity among the younger age bracket would result in weak labour work force and therefore low work output.

A major policy implication of the findings from this study is that government should as a matter of urgency put in place a machinery that would make food cheaper and more affordable, in addition to improved nutrition education at the local, state and national levels.

### CONCLUSION

This study assessed the Nigerian food insecurity situation with a focus on individuals in the rural and low-income urban areas using Orihionmwon and Ikpoba-okha Local Government Areas (LGAs) in Edo State respectively as a case study. The study identified three classes of persons within the population as more severely affected by food insecurity. These are the pre-schoolers, the male members of the households and the low-income urban households. This study recommends that government effort at solving the problem of food insecurity, most as a matter of urgency, focus greatly on the pre-schoolers who are helpless as they cannot influence the food policy of the home. Some of the policy options would be to educate parents on the need for a healthy nutrition of their children both in calorie and protein intakes. Government should also subsidize foodstuffs especially those for the younger ones whose future defines the hope of the nation.

Other policy options will be to intensify entrepreneurial training for the low-income urban dwellers so as to diversify their sources of income and open up more jobs and income earning opportunities.

### REFERENCES

1. Braun, J.V., 2005. The World Food Situation: AN Overview. International Food Policy Research Institute. Paper presented for CGIAR Annual General Meeting, Marrakech, Morocco, Dec 6<sup>th</sup>, 2005.
2. Baje, A.O., 2008. Food Crisis Hits the World. *Foodbusiness International*, 1(5): 11-12.
3. Lupien, J.R. and V. Menza, 2004. "Assessing Prospects for Improving Food Security and Nutrition". *FNA/ANA*, 25. pp: 5-9.

4. FAO, 2008. "The State of Food Security in the World"-9<sup>th</sup> Progress Report on World Hunger: Rome.
5. Kolapo, Y., 2008a. "Saving the Country from Hunger". *Nigeria Punch*, March 14<sup>th</sup>, 2008 pp: 56.
6. Ikeokwu, N., 2008. *The Global Food Crisis and the Challenges to Nigeria*. Economic Confidential, June, 2008.
7. Onwuemenyi, O., 2008. Impact of FDI on Lives of Nigerians. *Nigeria Punch* March 2<sup>nd</sup>, 2008 pp: 28.
8. Godwin, A., 2008. "Agriculture: Farmers give Yar'Adua Shopping List" *Nigeria Sunday Punch*, January 20<sup>th</sup>, 2008. pp: 32.
9. Babu, S.C. and V.J. Quinn, 2003. Food Security and Nutrition Monitoring in Africa: Introduction and Historical Background. *Food Policy*, 19(3): 211-217.
10. United Nation, 2008. Social Indicators, United Nations Statistics Division, Dept of Economic and Social Affairs. <http://unstats.un.org>.
11. Aromolaran, A.B., 1999. Household Food Security, Poverty Alleviation and Women Focused Development Policies in Nigeria. A Revised Research Proposal Presented at the Annual Mid-Year Research Workshop of the African Economic Research Consortium (AERC) in Accra, Ghana, May 29<sup>th</sup>-June 3<sup>rd</sup>, 1999.
12. Aromolaran, A.B., 2000. Food Consumption and Women Income: Implications for Household Food Security in Nigeria". A Revised Work-in-Progress. Presented at the AERC Mid-Year Workshop in Nairobi, Kenya, May 27<sup>th</sup>-June 1<sup>st</sup>, 2000.
13. Foster, J., J. Greer and Thorbecke, 1984. A Class of Decomposable Poverty Measures, *Econometrica*, 52(3): 761-766.
14. Appleton, S., 1999. Women Headed Households and Household Welfare: An Empirical Demonstration for Uganda, *World Development*, 24(12): 1811-1827.
15. Ayinde, I.A., 1999. An Assessment of Poverty Levels among Rural Farming Households in Ogun State. *The Nigerian Journal of Economics and Social*, 17(2).
16. Addo, A., 2005. Improving the Nutrition of the Nigerian Child through Dietary Modifications, Paper Presented at a Seminar on Child Nutrition by West Africa Milk Company (Nig) PLC.