

Comparative Analysis on Socio-economic Factors Between Food Secure and Food Insecure Households among Urban Households in Benue State, Nigeria

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KEYWORDS Comparative. Socio-economic Factors. Households. Food Secure and Food Insecure

ABSTRACT The study assessed food security situation among urban household in Benue State. This with the aim to assess household food expenditure and its implication on food security status, determine and compare food secure and food insecure households across socio-economic factors and analyze the determinants of household food security. A three-stage sampling technique was used to collect data. Descriptive statistics, food security index, logistic regression, were employed to analyse data. The result indicated that 67.3% of the households were food secured, while 32.7% were food insecure; mean age, education, income, food expenditure and quantity of food consumed were significantly higher ($2.61 \leq t \leq 12.83$ at $p \leq 0.05$) for food secured households than food insecure households. Age, income, and household size were determinants that a household will be food secured ($\chi^2 = 13.77$; $p > 0.05$). The study recommends that programmes that will enhance income of households should be strengthened.

INTRODUCTION

Nigeria is Africa's most populous country with a population of 140,003,542 million (Federal Republic of Nigeria 2007). Agriculture is the one of the most important sector of Nigerian economy. This is because the sector is the main source of food for the population and is the source of livelihood for over 70% of the population. Furthermore, the sector is a major source of raw materials for the agro-allied industries and a potential source of much needed foreign exchange. The agricultural sector in the periods immediately after independence performed creditably the roles highlighted above to such an extent that the regional development witnessed during these periods were linked directly to the sector. It once contributed over 60% of gross domestic product. However, over the years, the sector has witnessed a tremendous decline in its contribution to national development. The decline is attributed to the boom in the petroleum sector and the growth of the industrial sector (Akinleye 2007).

Providing food both in quantity and in good quality to meet the growing food demand for the growing population in Africa is a major concern of national government and many international organizations. This is because per-capita

tal growth of production of major crops has not been sufficient to satisfy the demand of an increasing population.

Food security as a concept entails the ability of the households (at the house level) to secure, either from own production or through purchase, adequate food for meeting the dietary needs of all its members (Maziya-Dixton et al. 2004). It is a situation where households are not at risk of losing the access to safe nutritious food to maintain a healthy and active life. Households are thus, food secure when they have year round access to the quantity and variety of foods their members need to maintain active and healthy lives (Theones 2004). The available historical series show that, about 852 million people world-wide were chronically undernourished between 1980-2005. About 800 million of this people live in developing countries (IFPRI 2005). Furthermore, available statistics show that at least 41 percent of the Nigerian population are food insecure with 16% being severely undernourished (Agboola et al. 2004). The incidence of household food insecurity in Nigeria rose from 18 percent in 1986 to over 40 percent in 2005 (Sanusi et al. 2006).

There exist a generally held notion that food insecurity situation is more prevalent in the rural areas based on low income and the poor socio-economic conditions of the rural inhabitants. This has skewed focus of food security research in favour of the rural areas. However,

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increasing rural- urban migration, low level of employment opportunities, high cost of living, poor economic infrastructure etc are factors that are likely to predispose urban household to a large extent to food insecurity. Gurkan (1995) aptly demonstrated the complexity of food security matrix by pointing out that food security is consistently not only linked with food production but also general economic and social development variables. Thus, the food security situation of urban households has remain largely unassessed in the study area. It is against this backdrop that this article was embarked upon with the following objectives addressed:

- i assess the household food expenditure in Benue State and its implication on food security status
- ii determine and compare socio-economic factors between food secure and food insecure households in the study area.
- iii analyze the determinants of food security of household in the study area.

METHODOLOGY

Data and Sampling Technique

The data used for the study were mainly from primary sources. These were collected on monthly expenditure of households on food and non food items through a well structured questionnaire. A multistage sampling procedure was employed. This involved sampling of all the three zones in the State; a purposive sampling of one local government area from each of these zones were drawn based on the criteria that they consists of a major urban center; a purposive selection of one town from each of the selected Local Government areas was made and a random selection of 50 households from each towns was made to give a total of 150 households.

Method of Data Analysis

The data collected for the study was analyzed using both descriptive and inferential statistics. The descriptive statistics include the percentage, frequency and ratio analysis. The

inferential analysis used was the logit regression model.

The ratio analysis used was the food security index. This was used to categorize the sampled households into food secured and food insecure groups. For instance, following Omonona and Agoi (2007), an household is considered food secured if it attains at least two – third of the average food expenditure of the sampled households otherwise the household is considered food insecure:

Thus,

$$F_i = \frac{\text{Per capita food expenditure for the } i\text{th household}}{2/3 \text{ mean per capita food expenditure of all household}}$$

Where F_i = food security index

When $F_i \geq 1$, the household is food secure; and, $F_i < 1$, the household is not food secure.

Furthermore, factors influencing food security of households was examined with logistic regression model such that:

$$P_i = \frac{1}{1 + e^{\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k}}$$

Where,

P_i is the probability that food security occur; β_0 is the constant term; β_i ($i=1, 2 \dots k$) are regression parameters to be estimated; X ($i=1, 2, \dots k$) are independent variables; and i the observation

$$\text{Let } z_i = \beta_0 + \sum \beta_k X_k$$

$$\text{Then } P_i = \frac{1}{1 + e^{z_i}}$$

The model is estimated though maximum likelihood procedure.

RESULTS AND DISCUSSION

Assessment of Households Expenditure on Food and its Implication on the Food Security Status of the Household

Table 1 summarized results of the analysis on household expenditure on food. The result indicates that most households (40%) spend between N10001 to N20000 on food. Also, about 20% and 25% of the households spend N1000 or less and between N20001 to N30000 respectively on food. However, only 14.6% of the households spend above N30000 on food per month.

Table 1: Distribution of households by their monthly expenditure on food

<i>Expenditure on food (N)</i>	<i>Frequency</i>	<i>Percent</i>
≤ 10,000	30	20.0
10001-20000	60	40.0
20001-30000	38	25.3
30001-40000	8	5.3
>40000	14	9.3
Total	150	100
Mean Food Expenditure =N21,748.00		
Standard Deviation =14499.30		
Minimum =1500.00		
Maximum =80000.00		

Source: Field Survey 2009

Furthermore, the study found the average food expenditure of the households to stand at N21748.00. Based on Omonona et al. (2007) index, an household is considered food secured if it attains at least two – third of the mean food expenditure of the sampled households otherwise the household is considered food insecure. Consequently, the households that spent at least N14,498.67 on food were categorized as food secure and those who spent below this value were categorized as food insecure households. The results (Table 2) indicate that 67.3% of the households were food secured while 32.7% are food insecured

Table 2: Distribution of household by their food security status

<i>Food security status</i>	<i>Frequency</i>	<i>Percent</i>
Food insecure	49	32.7
Food secure	101	67.3
Total	150	100

Source: Field Survey 2009

Socio-economic Characteristics of Respondents

Table 3 displays results of socio economic characteristics of respondents while Table 4 and 5 shows the results of hypothesis testing. The result on gender indicates 77.2% of the food secured households are male headed while 22.8%are female headed. Similarly, 75.5% of the food insecured households are male headed while 24.5% are female headed. However, test of difference shows that no significant differ-

Table 3: Socio-economic characteristics of respondents by food security status

<i>Index</i>	<i>Food secure households</i>		<i>Food insecure households</i>	
	<i>Fre- quency</i>	<i>Percen- tage</i>	<i>Fre- quency</i>	<i>Percen- tage</i>
Sex				
Male	78	77.2	37	75.5
Female	23	22.8	12	24.5
Total	101	100	49	100
Age				
≤ 20			2	4.1
21-40	31	30.7	26	53.1
41-60	60	59.4	19	38.8
≥ 61	10	9.9	2	4.1
Total	101	100	49	100
Marital Status				
Married	80	79.2	33	67.3
Single	7	7.0	8	16.3
Widow/Widower	14	14.0	8	16.3
Total	101	100	49	100
Education				
<1	3	3.0	-	
1-6	6	5.9	6	12.2
7-12	22	21.8	17	34.7
>13	70	69.3	26	53.1
Total	101	100	49	100
Income ('000)				
≤ 20	10	9.9	34	69.4
20.001-40	27	26.7	7	14.3
40.001-60	26	25.7	6	12.2
60.001-80	18	17.8	1	2.0
≥ 80	20	19.8	1	2.0
Total	101	100	49	100
Occupation				
Civil Servant	82	81.2	22	44.8
Trader	10	9.9	10	20.4
Farmer	5	5.0	13	26.5
Others	4	4.0	4	8.2
Total	101	100	49	100
Household Size				
≤ 4	19	18.8	8	16.3
5-8	42	41.6	28	57.1
9-12	34	33.7	10	20.4
≥ 13	6	5.9	3	6.1
Total	101	100	49	100
Qty of Food Consumed				
≤ 50	5	5.0	6	12.2
50.01-100	19	18.8	10	20.4
100.01-150	19	18.8	17	34.7
150.01-200	19	18.8	8	16.3
≥ 200.01	39	38.6	8	16.3
Total	101	100	49	100
Expenditure('000)				
≤ 10	0	0	30	61.2
10.001-20	41	40.6	19	38.8
20.001-30	38	37.6	0	0
30.001-40	8	7.9	0	0
≥ 40	14	13.9	0	0
Total	101	100	49	100

Source: Field Survey 2009

ence ($\chi^2 = 0.06$; $p > 0.05$) exist between the distribution of sex in food secured and food insecure groups (Table 5).

The results on age showed that a major percentage of food secured and food insecure groups fell within the age range of 21-60 years, constituting 90.1% and 91.9% respectively. Household heads of age greater or equal to 61 years constitute 9.9% for food secured and 4.1% for food insecure households. Furthermore, household head of age less than or equal to 20 constitute 4.1% of food insecure households while the food secured group had no person whose age is less or equal to 20 years. Test of difference further indicates that a significant difference ($t = 3.10$; $p \leq 0.05$) exists between the average age of food secured and the food insecure households (Table 4).

Table 4: t-test of difference between food secure and food insecure household

Variable	T	df	sig
Expenditure on food/month	12.826*	148	0.0001
Age	3.104*	148	0.003
Household size	1.676	148	0.097
Education	2.613*	148	0.010
Household head income/month	8.074*	148	0.0001
Quantity of food consumed/month	3.22*	148	0.002

Source: Field Survey 2009

* significant at 5% level

Table 5: χ^2 -test of difference between food secured and food insecure households

Variable	χ^2	df	sig
Sex	0.055	1	0.815
Marital status	7.092*	2	0.029
Occupation	59.680*	3	0.0001

Source: field survey 2009

* significant at 5% level

Analysis of the marital status of the household heads revealed that a greater proportion of heads of food secured and food insecure households were married. This constitutes 79.21% and 67.35% respectively. Furthermore, a higher percentage of food insecure households (16.33%) was single compared with 6.93% of the food secured households. Similarly, a higher percentage (16.33%) of food insecure households was widows compared with the proportion in the food secured households (13.86%). Furthermore, test of difference showed that the food

secured and food insecure groups are significantly different ($\chi^2 = 7.09$; $p \leq 0.05$) from each other in terms of their marital status (Table 5). The result further suggests that widowhood and singlehood are likely causes of food insecurity in household.

In contrast to about 3.0 percent of the food secure household heads who had no formal education, none of the household head in the food insecure category was found to have no formal education. In addition, among the food secured household heads, 5.9% had primary education; 21.8% had secondary education; and 69.3% had tertiary education. On the other hand, the distribution of educational qualification among the food insecure group showed that 12.2%, 34.7%, 53.1% of the households had primary, secondary and tertiary education respectively. Test of difference confirmed that mean years of education of food secured households (14.52 yrs) is significantly higher ($t = 2.61$; $p \leq 0.05$) than that of the food insecure (12.96 yrs) households (Table 4).

The distribution of households income showed that more proportion (83.7%) of the food insecure households earned between N0.00 to N40,000; about 14.3% earned between N41,000 to N80,000; and, only 2% earned above N80,000. In contrast, 36.6% of the food secured household head earned between N0.00 to N40,000; 43.5% earned between N41,000 to N80,000; and, 19.8% earned above N80,000. Indeed, t- test of difference attest to the fact that a significant difference ($t = 8.07$; $p \leq 0.05$) exists between the mean income of food secured (N 59,955.00) and that of food insecure (N 21,095.00) households (Table 4).

Analysis of occupation of respondents showed that majority (81.2%) of the food secured households are civil servants, 9.9% are traders, 4.9% are farmers while other occupation such as hairdressing, artisan etc constitute 3.9% of the group. In the food insecure group, 44.8% are civil servants, 20.4% are traders, 26.5% are farmers while 8.2% represents other occupations. Chi-square test of difference further indicates that the distribution of occupation among the food secured household is significantly different ($\chi^2 = 59.68$; $p \leq 0.05$) from that of food insecure households (Table 5).

The result on household size revealed that households with five to eight members and nine to twelve members form a greater propor-

tions (75.3% and 77.5%) of food secured and food insecure households respectively. Also, 18.8% and 5.9% of food secured households had 1-4 members and more than thirteen people in their households respectively. This is in contrast to 16.3% and 6.1% of the food insecure household with 1-4 members and greater than 13 people as members of the household respectively. Mean size of household of food secured group (7.78 members) was significantly greater ($t = 1.67$; $p \leq 0.10$) than that of food insecure (6.90 members) households (Table 4).

The results on the quantity of food consumed (in kilogramme) shows that, the food secured group had 4.9% of its total consuming ≤ 50 kg of food, 38.6% consume ≥ 200 kg of food while the population consuming 50-100, 101-150kg, and 151-200kg had equal percentage of 18.8%. In the food insecure group, households consuming ≤ 50 kg, 50kg-100, and 101-150 constitute 12.2%, 20.4% and 34.7% respectively. However, those consuming 151-200kg and above 200kg were equal in terms of proportion (16.3%). The t-test of significance further indicates that the mean quantity of food consumed by food secured (188.71kg) was significantly higher ($t = 3.22$; $p \leq 0.05$) than that consumed by food insecure (137.12kg) households (Table 4).

Analysis of food expenditure reveals that majority (78.2%) of the food secured households spent 11-30 thousand naira. Furthermore, 7.9 percent of the food secured households spent 31-40 thousand naira; 13.95% spent greater than N41000.00 while no food secured household was found to spend ten thousand naira or less. The study further revealed that all the sampled food insecure households spent N20,000 or less on food. However, 61.2% spend N10,000 or less and 38.8% spent between 11 to 20 thousand naira on food. A strong degree of difference ($t = 12.83$; $p \leq 0.05$) was found between mean monthly expenditure on food of food secured (N 27, 914.00) and that of food insecure (N 8,915.30) households (Table 4).

Determinants of Food Security Status of Households

The stepwise binary logistic regression model was used to assess factors influencing food security. The result is presented in Table 6. The

performance of the model in terms of goodness of fit was good. The non-significance of Hosmer-Lemeshow chi statistics ($\chi^2 = 13.77$; $p > 0.05$) implies that the model described by the data is not significantly different from the standard model. Furthermore, about 70 and 91 percent of the food insecure and food secured households were correctly classified by the model respectively. This gave an overall correct classification of about 84%. The result furthermore shows that the coefficient of age (0.065), income (0.001), and household size (0.284) were positive and statistically significant at 5%. This implies that these variables influence the food security of respondents. The result further implies that an increase in age by a year raises the probability of an household being food secured by 0.01. Similarly, every increase in income and household size by a unit increase the probability of household being food secured by 0.001 and 0.059 respectively.

Table 6: Parameter estimates of logistic regression of factors influencing food security of households

Variable	B	S.E	Wald	Exp (B)	Prior prob (P_1)	P_2	Change in Prob. ($P_2 - P_1$)
Age	0.065	0.021	9.457	1.067*	0.67	0.684	0.014
Income	0.000	0.000	13.683	1.000*	0.67	0.669	0.001
Household size	0.284	0.090	9.937	1.329*	0.67	0.729	0.059
Constant	-6.500	1.516	18.384	0.002	0.67	0.003	-0.667

Hosmer and Lemeshow Chi square = 13.77; $p > 0.05$

Source: Field survey, 2009

*significant at 5%

CONCLUSION

Based on the study, the following conclusions have been drawn: a good percentage (32.7%) of urban households are food insecure as average monthly food expenditure of the households stood at N21,748.00 per month. The result indicated that more of the food secured households heads were males and their mean age, education, income, food expenditure and quantity of food consumed were significantly higher ($2.61 \leq t \leq 12.83$ at $p \leq 0.05$) than those of food insecure households. However, no significant difference was found between the gender characteristics and household size of the food secured and the food insecure households. However, the result of inferential analysis indicated that the probability of a household being food

secure is positively determined by age and income of the household head as well as the size of the household.

RECOMMENDATIONS

Based on the study, the following recommendation was made:

There is need to enhance income of households through education, self empowerment, payment of salaries and wages compatible to the efforts of working class in the household and economic conditions in the study area.

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