

EFFECTS OF CHANGES IN FOOD PRICES ON FOOD SECURITY AND NUTRITIONAL STATUS AMONG HOUSEHOLDS IN RURAL AND URBAN COMMUNITIES OF OGUN AND OYO STATES, NIGERIA

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ABSTRACT

The study assessed changes in food prices, food security and nutritional status of households in rural and urban communities in Southwest Nigeria. Data for this study were obtained through the aid of a structured questionnaire. A multistage sampling procedure was employed to select 320 households from Ogun and Oyo States of Southwest Nigeria. Data were analysed using descriptive and inferential statistics. Results revealed that Ogun State had a mean age of 45.6 while Oyo State had a mean age of 43.5. Cassava flour (60.9%) and yam tuber (59.9%) witnessed the highest price percentage increase in RA and UA of Ogun State. In Oyo State, yam tuber witnessed the highest price percentage increase in both RA (41.3%) and UA (66.4%) of Oyo State. Furthermore, results revealed that 22.5% were food secure in RA of Ogun State, while only 15% were food secure in RA of Oyo State. On the other hand, 76.3% were food secure in UA of Ogun State compared to 71.3% in UA of Oyo State. Anthropometric result revealed that 82.6% of the respondents in the RAs of Ogun State had normal weight compared to 79.3% in the RA of Oyo State; as well as 96.1% and 93.1% in UA of Ogun and Oyo States respectively. In conclusion, variation exists in the percentage of households affected by increase in the prices of food items between rural and urban communities and across Oyo and Ogun States. More households are food secure in the urban with higher normal weight compared to rural communities. In order to improve food security and nutritional status in UAs and RAs, food distribution channel should be well integrated to reduce food prices.

Keywords: Food prices, Food security, Nutritional status.

INTRODUCTION

Food prices are a primary determinant of consumption patterns, and high food prices may have important negative effects on nutritional status and health, especially among poor people (Rosemary *et al.*, 2013). Olanike *et al.* (2007) revealed that prices of food such as millet, maize, and sorghum have increased by about 100 to 200% since 2007, and, consequently, led to an increase in malnutrition, poverty, and threats to peace and stability in many countries. High food prices has made most households food insecure and vulnerable (Brinkman *et al.*, 2009).

According to Brinkman (2009), the population groups most vulnerable to high food prices are those who spend a large share of their income on food, buy more food than they sell (net buyers), and have few coping strategies at their disposal. These groups include the urban poor, rural landless, pastoralists, and many small-scale farmers.

Rising food prices can have a major impact on food and nutrition security as these push the most vulnerable households further into poverty and weaken their ability to access adequate food (Gustafson, 2013). Food security is a situation in which all people, *at all times*, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and

food preferences for an active and healthy life (FAO, 2002). This includes having foods available that are nutritionally adequate, safe, acceptable, and obtained without resorting to emergency food supplies, scavenging, stealing, or similar coping strategies (Fred *et al.*, 2012). Hyacinth and Kwabena (2015) noted that an individual or household is food secure if only such entity is able to acquire and consume in a sustainable manner nutritionally adequate, safe and preferred food through socially acceptable means to guarantee wellbeing.

While food prices have increased drastically, households' income has not increased proportionately, thereby depriving household of their savings, negatively affecting income, nutrition and health of poor households. Households therefore find it difficult to provide their basic household requirements in terms of food, nutrition and adequate health care. In view of the above, it was imperative to embark on a study that examines the changes in food prices, as well as its effects on households' food security and nutritional status. The study will reveal the dichotomy between rural and urban households with respect to food and nutritional security. The study therefore has the following specific objectives:

1. to examine the variation in prices of food across rural and urban areas from 2012-2017;
2. to determine households' access and source of information about food prices;
3. to determine the food security and nutritional status among rural and urban households;
4. to determine the effects of changes in food prices on household food security and nutritional status.

METHODOLOGY

The study was carried out in South-Western part of Nigeria. A multistage sampling procedure was employed to select the households in the study area. The first stage was the random selection of Ogun and Oyo states out of the six states in the southwest. The states were further classified based on their agricultural zones. The second stage was the random selection of one block from the agricultural zones in each of the states. Three cells (one rural and two urban) were purposively selected from each zone based on conditions such as population, proximity to major roads, level of infrastructural facilities classifying them as rural and urban areas. Equal proportion of ten rural households and twenty urban households were conveniently selected across board from each cells, a total of one hundred and sixty households were interviewed per state; this gives a total of three hundred and twenty households which was used for the study.

Data were obtained through the aid of a well-structured questionnaire. The independent variables were: households' socioeconomic characteristics, food prices, access to information about market food prices, and were measured using descriptive statistics (percentages, mean and standard deviation). The dependent variables were food security status and nutritional status. Food security status was measured using the United State Department of Agriculture's food security approach (USDA, 2016). Data were collected using the 18-item household food security questions. It was based on 30 days recall, asking the respondents whether the condition or behaviour occurred at any time during the previous 30 days. The categorization of households was on the basis of the score on the food security scale, while the household's scale score were determined by its overall pattern of response to the set of indicator questions.

Nutritional status was measured using anthropometric measures, because of its distinct classification of nutritional status as underweight, normal, overweight or obese. Body Mass Index, which is a measurement of person's weight-to-height ratio, was used for the purpose of this study because it accesses height and weight directly. The

targets were the mother or anyone in charge of purchase, preparation of meals and in charge of dispensing the food budget for the household. Ordered logit regression model was used to analyse the effect of food prices on food security and nutritional status. The selection of the model was because the dependent variable (food security and nutritional status) are both categorical and ordinal. In line with Obayelu (2012), a significant positive coefficient indicates that a one unit increase in the independent variable increases the likelihood that household will be food or nutritional secure. On the other hand, a significant negative coefficient indicates that a one unit increase in the independent variable increases the likelihood that household will be food or nutritional insecure.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The result in Table 1 shows that 51.3 percent were mothers in rural Ogun state and 56.3 percent in the urban area of Ogun state. Similarly, 65.0 percent were mothers in rural area of Oyo state compared to 72.5 percent in the urban area. This observation further indicates that the respondents covered were predominantly female in Ogun state (58.8 percent in rural and 72.8 percent in urban) and Oyo state (63.8 percent in rural and 78.8 percent in urban) and traditionally in charge of purchase and preparation of meals and involvement in domestic activities. This finding is in agreement with Abdullah *et al.* (2017) who opined that information on decision regarding household activities especially domestic activities are related to women.

Based on marital status, 81.3 percent were married in rural Ogun state but only 72.5 percent were married in the urban area of the state. Similarly, 66.3 percent were married in rural Oyo state, compared to 70.0 percent in the urban area. Marriage plays an important role in food and nutrition security. Thus, being married, enhances family income and wealth (Zagorsky, 2005), which will have a positive effect on food intake, thereby promoting food and nutrition security.

With regards to household size, rural areas had higher household sizes compared to urban areas, as shown in Table 1. Ogun State had a mean household size of 5.8 compared to 5.1 in Oyo State. Study of Webb *et al.*, 2006 showed that size of households has effects on food availability and food security and eventually the nutritional status of household members the higher the household size, the greater the dependence on the available food.

About 16.3 percent had formal education in rural areas of Ogun state, while 73.8 percent had formal education in the urban areas. On the other hand, only 11.3 percent had formal education in rural areas of Oyo state compared to 71.3 percent in

the urban areas of the state. The findings indicate that level of education attained is higher in urban than in rural area. This is expected based on educational differences between urban and rural areas in Nigeria. In addition, high level of education in urban areas may be explained by the

high level of availability of educational institutions. Education may help the household to select their food items which may have significant effect on their health status and maintenance of proper eating habit.

Table 1: Distribution of Households Based on Socio/Demographic characteristics N=320

	Ogun			\bar{x}	SD	Oyo			\bar{x}	SD
	Rural (%)	Urban (%)	Total (%)			Rural (%)	Urban (%)	Total (%)		
Status in the household										
Father	38.8	25.0	31.9			23.8	17.5	20.6		
Mother	51.3	56.3	53.8			65.0	72.5	68.8		
Child	1.3	5.0	3.1			3.8	5.0	4.4		
Others	8.8	13.8	11.3			7.5	5.0	6.2		
Sex										
Male	41.3	27.5	34.4			36.1	21.2	28.7		
Female	58.8	72.5	65.6			63.8	78.8	71.3		
Age										
<=30	6.3	10.0	18.1			11.3	16.3	13.8		
31-40	27.5	25.0	26.3			30.0	31.2	30.6		
41-50	18.8	25.0	21.9			21.2	33.7	27.5		
51+	47.5	40.0	43.8	45.6	10.2	27.5	18.8	28.1	43.5	9.8
Marital status										
Single	3.8	8.8	6.3			10.0	11.2	10.6		
Married	81.3	72.5	76.9			66.3	70.0	68.1		
Divorced	1.3	0	0.6			5.0	6.3	5.6		
Widowed	13.8	18.8	16.3			18.7	12.5	15.7		
Household size										
<=3	7.5	16.3	11.9			6.3	20.0	13.1		
4-5	40.0	58.8	49.4			35.0	48.8	41.9		
6+	52.5	25.0	38.8	5.8	1.9	58.7	31.2	45.0	5.1	1.5
Level of education										
Tertiary education	16.3	73.8	45.0			11.3	71.3	41.3		
Secondary education	37.5	16.3	26.9			40.0	16.3	38.1		
Primary education	37.5	6.3	21.9			30.0	8.7	19.4		
No formal education	8.8	3.8	6.3			18.7	3.7	11.2		

Results on Table 1a indicate that 27.5 percent had access to credit facility in rural area of Ogun State compared to 67.5 percent in the urban areas. Similarly, only 27.5 percent in rural area of Oyo State had access to credit compared to 76.3 percent in the urban areas. The observation that high percentage of respondents living in urban area had access to credit facilities compared with respondents in rural area could indicate that various financial institutions such as banks and cooperative societies giving loans to business owners are more in urban areas than rural. These credits facilities could help both small scale and large scale business owners to boost their non-farm activities which indirectly influence the nutritional status of the business owners and reduce food scarcity as well in the communities. Table 1a further shows that only 31.3 percent in rural area of Ogun State belong to cooperative society and 50.0 percent in the urban area do belong. On the other hand, 41.3 percent in

rural areas of Oyo State belong to cooperative societies and 61.3 in the urban areas do belong. Non-membership of cooperative can also limit their access to productive resources which can lead to poor agricultural practices or inadequate nutrition. Membership of cooperative societies or other associations on the other hand, may have influence on food information and other services that can improve their livelihoods.

Results of this study indicate that respondents in the rural area were involved more in agriculture as expected. This implies that a large percentage of farmers involved in food production and agriculture in general are in rural areas, although, rate of urban agriculture is fast increasing. Personal observation during the field work shows that those involved in agriculture in urban areas practiced subsistence agriculture through the home garden.

Table 1a: Distribution of Households Based on Socio/Demographic characteristics N=320

	Ogun			Oyo		
	Rural (%)	Urban (%)	Total (%)	Rural (%)	Urban (%)	Total (%)
Access to credit						
Yes	27.5	67.5	47.5	27.5	76.3	51.9
No	72.5	32.5	52.5	72.5	23.7	24.1
Member of cooperative						
Yes	31.3	50.0	40.6	41.3	61.3	51.3
No	68.8	50.0	59.4	58.7	38.7	48.7
Source of food						
Purchase	10.0	85.0	47.5	13.7	76.3	45.0
Own production	0	0	0	0	0	0
Both	90.0	15.0	52.5	86.3	23.7	23.7
Agricultural activities						
Home garden	6.3	11.3	8.8	7.5	15.0	11.3
Poultry	0	11.3	5.6	5.0	13.7	9.4
Livestock production	0	3.8	1.9	3.7	1.3	2.5
Crop production	58.8	2.5	30.6	51.3	5.0	28.1
Crop and animal	33.8	3.8	18.8	32.5	6.3	19.3
None	1.3	67.5	34.4	0	58.7	29.4

Table 2 reveals the mean change in food prices between 2014 and 2017. The study revealed that all the food items considered for this study experienced varying percentage increase over the years. In Ogun State, cassava flour and garri witnessed the largest percentage increase over the years in the rural areas with 60.9% and yam tuber with 59.9% in the urban areas. On the other hand, local rice witnessed a percentage decrease of 1.1% in rural area of Oyo, with yam tuber witnessing the highest percentage increase in both rural and urban areas (41.3% and 66.4% respectively). It was

observed that urban areas witnessed the highest increase in food prices than rural areas, with Ogun State witnessing higher food prices than Oyo state. A higher price of food items in urban areas compared to rural areas could be due to series of interventions (handling, processing, packaging, transport, storing, marketing etc.) that takes place at the rural area before getting to the urban areas (Armar-Klesu, 2000) and also low percentage of households in urban areas were involved in agricultural activities.

Table 2: Changes in prices (₦) agricultural food produce

Agricultural farm produce	Ogun state					
	<i>Rural</i> Unit price in 2012	Present unit price	Percent change	<i>Urban</i> Unit price in 2012	Present unit price	Percent change
Yam tuber	363.44	893.69	59.3	424.36	1058.34	59.9
Cassava flour	221	565.80	60.9	242.91	602.44	59.7
Garri	203.54	520.08	60.9	230.29	560.29	58.9
Yam flour	330.81	769.10	57.0	412.94	805.74	48.8
Local rice	953.34	1431.85	33.4	1018.7	1549.21	34.2
Cowpea (brown)	382.56	926.67	58.7	429.01	1018.11	57.9
Cowpea (white)	388.13	864.14	55.1	400.33	966.77	58.6
Agricultural farm produce	Oyo state					
	<i>Rural</i> Unit price in 2012	Present unit price	Percent change	<i>Urban</i> Unit price in 2012	Present unit price	Percent change
Yam tuber	62.31	106.17	41.3	68.37	113.80	66.4
Cassava flour	234.31	271.39	13.7	219.67	265.61	17.3
Garri	169.97	186.22	8.8	168.13	179.88	6.5
Yam flour	380.06	402.56	5.8	393.16	485.62	19.0
Local rice	255.30	252.44	-1.1	249.67	261.62	4.6
Cowpea (brown)	287.18	373.65	23.1	299.37	367.70	18.6
Cowpea (white)	223.41	280.00	20.2	227.59	271.60	16.2

Awareness and sources of information about food prices

The awareness and sources of information about food prices are shown in Table 3. All the respondents indicated that they obtain the prices of food items in the market. Local sources (that is, through friends and family) are the major source of information (100%). Respondents reported that they also get information about market days from

radio programs such as Sajenwogba on Paramount FM, Oju-oja on Sweet FM in Ogun state and Ojo-oja on Fresh FM in Oyo State. Results of the study indicating high level of awareness of respondents about food most especially via local sources confirmed that information is mostly disseminated in the rural area mainly by friends and family members through local markets.

Table 3: Awareness and Sources of Information about Food Prices

	Ogun		Oyo	
	Rural (%)	Urban (%)	Rural (%)	Urban (%)
Awareness about food prices				
Yes	100.0	100.0	100.0	100.0
No	0	0	0	0
Sources of information				
Tv	0.5	13.5	0	4.7
Radio	6.9	12.4	8.3	20.9
Newspaper	0	9.6	0	0
Local sources	38.8	31.9	41.0	37.2
Conferences	15.0	1.6	9.7	0
Market	38.8	31.1	41.0	37.2
N	206	251	195	215

Food security status

The description of the food security status of the households is shown in Table 4. The food security status was classified into high food security, marginal food security, low food security and very low food security based on household responses to the 18-items of the USDA food security module. Results revealed that 22.5 percent of HH in rural area of OgunState were highly food secured compared to 15.0 percent in rural area of Oyo state; and 76.3 percent HH in urban areas of OgunState compared to 71.3 percent in Oyo state.

This implies that urban areas were more food secured than rural areas and this is contrary to expectations that people in rural areas whose predominant occupation is farming, with lower food prices are always food secured. This might be as a result of high quantity of food consumed by the rural area households rather than the quality. Rural farmers take the best of their produce to urban centres in order to have more money since they attract higher financial value, thus neglecting the food quality.

Table 4: Households' Food Security Status

	Ogun			Oyo			Pooled		
	Rural (%)	Urban (%)	Total (%)	Rural (%)	Urban (%)	Total (%)	Rural (%)	Urban (%)	Total (%)
Food security status									
High food security	22.5	76.3	49.4	15	71.3	86.3	18.7	73.8	46.2
Marginal food security	26.3	18.8	22.5	22.5	16.3	38.8	24.4	17.5	20.9
Low food security	25.0	5.0	15.0	27.5	8.7	36.2	16.3	6.9	16.5
Very low food security	26.3	0.0	13.1	35	3.7	38.7	30.6	1.8	16.4

Nutritional status

The Body Mass Index of every member of the households that were 18 years and above were measured, as presented on Table 5. The Table shows that only 15.9 percent were underweight in rural areas of Ogun state compared to 17.9 percent in Oyo state; and 1.8 percent in urban area of Ogun state compared to 4.9 percent in Oyo state. This result supports the findings of Torlesse *et al.*, (2003) who opined that most undernourished

children live in rural areas. It also supports finding of Khoret *al.* (2003) who reported that the prevalence of stunting was high among children in poor rural areas. This result implies that nutritional status of households is dependent on change in price of food items in the market; as household consume less as price of food increases. This invariably determines the nutritional status of the households.

Table 5: Nutritional status of households

	Ogun state		Oyo state	
	Rural (%)	Urban (%)	Rural (%)	Urban (%)
Nutritional status				
Underweight	15.9	1.8	17.9	4.9
Normal	82.6	96.1	79.3	93.1
Overweight	1.5	1.4	2.8	2.0
Obese	0	0.7	0	0

Effects of changes in food prices on household food security status

The result of the ordered logit regression model in Table 6 shows that increase in prices of some common foods had a significant influence on the household food security status. It shows that a unit increases in price of rice will decrease the probability of household food security by 0.002, a unit increase in price of beans will reduce the probability of household to be food secured. Also,

a unit increase in price of yam tuber will reduce the probability of household to be food secured by 0.07. Also, a unit increase in price of yam flour will reduce the probability of household being food secured by 0.08. As prices of food increases, households tend to purchase and consume less of these food items, and this supports the law of demand that *the higher the price, the lower the quantity that will be demanded*.

Table 6: Results of marginal effects of food prices on household food security status

Variable	Marginal effect	S.E	Marginal effect	S.E	Marginal effect	S.E	Marginal effect	S.E
	Y ₀		Y ₁		Y ₂		Y ₃	
Geographical location	0.103	0.0390	0.268	0.0347	-0.323	0.0494	-0.0477	0.0103
Price of rice	-.002954	.00135	.00246	.00122	.000476	.00028	.0000227	.00002
Price of garri	.000999	.00244	-.000830	.00204	-.000161	.00039	-7.69e-06	.0000
Price of beans	-.0000921	.00008	.0000765	.00007	.0000149	.0000149	7.08e-07	.0000
Price of yam tuber	-.0154	.0842	.0466	.0711	.00905	.0135	.000431	.0007
Price cassava flour	-.0749	.0368	.0622	.0327	.0121	.0076	.000576	.00051
Price of yam flour	-.0705	.0452	.0670	.0399	.0130	.00866	.0006204	.00058

Effects of Changes in Food Prices on Household Nutritional Status

The result of the marginal effect in Table 7 shows that a unit increase in price of rice will decrease the probability of household nutritional status by 0.008. A unit increase in cassava flour will reduce the probability of household nutritional

status by 0.002. Also, unit increase in yam tuber will reduce the probability of household nutritional status by 0.04. A unit change in the price of yam flour will decrease the probability of household nutritional status by 0.03. A unit increase in cowpea (brown) will reduce the probability of household nutritional status by 0.02.

Table 7: Results of Marginal Effects of Food Prices on Household Nutritional Status

Variable	Marginal effect Y ₀	S.E	Marginal effect Y ₁	S.E	Marginal effect Y ₂	S.E	Marginal effect Y ₃	S.E
	Geographical location	-.0218	.00131	-.00379	.0078	.00423	.0185	.00318
Price of rice	.000361	.00580	.000542	.00870	-.0000406	-.000651	-.00502	-.00806
Price of garri	-.00113	.120	.666	.152	.129	.0592	.00616	.00452
Price of beans	3.68e-07	.00002	-2.24e-07	.00001	-4.91e-08	.00000	-9.49e-08	.00001
Price of yam tuber	-.0438	.0219	-.656	-.0328	.00491	.00245	.0607	.0304
Price of cassava flour	-.00267	.00147	.00922	.0243	.0803	.0262	-.00026	.00072
Price of yam flour	-.0261	.00752	-.233	.0504	.208	.0445	.0515	.0147
Price of cowpea (brown)	0.0169	.0159	-.00287	.00211	.00238	.00305	.00463	-0.00495
Price of cowpea (white)	.197	.0248	-.0119	.0169	-.00263	.00407	-.00508	.00697

CONCLUSION AND RECOMMENDATION

Results of this study revealed that prices of food stuffs across rural and urban areas showed significant variations over time, with a higher increase in urban areas. Urban food distribution systems (from harvesting until the moment the produce reaches the urban consumer's table) contribute to the higher prices of food items in the urban areas. Households' major source of information on food prices was local sources (that is, through friends and family). The urban areas

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