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Seasonal Assessment of Household Food Access in Ibadan Metropolis, Nigeria

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Abstract

The study was carried out in Ibadan metropolis of South Western Nigeria to determine average household food access and diversity. Structured questionnaire was used to obtain responses from 180 households interviewed both during harvest and hunger periods. Data was analysed using Household Food Insecurity Access Scale (HFIAS) and Z-test. It appeared that average households tended to have significantly better food access during the harvest than hunger period. During the harvest period, at 95 % confidence interval, the HFIAS score ranged between 5.23 and 7.01 i.e. an average household had adequate food access; however during the hunger period, at 95 % confidence interval, a higher HFIAS score that ranged between 9.75 and 11.77 was observed i.e. in the hunger period, an average household still maintained an adequate food access though poorer compared to the previous season. Combined, the households in Ibadan metropolis had a higher mean score for dietary diversity in the harvest period than in the hunger period. In the harvest period with the combined mean score of food groups consumed during the harvest period being 3.08 i.e. households in Ibadan metropolis consumed an average of 3 food groups during the harvest period decreasing to an average score of 2.54 i.e. households in the settlement consumed lesser food groups in the hunger period. The difference in the mean score using Z-test, for food groups between the periods was significant at $p < 0.01$. The findings suggest that food access varied significantly with season in metropolises howbeit to a lesser degree in a metropolis closer to agricultural markets. Urban agriculture is therefore recommended.

Keywords: Food access, dietary, hunger, harvest, food insecurity

INTRODUCTION

In spite of the dramatic progress made in the various fields of nutrition in recent years, 790 million people in the developing world and 34 million people in the developed countries are still underfed with less than adequate access to food of the right quality and quantity (Oldewage-Theron et al., 2006).

Hunger, a manifestation of poor food access among households in the world over, has become a spectre hanging menacingly over a significant portion of the world population. In fact, by aggregation, about 1 billion people in the world over are said to be hungry i.e. 1 in 7 persons in the world (FAO, 2010). This menace of hunger is quite astonishing. Though claims are made to leaps in technological and scientific breakthroughs, yet it seems very little is translated to placing food on tables of the citizens of the world. FAO (2008) actually revealed that 36 countries are in food crisis globally, 20 of which are in Africa. In consonance with this is the finding of the World Health Organisation (2009) which posited that 21 of the most nutritionally vulnerable countries are in the WHO African Region.

In Africa, as in any other continent, the foods and diet of the various strata of the urban population deserve more attention than they are being given not only for their implication for agricultural policy purposes but also as a means for

proactive actions towards ensuring better nutrition for the urbanites as well as securing a better food access for urban households. This becomes particularly more so when the effect of urbanisation is explored in the continent. Exploring household food access within the dynamics of a rapidly urbanising Africa, studying within the microcosm of a metropolis, would shed more light on the implications on food access. The interesting aspect of this is that urbanisation, though a primary driver of the economy (Thomas, 2008), has its negative effect on the food and diet of urbanites in terms of its implication on the demand for food. When demand outstrips supply (as is expected to be the case in metropolises where there is rapid urbanisation), economic reasoning suggests that prices of commodity(s), food in this case, would skyrocket, thus taking food away from the reach of those not economically able to contend for it. Coupled with the volatile world food prices that began in 2006 (Billingham, 2007), household access to food in urban areas appears to be seriously threatened. This assertion seem to be the exact sentiments of Badmus and Yekini (2011) who pointed out that a steady increase in the number of people living in and around cities in Nigeria has implications for food security since the costs of supplying food from rural to urban areas are also rising.

Given the implication of urban living and its implication on the food needs of urbanites even in a continent like Africa, specifically in our case, Ibadan metropolis, Nigeria, a study of this nature becomes necessary. In order to do justice to a study of this nature, it is important to study urban households food access bearing in mind the issue of volatility of world food prices peaking and dropping with seasons as this has been identified as a major limitation to food access in Nigeria (NPC, 2005; Billingham, 2007).

Therefore this study aims to

- i. Determine the average level of households' food access in Ibadan metropolis comparing two time periods.
- ii. Determine the average level of households' food diversity in Ibadan metropolis comparing two time periods.

THEORETICAL AND CONCEPTUAL FRAMEWORK

Quantitative approach to measuring food access

The quantitative approach which though methodologically sophisticated and empirically grounded as a measurement scale poorly reflects an individuals' true deprivation. This is because such scales use income-based measures of food insecurity at the household level (Webb *et al.*, 2002) which may not truly reflect food security or insecurity status especially for households producing own food. Usually, this income-based measure of food security at the household level involves manipulation of data of the household income and determining relationships between income-based variables and certain household characteristics (Coates *et al.*, 2003). A typical example of such empirical approach is found in the work of Omonona and Agoi (2007) in which food insecurity situation among urban households in Nigeria was measured. Omonona and Agoi (2007) developed an index for food insecurity as the ratio of per capita food expenditure for a household to the mean per capita food expenditure of all households. An index greater than or equal to one was interpreted as being food secure while one with an index less than one was interpreted as being food insecure. Though empirically appealing, this approach could be limited in its usefulness if one considers households whose food consumption consists of home grown or produced food, or those households who enjoy food aids or source for food in socially acceptable ways but which do not necessary involve expenditure for food acquisition. A more direct approach which would address household food experience arguably needs be evolved.

Qualitative approach to measuring food access

This is a direct approach which elicits responses on experiences of food insecurity through certain tools. Validation studies of this approach to measuring food access more directly, by constructing measures based on households' experience of the problem, have demonstrated the feasibility and usefulness of the approach in very different, developing country contexts (Webb *et al.*, 2002, Coates *et al.*, 2003, Frongillo and Nanama, 2003). Strong correlation existed between these measures and common indicators of poverty and food consumption as well as with indicators currently used by Private Voluntary Organizations (PVOs) to monitor their food security-related activities.

The Food and Agriculture Organization of the United Nations (FAO, 2008) carried out a project in Central Mozambique, funded by the Belgian Survival Fund, to improve food security and nutrition in communities affected by HIV/AIDS. A baseline survey of 4 districts was conducted in December 2006 during the pre-harvest period, one of the last months before the harvest when food stores are normally lowest. A follow-up survey was conducted in two of the original districts, Chibabava and Gondola, in July 2007, during the post harvest period when food stores are normally good. The purpose of the paper was to compare access to food, and thus food security of households in the two periods, using the

Household Food Insecurity Access Scale (HFIAS) and the Household Dietary Diversity Score (HDDS). Both are simple tools that provide information on household's diets in relation to their ability to access food.

The HFIAS tool is composed of nine questions that asked about modifications households make in their diet or food consumption patterns when having limited resources to acquire food. The tool elicits whether in the previous month households experienced anxiety about the household food supply, and if they reduced the quality or quantity of food consumed. The HDDS is a measure of the total number of different food groups eaten in the previous 24 hours. This tool reflects both food availability and in particular food access, on the premise that households consume a variety of foods when they have the means to acquire them.

The HFIAS and HDDS are simple to use and analyze and are appropriate for monitoring of populations to assess changes in food access and dietary consumption, to plan interventions for development or following shocks, and for monitoring and evaluation of food security and nutrition policies and programmes.

RESEARCH AREA

The research area is Ibadan, a city in south western Nigeria, capital of Oyo State, located about 110 km (about 70 mi) northeast of Lagos. Ibadan is a major transit point between the coast and areas to the north. The population of Ibadan metropolis area increased at a growth rate of 3.9 % per annum from 1952 to 1963 when the population rose to 1,258,625, then to 1,829,300 in 1999 at a growth rate of 1.65 % from 1963 (National Population Commission, 2007). The population growth is said to have shifted gradually to the lesser city with a growth rate of 4.7 % per annum between 1991 and 2006. Ibadan is the centre of trade for a farming area producing cacao, palm oil, yams, cassava, corn, and fruit. Ibadan metropolis is made up of 11LGAs consisting of five urban local governments in the city, six semi-urban local government areas in the less city. The five urban local governments are Ibadan North, Ibadan North East, Ibadan North West, Ibadan South East and Ibadan South West while the six semi-urban local governments are Akinyele, Egbeda, Ido, Lagelu, Ona-Ara and Oluyole. Ibadan is the capital city of Oyo State and the third largest metropolitan area in Nigeria, after Lagos and Kano, with a population of 1,338,659 according to the 2006 census. Ibadan is also the largest metropolitan geographical area. At Nigerian independence, Ibadan was the largest and most populous city in the country and the third in Africa after Cairo and Johannesburg. Until 1970, Ibadan was the largest city in sub-Saharan Africa. (Areola, 1994).

RESEARCH METHODOLOGY

Sampling Procedure

A multi-stage sampling technique was used for the research. Firstly, using the classification criteria adopted from Okuneye *et al.* (2007), Ayeni (1982), NISER (1988), Abumere (1994) and Asiyabola and Filani (2008), the metropolis was classified as relatively High Income and Low Population density settlements, Relatively Middle Income and Medium Population density settlements and Relatively Low Income and High Population density settlements. A total of 180 randomly selected respondents were covered and these were drawn from three purposively selected Local Government Areas (LGAs) representing relatively high-income and low traffic, relatively middle-income and traffic and relatively low-income, high traffic sectors of the cities. Ibadan South East LGA (Mapo settlement) was selected to represent Low Income High density settlements. Ibadan South West LGA (Oke-Ado settlement) was selected to represent Middle Income and Medium Population density settlements, while Ibadan North LGA (Bodija settlement) was selected to represent high Income and Low Population density settlements. In each LGA, the street listings of the 2006 National Census were used to draw a random list of six streets after which systematic random sampling was used to select 10 houses (first house was selected by the use of random numbers, subsequently, every fourth house was selected) per street from which a household was subsequently selected. From this point, household food consumption and experiences of hunger and access based on memory recall was conducted. The selected households were interviewed during the post harvest period when food stores are normally good, between September and October of 2010. This was based on the predictions of the Famine Early Warning Systems Network (2010) of harvest season for the southern part of Nigeria where the metropolis are located. A repeat survey was carried out on the same set of households during the hunger period, between December and January of 2011. This was done in order to be able to compare the prevalence or otherwise of food access among households in both settlements over a period of time

The research instrument was a combination of structured questionnaires designed to elicit responses on household characteristics, socio-economic as well as economic characteristics and HFIAS tool.

Analytical Procedure

This study involved analysing the data obtained using Household Food Insecurity Scores (HFIAS), Household Dietary Diversity Scores (HDDS), means, Z-test and confidence intervals.

The mean HFIAS score from the HFIAS scale and the mean HDDS score from HDDS scale were used for the purpose of analysis. The HFIAS module contains 9 questions with each having a maximum score of 3 for frequency of experience of various domains and sub-domains of food hunger experience. A maximum score of 27 is what is achievable. The tool is composed of nine questions that ask about modifications households made in their diet or food consumption patterns due to limited resources to acquire food. Three themes are covered by the tool: 1) experiencing anxiety and uncertainty about the household food supply; 2) altering quality of the diet; and 3) reducing quantity of food consumed. The respondent is ideally the person in charge of food preparation or the head of household who answers on behalf of all household members. Based on the response to the nine questions and frequency of occurrence over the past 30 days, households are assigned a score that ranges from 0 to 27.

A higher HFIAS score is indicative of poorer access to food and greater household food insecurity. Three degrees of severity of food insecurity was developed adopting the approach of FAO (2008) most food secure = scores of 0-11; medium food secure/moderately food insecure = 12-16; and least food secure/severely food insecure = 17 or more.

The HDDS measured the total number of different food groups eaten in the previous 24 hours by any household member at home. The tool aggregated all the food to 8 for the purpose of analysis. The categories for analysis of the metropolis in the first and second round: low DD = 3 or fewer food groups; medium = 4; and high = 5 or more. Ranges for the mean HFIAS and HDDS were arrived at 95 % confidence interval.

RESULT AND DISCUSSION

Table 1 shows the level of food access among households in Ibadan metropolis. Combining settlements, it showed that all settlements had better food access in the harvest period (September and October, 2010) than in the hunger period (December 2010 and January, 2011) as indicated by the lower mean score obtained from the HFIAS tool. Again, this underscores the place of seasonal variation in the food access of households in metropolises. Average households therefore tended to have significantly better food access during the harvest than hunger period. However, the pattern of food access in Ibadan metropolis was markedly different compared to what was observed in Lagos metropolis according to the finding of Odusina (2012) because in Ibadan metropolis quite unlike in Lagos metropolis, adequate food access was still maintained for an average household despite the downturn or change in season. During the harvest period, at 95 % confidence interval, the HFIAS score ranged between 5.23 and 7.01 which mean an average household had adequate food access; however during the hunger period, at 95 % confidence interval, the HFIAS score ranged between 9.75 and 11.77 which means that combined, in the hunger period, an average household had an adequate food access. Households in the high income Bodija had adequate food access in both the harvest and hunger period as witnessed by the average HFIAS score (3.22 and 7.24 respectively). However, for the low income Mapo and medium income Oke-Ado, the households had poorer access in the hunger period than in the harvest period (13.85 from 8.80, and 10.85 from 6.02 respectively). There was a significant difference in the mean level of food access between the low income Mapo and medium income Oke-Ado ($p < 0.01$), using Z-test, with the medium income Oke-Ado having better access in both periods than the low income Mapo. Between high income Bodija and both low income Mapo and medium income Oke-Ado, there was a statistically significant difference in mean food access ($p < 0.01$), with the high income Bodija settlement having better food access. Again, this displays a similar trend with what was observed in Lagos metropolis (Odusina, 2012), where higher income settlements, on the average had better food access in both periods when compared to lower income settlements.

Table 2 shows household dietary diversity at 2 time periods by settlements in Ibadan metropolis. Combined, the households in Ibadan metropolis had a higher mean score for dietary diversity in the harvest period than in the hunger period. In the harvest period the combined mean score of food groups consumed during the harvest period was 3.08 i.e. households in Ibadan metropolis consumed an average of 3 food groups during the harvest period. This figure decreased to an average score of 2.54 i.e. households in the settlement consumed lesser food groups in the hunger period. The difference in the mean score using Z-test, for food groups between the periods was significant at $p < 0.01$ level. In the low income Mapo settlement the difference between mean score of food groups consumed during the harvest period and the hunger period was slight and insignificant. At the two periods, the average food groups consumed were slightly less than two but ranged between 1.8 and 2.13 during the harvest period to between 1.46 and 1.76 in the hunger period at 95 % confidence interval. The same pattern of decrease in mean score of food group consumed was observed in the medium income Oke-Ado and high income Bodija settlements though slight but with statistically significant differences at 0.01 level (from about 3 food groups to 2 food groups for medium Oke-Ado households, and about 4 food groups to 3 food groups for high income Bodija households).

Table 1. Comparing levels of food access using HFIAS scores by settlements at two time periods for Ibadan metropolis

Combined settlements	Mean HFIAS \pm standard error of the mean	95 % confidence interval
September – October 2010(Harvest)	6.12 \pm 0.45	5.23 -7.01
December – January 2011(Hunger)	10.76 \pm 0.51	9.75 - 11.77
Low Income (Mapo) survey 1 ^{a,b}	8.80 \pm 0.76	7.29 - 10.31
Low Income (Mapo) survey 2 ^{c,d,e}	13.85 \pm 0.76	12.33 - 15.37
Medium Income (Oke-Ado) survey 1 ^{f,g}	6.02 \pm 0.87	4.27 - 7.78
Medium Income (Oke-Ado) survey 2 ^h	10.85 \pm 0.92	9.00 - 12.70
High Income (Bodija) survey 1 ⁱ	3.22 \pm 0.49	2.25 - 4.19
High Income (Bodija) survey 2	7.24 \pm 0.75	5.73 - 8.75

a. Z-stat = 4.243, significant difference in mean HFIAS between 2 time periods in Low Income Mapo Settlement Area ($p < 0.01$)

b. Z-stat = 2.869, significant difference in mean HFIAS between Low Income Mapo and Medium Income Oke Ado Area during harvest period ($p < 0.01$)

c. Z-stat = 5.623, significant difference in mean HFIAS between Low Income Mapo and High Income Bodija Area during harvest period ($p < 0.01$)

d. Z-stat = 2.597, significant difference in mean HFIAS between low income Mapo and Medium Income Oke Ado during hunger period ($p < 0.01$)

e. Z-stat = 3.601, significant difference in mean HFIAS between Low Income Mapo and High Income Bodija during hunger period ($p < 0.01$)

f. Z-stat = 2.741, significant difference in mean HFIAS between 2 time periods in medium income Oke Ado ($p < 0.01$)

g. Z-stat = 3.214, significant difference in mean HFIAS between Medium Income Oke Ado and High Income Bodija during harvest period ($p < 0.01$).

h. Z-stat = 2.639, significant difference in mean HFIAS between Medium Income Oke Ado and High Income Bodija Area during hunger period ($p < 0.01$)

i. Z-stat = 3.491, significant difference between HFIAS between 2 time periods in High Income Bodija ($p < 0.01$)

Source: Field Survey, 2011

Table 2. Comparing household dietary diversity (HDDS) by settlements at two time periods for Ibadan metropolis

Combined settlements	Mean HDDS \pm standard error of the mean	95 % confidence interval
September – October 2010(Harvest)	3.08 \pm 0.09	2.89 – 3.27
December – January 2011(Hunger)	2.54 \pm 0.08	2.37 – 2.70
Low Income (Mapo) survey 1	1.97 \pm 0.08	1.80 – 2.13
Low Income (Mapo) survey 2	1.62 \pm 0.07	1.46 – 1.76
Medium Income (Oke-Ado) survey 1 ^a	3.02 \pm 0.08	2.86 – 3.18
Medium Income (Oke-Ado) survey 2	2.60 \pm 0.09	2.42 - 2.79
High Income (Bodija) survey 1	4.37 \pm 0.09	4.17 – 4.57
High Income (Bodija) survey 2 ^b	3.50 \pm 0.11	3.28 – 3.72

Source: Field Survey, 2011

a. Z-stat = 2.864, significant difference in mean HDDS between Medium Income Oke Ado and High Income Bodija during the harvest period ($p < 0.01$)

b. Z-stat = 2.639, significant difference in mean HDDS between Medium Income Oke Ado and High Income Bodija during hunger period ($p < 0.01$)

CONCLUSION

- i. Harvest period food access was significantly better than hunger period food access for an average household in the metropolis.

- ii. Proximity of a metropolis to primary agricultural market was partly identified as a possible reason for better food access as was the case in Ibadan metropolis.
- iii. Seasonal nature of food commodities affects an average household access to food commodities.
- iv. Access to food in the right quantity among households in the metropolises did not guarantee access to food of the right quality as situations existed where average households in Ibadan metropolis had adequate food access in both harvest and hunger periods but when their dietary diversity was considered, they were ranked low.
- v. Households with better incomes have better dietary diversity than those with lower incomes.

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