

## Hunger in the midst of plenty: A survey of household food security among urban families in Lagos State, Nigeria

Alero Ann Roberts, James Olufemi Osadare, Victor Akpan Inem

Department of Community Health and Primary Care, Faculty of Clinical Sciences, College of Medicine University of Lagos, Nigeria

### Abstract

Research has documented that food security at national level does not translate to food security at household level. The study assessed the level of food security among urban households in Shomolu LGA, Lagos State. Using the 9-item Household Food Insecurity Access Scale (HFIAS) information was collected from 306 heads of households on adequacy of food availability and consumption. Data were analyzed using Epi info and presented as frequencies and percentages. Associations between variables were tested using Chi-square at a significance level of 0.05. Households were classified as food secure, food insecure without hunger and food insecure with hunger. Only 33.8% of households were food secure, 45.1% were food insecure without hunger and 21.1% were food insecure with hunger. Food secure households were statistically significantly associated with households where heads had secondary or higher education, women were married, spending <40% of household monthly income on food and living in their own homes ( $P=0.001$ ). Household food insecurity is found in urban communities and is positively associated with indicators of poverty.

### Introduction

Household food security is a subset of national food security, but research has documented that the security at a national level does not translate to security at the level of the household.<sup>1</sup> The concept of household food security refers to both the availability of, and accessibility to food that meets people's dietary needs and food preferences at the level of the household.<sup>2,3</sup>

Food security can be assessed on any scale from a single household to the global population. The World Food Summit defined food security as existing when all people at all times have access to sufficient,

safe and nutritious food to maintain a healthy and active life.<sup>4</sup> Despite advances being made in the West African sub region that has seen reductions from 24.2% (1990-92) to 9% (2014-16) there are still areas where the undernourishment prevalence rate is over 35%.<sup>5</sup> Households have been variously defined as having a commonality of residence, sources of food, intermingling of income and production decisions and several emotional and social relationships.<sup>6,7</sup>

Two salient aspects of economic decision-making are the availability and utilization. A household is considered food-secure when the occupants do not live in hunger or fear of starvation and access by all members at all times to enough food for a healthy life. It also includes at a minimum the ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways i.e. without resorting to emergency food supplies, scavenging, stealing or other means.<sup>8</sup> There are four elements that affect household food security – availability of food, access to food, utilization of food and sustainability of access.<sup>9</sup> The type of food insecurity observed in SSA is a combination of widespread chronic food insecurity, resulting from continuing or structural poverty, inadequate power supply, lack of hygienic water and transitory emergency-related food insecurity, which occurs in periods of intensified pressure caused by natural disasters, economic collapse or conflict. Household food security has been positively linked to higher education of household heads, higher household incomes and place of residence.<sup>10,11</sup>

Nigeria's demographic and health survey reported that nationally 37% and 21% of children are 'stunted' and 'severely stunted' respectively.<sup>12</sup> Studies have shown that the steady rise of food insecurity from 18% in 1986 to 41% in 2004 is due to an increase in urbanization.<sup>13,14</sup> Household food insecurity has a devastating effect on household members especially women and children. Food insecurity has been shown to occur in urban as well as rural areas and to have links to maternal emotional and psychological wellbeing as well as the psychosocial functioning of children.<sup>15,16</sup>

The Household Food Insecurity Access Scale (HFIAS) has been proven to accurately compare the common indicators of food consumption and poverty across different socio-cultural circumstances in developing countries to differentiate food secure households from food insecure households.<sup>17-20</sup> Using nine *occurrence* questions, HFIAS determines the frequency of the experience which represents universal domains of food

Correspondence: Alero Ann Roberts, Department of Community Health & Primary Care, Faculty of Clinical Sciences, College of Medicine University of Lagos, Nigeria. Tel.: +234.0803.3083071 E-mail: aaroberts@cmul.edu.ng

Key words: Household food insecurity, urban, households, Lagos, Nigeria.

Contributions: AAR and JOO conceived the study and participated in its design and implementation. AAR, VAI and JOO reviewed the data, performed the statistical analysis and drafted the manuscript. AAR and VAI participated in the writing of the manuscript. JOO, AAR, and VAI reviewed the initial manuscript. All authors read and approved the final manuscript.

Conflict of interest: the authors declare no potential conflict of interest.

Funding: none.

Received for publication: 20 February 2018. Accepted for publication: 23 August 2018.

This work is licensed under a Creative Commons Attribution NonCommercial 4.0 License (CC BY-NC 4.0).

©Copyright A.A. Roberts et al., 2019  
Licensee PAGEPress, Italy  
*Journal of Public Health in Africa* 2019; 10:885  
doi:10.4081/jphia.2019.885

insecurity; anxiety and uncertainty about the household food supply, insufficient food quality and insufficient food intake.<sup>18,21-23</sup> Households are categorized as increasingly food insecure as they respond affirmatively to more or severe condition and /or experience those conditions more frequently. The study was conducted to assess the level of food security among urban households in Shomolu LGA, Lagos state, an urban densely populated neighborhood in a rapidly growing potential megacity.<sup>24</sup>

### Materials and Methods

This was a cross-sectional descriptive study done in Shomolu local government area (LGA) of Lagos. The study participants were women in the households involved in the purchase and preparation of food as well as management of the household food budget. The sample size was calculated from a prevalence of 0.24 obtained from a study in North Central Nigeria, which yielded 306.<sup>25</sup>

Using a multi-stage sampling method, 2 of 8 wards were selected by simple random

sampling. In each ward, 2 of 8 streets were also selected by simple random sampling. In each street, 25 out of approximately 60 households per street were selected by systematic random sampling using a sampling fraction of total number of households/sample size which was 60/24 yielding 2. The initial house was selected by balloting between the first 2 buildings in the street and thereafter, every second building was selected. Within the selected building, any woman who fitted the inclusion criteria and was willing to participate was interviewed until the sample size was obtained. Ethical approval was obtained from the Lagos University Teaching Hospital Human Research Ethics Committee and permission was sought from the LGA Chairman. Informed consent was obtained verbally from each of the study participants, who were assured of total confidentiality and their right to withdraw from the study at any time without consequence.<sup>26</sup>

Using a pre-tested, structured, interviewer-administered questionnaire comprising the 9-item Household Food Insecurity Access Scale (HFIAS) for measurement of food access; information was collected on socio-demographic characteristics of heads of households (if different from the study participant) such as age, sex, level of education, occupation and other household characteristics including household monthly income, size of the households, number of children and dependents. Knowledge about the concept of household food security was determined based on the correct responses to a 12-item section that examined knowledge about the sources of food, knowledge about best agricultural and food handling practices, optimal frequency of meals and alternative storage methods to reduce incidence of food scarcity. Household food security was determined by answers to questions examining the occurrence of situations representing food insecurity and the frequency of those occurrences. The areas examined relate to anxiety and uncertainty of food supply, as well as insufficient quantity and quality of food. Households were scored from 0 to 27 depending on their responses to the 9 HFIAS questions and the frequency of occurrence over the preceding 30 days. Households scoring 9 or less were graded 'Food secure', scores of 10 to 18 were graded 'Food insecure without hunger' and those with scores of 19 and over were graded as 'Food insecure with hunger'.<sup>27</sup>

Socio-demographic characteristics are presented as means  $\pm$  standard deviation, frequencies and percentages. Bivariate analysis was done using Chi-square test and Fisher's exact tests to determine associa-

tions between dependent and independent variables at 95% level of significance ( $P \leq 0.05$ ).

## Results

Two hundred and seventy-five respondents were successfully interviewed, representing 89.7% response rate. The modal age group is 35-44 years (38.9%) and the mean age of the women was 41.6 $\pm$ 9.4 years. Majority of the women (61.1%) were married while 64% had secondary education and above. The women were predominantly Muslims (39.6%) while 56.4% of households had 4-7 members. A third of the women (33.5%) were traders while 18.2% of the household heads were civil servants (Table 1). Little over half the households (53.4%) lived on incomes less than N20,000 monthly, equivalent to less than \$2 a day. A quarter of the households spent between 41-80% of the monthly household income on food, a third of the households (33.8%) were food secure, 45.1% were food insecure without hunger and 21.1% were food insecure with hunger. The knowledge levels of the study participants about the concept of food security regarding sources of food, food handling practices, optimal frequency of meals and alternative storage methods was good (38%), fair (27%) and poor (35%) (Table 2).

**Table 1. Sociodemographic characteristics of respondents (N=275).**

Variable	Frequency (%)
<b>Age (years)</b>	
< 24	11 (4.0)
25-34	58 (21.1)
35-44	107 (38.9)
45-54	70 (25.5)
55 and above	29 (10.5)
<b>Marital status</b>	
Never married	36 (13.1)
Married	168 (61.1)
Separated/Widowed	71 (25.8)
<b>Educational status</b>	
No formal education	25 (9.1)
Primary	74 (26.9)
Secondary	102 (37.1)
Tertiary	74 (26.9)
<b>Religion</b>	
Christianity	76 (27.9)
Islam	109 (39.6)
Traditional/Other	90 (32.8)
<b>Respondent's occupation</b>	
Unemployed	16 (5.8)
Trade/craft	92 (33.5)
Wage	55 (20.0)
Civil servant	73 (26.5)
Professional	39 (14.2)
<b>Household head's occupation</b>	
Unemployed	22 (8.0)
Trade/craft	37 (13.5)
Wage	56 (20.4)
Civil servant	50 (18.2)
Professional	36 (13.1)
No response	74 (26.9)

**Table 2. Household income, proportion spent on food and food security status (N=275).**

Variable	Frequency (%)
<b>Household monthly income, N</b>	
<20,000	147 (53.4)
20,000 and over	128 (46.6)
<b>Proportion of monthly income given as food allowance, %</b>	
<10	70 (25.5)
10-40	97 (35.3)
41-80	74 (26.9)
>80	34 (12.4)
<b>Household size (members)</b>	
<4	66 (24)
4-7	155 (56.4)
>7	54 (19.6)
<b>House ownership</b>	
Yes	84 (30.5)
No	191 (69.5)
<b>Knowledge of good household food security practices</b>	
Good	104 (37.8)
Average	72 (26.2)
Poor	99 (36.0)
<b>Household food security status</b>	
Food secure	93 (33.8)
Food insecure without hunger	124 (45.1)
Food insecure with hunger	58 (21.1)

Food secure households were statistically significantly likely to have women who had secondary or higher education, professional occupations and were married. There was a statistically significant positive relationship ( $P \leq 0.05$ ) between the level of education of the respondents and whether the household is food secure or not. Being Muslim and a civil servant/professional was also positively associated with food security ( $P < 0.05$ ). Households with higher monthly incomes had higher levels of food security level among the respondents. The level of food insecurity reduces as the proportion of household monthly income spent on food increases. Households where the proportion of the household monthly income spent on purchasing food decreased to between 10% and 40% were statistically significantly more likely to be food secure than those households where a greater proportion of the monthly household income was spent on food. Respondents who lived in their

own home, as opposed to rented accommodation was associated with them being food secure ( $P = 0.001$ ). Among households that were food insecure without hunger, however, the proportion of respondents who own their houses (48.2%) was higher than those who do not (38.1%) while the reverse was found in the case of households that are food insecure with hunger (Table 3).

## Discussion

Findings from this study estimate the level of food security among households in Shomolu to be 33.8%, which agree with that of a previous study, which reported a similar proportion of women who participated as food secure.<sup>28</sup> However, that study used the 6-item HFIAS survey tool. The level of food security was much lower than levels reported from other studies in Ondo, Nigeria and Nairobi, Kenya,<sup>29,30</sup> but higher

than what has been found in Latin America among urban households.<sup>31</sup> Food security was positively associated with women having higher educational levels, higher monthly household incomes, smaller household sizes and proportions of monthly income spent on food being less than 40%. This confirms findings from other studies that correlate household food security with maternal resources, lower paid occupations, and dependence on purchased food.<sup>32-34</sup> The proportion of household income spent on food has been reported to vary in order to accommodate the rather fixed costs of housing and utilities. Where money spent on food constitutes higher than 40%, it is presumed that food insecurity can result from the pressure of competing needs.<sup>34</sup> This concept of how urbanization is contributing to the development of a class of urban malnutrition has been examined critically and what has emerged is that urbanization with the improvement in food production, stor-

**Table 3. Correlates of household food security level of the respondents (N=275).**

	Household Food Security Level			Significance level
	Food secure (%)	Food insecure without hunger (%)	Food insecure with hunger (%)	
<b>Level of education</b>				
No formal education	2 (8.0)	2 (8.0)	21 (84.0)	$\chi^2=103.01$ $P < 0.0001$
Primary	9 (12.2)	45 (60.8)	20 (27.0)	
Secondary	39 (38.2)	48 (47.1)	15 (14.7)	
Tertiary	43 (58.1)	29 (39.2)	2 (2.7)	
<b>Religion N=272</b>				
Christianity	18 (23.7)	30 (39.5)	28 (36.8)	$\chi^2=30.03$ $P < 0.0001$
Islam	33 (30.2)	60 (55.0)	16 (14.7)	
Traditional	21 (37.5)	24 (42.9)	11 (19.6)	
Other	20 (64.5)	8 (25.8)	3 (9.7)	
<b>Occupation of respondent</b>				
Unemployed	3 (18.8)	4 (25.0)	9 (56.3)	$\chi^2=51.6$ $P = 0.001$
Semi-skilled	19 (20.7)	42 (45.7)	31 (33.7)	
Unskilled	33 (60.0)	19 (34.5)	3 (5.5)	
Civil servant/professional	38 (33.9)	59 (52.7)	15 (13.4)	
<b>Occupation of household head</b>				
Unemployed	12 (54.5)	8 (36.4)	2 (9.1)	$\chi^2=58.8$ $P < 0.0001$
Semi-skilled	27 (48.2)	26 (46.4)	3 (5.4)	
Unskilled	6 (16.2)	23 (62.2)	8 (21.6)	
Civil servant/professional	27 (31.4)	49 (57)	10 (11.6)	
No response	21 (28.4)	18 (24.3)	35 (47.3)	
<b>Monthly household income, N</b>				
<60,000	0 (0.0)	123 (83.5)	24 (16.5)	$\chi^2=202.91$ $P < 0.0001$
60,000 and over	107 (83.8)	21 (16.2)	0 (0.0)	
<b>Proportion of monthly household income spent on food, %</b>				
<10	19 (27.1)	32 (45.7)	19 (27.1)	$\chi^2=25.09$ $P = 0.0003$
10-40	35 (36.1)	37 (38.1)	25 (25.8)	
41-80	23 (31.1)	47 (63.5)	4 (5.4)	
>80	16 (47.1)	8 (23.5)	10 (29.4)	
<b>Household size</b>				
<4	4 (6.1)	32 (48.5)	30 (45.5)	$\chi^2=47.07$ $P < 0.0001$
4-7	62 (40.0)	68 (43.9)	25 (16.1)	
>7	26 (48.1)	25 (46.3)	3 (5.6)	
<b>Home ownership</b>				
Yes	36 (42.9)	40 (47.6)	8 (9.5)	$\chi^2=48.93$ $P < 0.0001$
No	25 (13.1)	73 (38.2)	93 (48.7)	

age and distribution does not imply less hunger and undernutrition.<sup>35</sup>

Findings of levels of insecurity in this study were to those of another study that found the same factors associated with household food insecurity.<sup>36</sup> Food insecurity has been reported among the elderly in southwest Nigeria and several factors identified as contributory are found to be operational at household level in this study.<sup>37</sup> Recent food, fuel and economic crises have left many urban West African households vulnerable to food insecurity and the HFIAS tool has been documented to be sensitive enough as an early warning system for evaluating individual household food status.<sup>38</sup> This study was limited in that it did not examine the proportion of household income spent on other living essentials such as health-seeking, education for children, housing, utilities and transport. Food costs are not the only driver of household food security. There is the aspect of the quality and availability of healthy food which contributes to the overall health status of households and this study assumed that households in the area had equal access to food sources such as markets and supermarkets, and that the food available met their preferences with regards to taste and cultural acceptance.

## Conclusions

Despite the fact that the households surveyed resided in a densely populated urban area of Lagos with several food markets, the proportion of the residents classified as food insecure, with (21.1%) or without hunger (45.1%) constituted two thirds of the study population. However, further research is needed to determine what role food insecurity plays in the overall range of financial stressors that undermine health and wellbeing in the community.

## What is already known

1) The HFIAS tool is sensitive to classify household food security; 2) Households headed by less educated people have a greater propensity to food insecurity. 3) Food security is positively linked to household incomes.

## What this study adds

1) Urbanization with the improvement in food production, storage and distribution does not imply less hunger and undernutrition. 2) A significant proportion of an urban population in Lagos live with food insecurity with hunger. 3) Households which spent 40% or less of the household income on food was more likely to be food secure.

## References

- Aidoo R, Mensah JO, Tuffour T. Determinants of Household Foods Security in the Sekyere-Afram Plains District of Ghana. Azores: 2013.
- Sanusi R, Badejo C, Yusuf B. Measuring Household food insecurity in selected local government areas of Lagos and Ibadan Nigeria. *Pak J Nutr* 2006;5:62-7.
- Nord M, Hopwood H. Recent advances provide improved tools for measuring children's food security. *J Nutr* 2007;137:533-6.
- Pinstrup-Andersen P. Food security: definition and measurement. *Food Secur* 2009;1:5-7.
- FAO. Regional overview of food insecurity: African food security prospects brighter than ever. Rome: FAO; 2015.
- Akresh R. Flexibility of household structure: child fostering decisions in Burkina Faso. *J Hum Resr* 2009;44: 976-97.
- Hosegood V, Timaeus I, van der Walle E. Household composition and dynamics in KwaZulu Natal, South Africa: mirroring social reality in longitudinal data collection. In: *African Households: Censuses and Surveys*. Armonk, NY: M.E. Sharpe 2006. 58-77.
- The World Food Summit: Five years later. Available from: <http://www.fao.org/docrep/013/al936e/al936e00.pdf> (accessed 16 Apr2012).
- Omonona BT, Agoi GA. An analysis of food security situation among Nigerian urban households: evidence from Lagos State, Nigeria. *J Cent Eur Agric* 2007;8:397-406.
- Dean WR, Sharkey JR. Food insecurity, social capital and perceived personal disparity in a predominantly rural region of Texas: an individual-level analysis. *Soc Sci Med* 2011;72:1454-62.
- Belachew T, Lindstrom D, Gebremariam A, et al. Predictors of chronic food insecurity among adolescents in Southwest Ethiopia: a longitudinal study. *BMC Public Health* 2012;12:604.
- Commission NP. Nigeria demographic and health survey 2013. 2013.
- Food and Agriculture Organization of the United Nations, editor. *Globalization of food systems in developing countries: impact on food security and nutrition*. Rome: Food and Agriculture Organization of the United Nations; 2004.
- Cohen MJ, Garrett JL. The food price crisis and urban food (in)security. *Environ Urban* 2010;22:467-82.
- Chinnakali P, Upadhyay RP, Shokeen D, et al. Prevalence of Household-level Food Insecurity and Its Determinants in an Urban Resettlement Colony in North India. *J Health Popul Nutr* 2014;32:227-36.
- National Academies Press (US). *Socioecological Perspectives: The Individual Level*. National Academies Press (US) 2011.
- Salvador Castell G, Pérez Rodrigo C, Ngo de la Cruz J, et al. Household food insecurity access scale (HFIAS). *Nutr Hosp* 2015;31:272-8.
- Swindale A, Bilinsky P. Development of a universally applicable household food insecurity measurement tool: process, current status, and outstanding issues. *J Nutr* 2006;136:1449S-52S.
- Frongillo EA, Nanama S. Development and validation of an experience-based measure of household food insecurity within and across seasons in northern Burkina Faso. *J Nutr* 2006;136:1409S-19S.
- Melgar-Quinonez HR, Zubieta AC, MKNelly B, et al. Household food insecurity and food expenditure in Bolivia, Burkina Faso, And the Philippines. *J Nutr* 2006;136:1431S-7S.
- Swindale A, Bilinsky P. Household Dietary Diversity Score (HDDS) for measurement of household food access: indicator guide, version 2. Washington: USA: 2006.
- Webb P, Coates J, Frongillo EA, et al. Measuring household food insecurity: why it's so important and yet so difficult to do. *J Nutr* 2006;136:1404S-8S.
- McGuire S, Nord M, Coleman-Jensen A, et al. *Household Food Security in the United States, 2009*. EER-108, U.S. Dept. of Agriculture, Econ. Res. Serv. November 2010. *Adv Nutr Int Rev J* 2011;2:153-4.
- The World's Fastest-Growing Megacities. Available from: <http://www.forbes.com/sites/joelkotkin/2013/04/08/the-worlds-fastest-growing-megacities/> (accessed 16 Feb2015).
- Elijah OA. Classification of households into food security status in the north-central Nigeria: An application of RASCH measurement model. *J Agric Biol Sci* 2010. Available from: <http://agris.fao.org/agris-search/search.do?recordID=US201301846459> (accessed 11 Feb2017).
- World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. *Bull World Health Organ* 2001;79:373-4.

27. Birhane T, Shiferaw S, Hagos S, et al. Urban food insecurity in the context of high food prices: a community based cross sectional study in Addis Ababa, Ethiopia. *BMC Public Health* 2014;14:680.
28. Martin-Prevel Y, Becquey E, Tapsoba S, et al. The 2008 food price crisis negatively affected household food security and dietary diversity in urban Burkina Faso. *J Nutr* 2012;142:1748-55.
29. Oluwole KA, Oni OA, Omonona BT, et al. Food Security Among Cocoa Farming Households of Ondo State, Nigeria. *J Agric Biol Sci* 2009;4:7-13.
30. Kimani-Murage EW, Schofield L, Wekesah F, et al. Vulnerability to Food Insecurity in Urban Slums: Experiences from Nairobi, Kenya. *J Urban Health Bull NY Acad Med* 2014;91:1098-113.
31. Schmeer KK, Piperata BA, Rodríguez AH, et al. Maternal resources and household food security: evidence from Nicaragua. *Public Health Nutr* 2015;1-10.
32. Schmeer KK, Piperata BA, Herrera Rodríguez A, et al. Maternal resources and household food security: evidence from Nicaragua. *Public Health Nutr* 2015;18:2915-24.
33. Galal O, Corroon M, Tirado C. Urban environment and health: food security. *Asia Pac J Public Health* 2010;22:254S-61S.
34. Ward PR, Verity F, Carter P, et al. Food Stress in Adelaide: The Relationship between Low Income and the Affordability of Healthy Food. *J Environ Public Health* 2013;2013:e968078.
35. Satterthwaite D, McGranahan G, Tacoli C. Urbanization and its implications for food and farming. *Philos Trans R Soc Lond B Biol Sci* 2010;365:2809-20.
36. Omuemu VO, Otasowie EM, Onyiriuka U. Prevalence of food insecurity in Egor local government area of Edo State, Nigeria. *Ann Afr Med* 2012;11:139-45.
37. Olayiwola IO, Ketiku AO. Socio-demographic and nutritional assessment of the elderly Yorubas in Nigeria. *Asia Pac J Clin Nutr* 2006;15:95-101.
38. Becquey E, Martin-Prevel Y, Traissac P, et al. The household food insecurity access scale and an index-member dietary diversity score contribute valid and complementary information on household food insecurity in an urban West-African setting. *J Nutr* 2010;140:2233-40.