

## FACTORS AFFECTING HOUSEHOLD FOOD SECURITY IN A RURAL COMMUNITY IN NORTH-CENTRAL NIGERIA

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### ABSTRACT

Although the proportion of hungry people in the world is slowly decreasing, there are presently 852 million people worldwide who are chronically undernourished; mostly rural dwellers in the lower socio-economic strata. This study therefore examines the factors influencing household food security in a rural community in North Central Nigeria. Using Multistage sampling technique, 235 households were sampled. Interviewer administered structured questionnaires were used to gather data which were collated and analyzed using Epi Info version 3.5.3. The value  $P \leq 0.05$  was considered statistically significant with a confidence level of 95%. The results showed that 66.2% of studied households grew most of their consumed food on their farmlands, while 43.8% of the households spent between 25–50% of their monthly income on feeding their members. Although most of the households (72.9%) dry and bag their farm produce after harvest, 77.8% lose 0-24% of the produce to spoilage or pests yearly. In addition, poverty (47.5%) was observed to be the commonest factor limiting access to sufficient food, while poverty and poor storage were notable factors affecting household food security among rural dwellers. Therefore, governments and non-governmental organizations need to employ strategies that will ensure poverty reduction and improve food storage and processing facilities.

**Keywords:** Rural Community, Household, Food security, Food storage, Hunger, Poverty

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### INTRODUCTION

According to Agboola (2008), food is any plant or animal substance consumed to provide nutritional support for the body. Therefore, a household is said to have food security when members, at all times, have physical and economic access to adequate, safe and nutritious food to satisfy their dietary/nutritional needs for a healthy and active life, all year round (Agboola, 2008). This implies also, that food security ensures sufficient food supply through production, purchase (given sufficient purchasing power) or gifts, and that the utilization of these food supplies is enough to meet the specific dietary needs of all the members in a household, all year round. In fact, the first of the eight Millennium Development Goals (MDGs) amongst others, is to achieve a fifty percent 'eradicate extreme poverty and hunger' amongst the proportion of the world's population living in such conditions by the year 2015 (Ajayeoba, 2010).

However, the world faces a potentially greater crisis in food security as the global population is expected to grow to over 9 billion by the year 2015, coupled

with increasing affluence and urbanization, resulting in fewer hands in agricultural food production (Ayantoye et al, 2011).

It is projected that global food demands will increase by 40% in 2030 and 70% by 2050. Therefore the challenge is to meet this growing demand in environmentally, socially and economically sustainable ways in the face of climate change and the global financial crises (Agboola, 2008; Ayantoye, 2011; Bellows, 2007).

About 852 million people worldwide are chronically malnourished and over 60% of the world's undernourished people live in Asia; while a quarter live in Africa (Ayantoye, 2011; Bellows, 2007). It has also been estimated that most of the world's hungry population live in developing countries (of Africa, South America and Asia), where they constitute about 16% of the population (Bellows, 2007). The Food and Agricultural Organization (FAO) noted that between 2006 and 2008, 850

million people worldwide (13% of the population) were undernourished. Although this figure is an improvement over the 200-2002 estimates of 836 million, much more efforts need to be put in to ensure the attainment of MDG 1 targets (FAO, 2011).

Recent estimates put the number of food-insecure (hungry) people in Nigeria at over 53 million which is 32% of the country's population (FAO, 2005). This is despite the huge sums of money being spent by the nation to import food items yearly. By 2009, the Federal Ministry of Agriculture estimated that the country spent over \$3billion annually on importation of food items like rice, sugar and flour (FAO, 2005).

The percentage of food-insecure households in Nigeria varies between seasons and between geopolitical regions (Muhammad-Lawal, 2008; NPC, 2008). On a national scale, the per-capita growth or production of major (staple) food items has not been sufficient to meet the nutritional demands of the increasing population, resulting in national food insecurity (Bellows, 2007). In the early 19<sup>th</sup> century (1920s to 1950), the country was food secured and was a major exporter of food and cash crops including groundnuts and cocoa. However from the 1960s, the discovery of crude oil, urbanization and the financial crises (among other reasons) resulted in the abandonment of agriculture to peasant farmers in rural settings. These peasant rural farmers however are faced with a lot of challenges that which mitigates against their ability to produce sufficient food for their families as well as for profit making.

This study therefore, set out to ascertain the factors that affect household food security among the rural populace of Pumbush, Mangu LGA of Plateau State, Central Nigeria.

## **MATERIAL AND METHOD**

**Study Area:** The study was conducted in Pumbush community which is one of the rural settlements in Kasuwan Ali Ward of Mangu LGA, Plateau State, Central Nigeria. Plateau state is located between latitudes 80°24'N and 80°32'N and longitudes 90°56' and 100°38' E and its altitude ranges from 1,200 meters (4000 feet) to a peak of 1,827 meters above sea level in Shere Hills near Jos (NPC 2008).

**Study Population:** Majority of the populace in the community is of the lowest social strata, illiterate and communicates mainly in Hausa or the local dialect of Pyem. The average household size is seven (7) while the working class was mainly farmers or traders

**Sampling technique:** The oldest female in charge of the buying/cooking of foodstuff in every household was sampled to provide information about food security in the household. Male subjects who lived alone were also included in the study as well as households where a male was in charge of the buying/preparation of food.

A sample size of 235 households was calculated by applying the formula for minimum sample determination for prevalence of food-security (Sanusi et al, 2006).

Systematic sampling technique was used to sample the studied subjects. A preliminary survey of the study area showed that there were approximately 248 households in the community with a calculated minimum sample size of 196, the sampling interval of 1 was obtained ( $248/196 = 1.3$ ) and used to sample one respondent from every household in the community.

**Ethical consideration:** Each respondent gave verbal informed consent before being enrolled into the study; after being assured of confidentiality and given the option to opt out of the study at any time, without any loss of benefits. Sensitization on the importance of ensuring household food security was given to respondents free as an incentive.

**Data Collection method:** A house-to-house visit was adapted to sample from each household those interviewed. A semi-structured interviewer administered questionnaire was used for data collection. The research team administered the questionnaires to the respondents, translating it to Hausa when the need arose, to ensure it was understood.

**Data analysis:** All data was collated and analyzed using Epi Info version 3.5.3. Chi square test was used as a test of statistical significance and a p-value of less than or equal to 0.05 was considered statistically significant.

## **RESULTS**

Of the 235 females sampled, 58.7% were aged between 30 and 39 years while only 3.0% were aged between 20 and 29 years of age. Their commonest occupation was farming (29.4%) while 28.8% had attained at least primary school education (Table I). interestingly, there were no males who controlled their own foodstuff issues by themselves in the study area.

Most respondents grow their own food (67%; Fig I) and only small proportions get their food mainly as gifts from relatives. Interestingly, 43.8% of respondents spend between 25-50% of their monthly income on food purchase (Table II).

The commonest factor found to limit their growth or purchase of sufficient food to meet their nutritional need was insufficient money (47.5%) and distance of the farm/market from their residence (14.6%) (Figure 2). Although 72.9% of households preserved their

food by drying and bagging, over 75% of them lose at least 25% of their stored food to spoilage or pests destruction by the end of the year annually (Table III).

Statistically, there was no significant ( $p>0.05$ ) association between the households' farm size and the proportion of their monthly income spent on feeding (Table IV). Also, there was no significant relationship between household size and proportion of monthly income spent on feeding (Table V).

**Table I: Socio-demographic Characteristics of Respondents**

Variable	Frequency (n = 235)	Percentage (%)
<b>Age (Years)</b>		
20 – 29	7	3.1
30 – 39	138	58.7
40 – 49	47	20.0
50 – 59	29	12.3
≥60	14	5.9
<b>Occupation</b>		
Farmer	69	29.4
Trader	52	22.1
Civil Servant	32	13.6
Student	39	16.6
Unemployed	29	12.3
Others	13	6.0
<b>Highest educational status attained</b>		
None	56	23.8
Primary	68	28.9
Secondary	65	25.9
Tertiary	46	21.4

**Table II: Proportion of Monthly income spent on feeding household**

Proportion of Income (%)	Frequency	Percentage
<25	70	29.8
25 – 49	103	43.8
50 – 75	41	18.3
>75	21	8.1
Total	235	100.0

**Table III: Proportion of farmed/purchased Foodstuff lost annually in Households**

Proportion (%)	Frequency	Percentage
<25	183	77.8
25 – 49	26	11.1
50 – 75	21	9.1
>75	5	2.0
Total	235	100.0

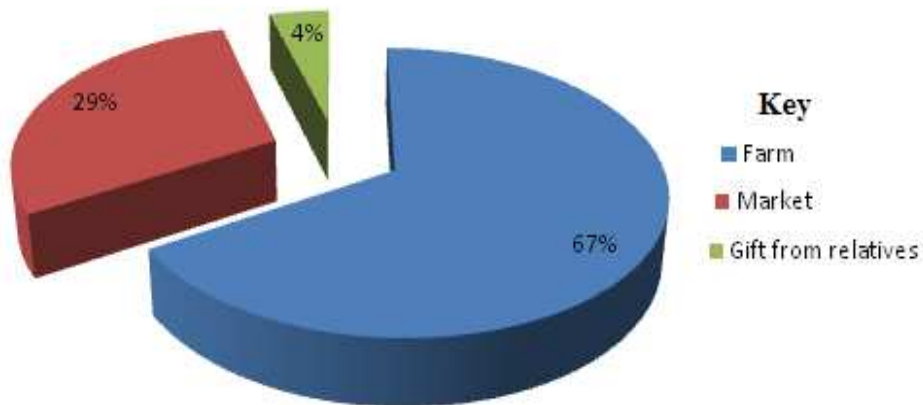


Figure 1: Major source of food of households

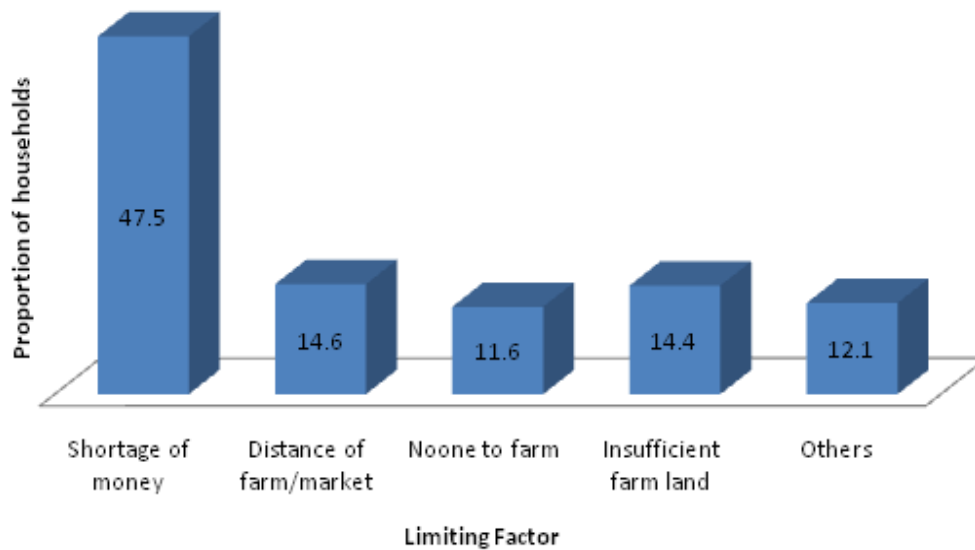


Figure 2: Factors limiting ability of household to farm/purchase sufficient food

Table IV: Relationship between Household farm size and proportion of income spent on feeding.

Proportion of	Farm Size compared to food needs of household					Total income (%)
	Too small	Small	Adequate	Big	Too big	
< 25	5	12	32	5	9	63
25-50	9	22	46	13	5	95
50-75	8	7	21	7	3	46
>75	4	4	15	5	3	31
Total	26	45	114	30	20	235

$\chi^2 = 10.09$ ;  $df = 12$ ;  $p = 0.6077$

**Table V: Relationship between household size and proportion of monthly income spent on food.**

Proportion of income	Household Size				Total
	1-3	4-6	7-9	>10	
<25	22	13	12	8	55
25-50	42	25	22	8	97
50-75	22	17	14	3	56
>75	13	5	4	5	27
Total	99	60	52	24	235

$$\chi^2 = 6.912; df = 9; p = 0.6462$$

## DISCUSSION

Although most respondents (66.2%) grew their own food, up to 43.8% spend between 25-50% of their monthly (financial) income on purchase of food items; which are either finished staple food items (mainly cereals, legumes and tubers) or food ingredients required to prepare meals (like oils, vegetables, spices, beverages or snacks). In Nigeria Agriculture provides 80% of the food needs of the populace and employs 68% of the work force; particularly in rural setting like the studied area (Oluwatayo, 2009; Sanusi et al, 2006). This can be attributed to the fact that almost every family has its farmland which is handed down through generations and available for cultivation. Furthermore, in the North-Central zone (where the study area falls) 34% of rural women are employed in agriculture and 47% of the working population in the zone is employed in Agriculture (Smith & Ali, 2007). The corresponding figures for males are slightly different (55.5% and 40.7% respectively) since males migrate more to urban areas in search of 'better paying jobs', since they are better educated.

Food items grown in the study area -like elsewhere in the country, are mainly cereals (together with tubers) which make up a large proportion of the staple diet of most indigenous households (Oluwatayo, 2009). However, it was found from this study that the food items are usually not grown in sufficient amounts to meet the nutritional needs of each member of the rural household all the year round for several reasons: insufficient land space to farm, insufficient funds to purchase fertilizer to boost yield, few hands to farm (agile youths are in school or have migrated to urban areas) and the distance of the farmland from the residence; coupled with the insecurity in the area resulting in people being afraid of attacks while on their farms in the bush.

It is evident that the economic condition of a community or a household, determines its ability to achieve and maintain food security at both the

household and individual levels, since finance is a major determinant for food accessibility (UN, 2001; FAO, 2010). This was clearly seen in this study as insufficient funds was the main constraint for 47.3% of households in the community having sufficient food all year round. This finding is expected in such a rural populace where most of the populace is in the lower half of the socio-economic strata in the society. As such, the use of Cooperatives have been advocated as a potential means of accessing the needed funds by rural populace as they are "community-based, rooted in democracy, flexible, and have participatory involvement that makes them well suited for community development (UN, 2001).

Majority (72.9%) of the households studied, dry and bag their farm or purchased food items. However, most of them (77.8%) lose up to 25% of their stored food to spoilage, pests (weevils) and vermin (rats) by the end of the year. This further reduces the meager rations of the food available to the household; making them more food insecure. All the households studied do not use any chemical method of reducing this occurrence (like pesticides) though some (3.7%) use biological methods; they keep cats to eat the rats and chickens to feed on the weevils. This phenomenon can be attributed to their low educational status, poor financial standing and the fact that the quantity of food items is relatively small and expected to be eaten up before it spoils or is pestered upon.

Increased agricultural production (a precursor to food security) is only made possible when there is availability of finances or credit facilities to enhance increased production; from subsistence agriculture to large scale agriculture (FAO, 2010). In its absence, rural households have to spend their meager income (from petty trading and gifts majorly) to buy food stuff when the one farmed gets exhausted, or to buy ingredients needed to prepare meals. It has also been found that assessing food related expenditure of households, can be a method of measuring its food security (UN, 2001).

The trend of food prices in Nigeria in the last few years reveals a steady increase in prices of most cereals, tubers, plant protein and food ingredients (oils); more in urban than rural setting (USDA, 2012). In this study however, there was no statistically significant association between the proportion of households' monthly income spent on feeding and the households' farm-size or the household size. This could be explained by the fact that the income was assessed as a proportion that can be either exaggerated or under-rated by respondents. Furthermore since their income comes erratically (unlike salaries which are periodically spaced) their ability to gauge the amounts might have been difficult.

It was concluded from this study, that the commonest factor affecting food security in the studied community was poverty (47.3%) and food loss due to poor storage facilities. The amount of income spent on food was not statistically related to household size or household farm-size. It is therefore recommended that governments and non-governmental Organizations need to assist rural households to employ multi-dimensional (chemical and biological) methods of preventing food lost to spoilage and pests. Rural populace need to be encouraged to employ income diversifications methods (like cooperative formation) to meet growing nutritional needs.

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#### **REFERENCES**

Agboola, PO, Awotide, DO, Ikpi, AE, Kormawa, PM, Okoruwa, VO and Babalola DA. (2008). Diversification Strategies on food, Insecurity Status of Farming Households in Africa: Result of Analysis from Nigeria. International Congress of European Association of Agricultural Economists. Ghent – Begium. 26<sup>th</sup> -29<sup>th</sup> August, 2008. Pp 32 -39.

Ajayeoba, A. (2010). Concerning Food security in Nigeria. West Africa Insight, Dec 2010. Available at [westafricainsight.org/articles/PDF/8](http://westafricainsight.org/articles/PDF/8). Accessed 26/6/12.

Ayantoye, K., Yusuf, S.A., Omonona, B.T. and Amao, J.O. (2011). Food insecurity dynamics and its correlates among rural households in South-Western Nigeria. *International Journal of Agriculture and Rural Development*; 4(1):43-56.

Bellows, A.C., Brown, K., Jac, S. (2007). Health benefits of urban agriculture. Available at [www.foodsecurity.org/UAHealthArticle.pdf](http://www.foodsecurity.org/UAHealthArticle.pdf). Accessed 26/6/12

FAO (2011). Hunger report. Available at <http://faostat.fao.org>. Accessed 27/6/12.

FAO(2005). The state of Food Insecurity in the World, Rome, 2005, pp 2. Available at [www.fao.org/docrep/013/i1683e/i1683e.pdf](http://www.fao.org/docrep/013/i1683e/i1683e.pdf). Accessed 20/6/12.

Muhammad-Lawal, A. and Omotesho, O.A. (2008). Cereals and Farming Households' Food Security in Kwara State, Nigeria, *Agricultural Journal*; 3 (3): 235-240.

National Population Commission (2008) [Nigeria] and ICF Macro. 2009. Nigeria Demographic and Health Survey 2008. Abuja, Nigeria: National Population Commission and ICF Macro. Pp10-60

Oluwatayo, I.B. (2009). Towards assuring households' food security in rural Nigeria: Have cooperatives got any place? *International Journal of Agricultural Economics and Rural Development*; 2 (1):53-62.

Sanusi R.A., Badehi, C.A. and Yusuf, B.O. (2006) Measuring Food Security in selected Local Government Areas of Lagos and Ibadan, Nigeria. *Pakistan Journal of Nutrition*; 5(1): 62-67.

Smith, L.C. and Ali, S. (2007) Measuring Food Security Using Household Expenditure Surveys. Food Security in Practice technical guide series. Washington, D.C.: International Food Policy Research Institute. Available at [www.ifpri.org](http://www.ifpri.org). Accessed 19/6/12.

UN (2001). Millennium Project: Goals, targets and indicators. [www.unmillenniumproject.org/goals/gti.html](http://www.unmillenniumproject.org/goals/gti.html). Accessed 25/6/12.

USDA (2012). Community Food Security Assessment Toolkit; Assessment of Household Food Security. Available at [www.ers.usda.gov/publications/efan02012/efan02013f.pdf](http://www.ers.usda.gov/publications/efan02012/efan02013f.pdf). Last accessed 12/6/12.

#### **AUTHORS CONTRIBUTION**

Banwat M.E., is the principal author and was involved in the design of the study, development and pretesting of questionnaire, data collection, data

analysis and manuscript writing. LarL. A., was involved in the design of the study and development of the tool. Dakum, L.B. took part in the data collection. IGOH C.S., was actively involved in data collection while Daboer J.C and Ogbonna, C., performed the statistical analysis and were involved in the manuscript critique.

