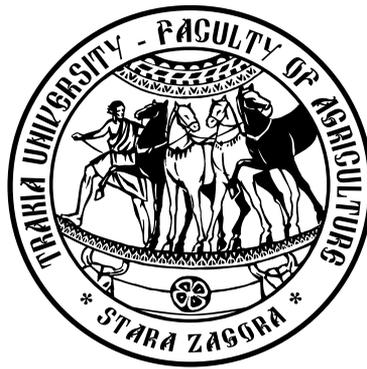


ISSN 1313 - 8820 (print)
ISSN 1314 - 412X (online)

Volume 11, Number 1
March 2019



AGRICULTURAL
SCIENCE AND TECHNOLOGY

2019

An International Journal Published by Faculty of Agriculture,
Trakia University, Stara Zagora, Bulgaria

Food security status of female-headed households in Mubi North Local Government area, Adamawa State, Nigeria

A.J. Madugu*

Department of Agricultural Economics and Extension, Adamawa State University, Mubi, Nigeria

(Manuscript received 5 June 2018; accepted for publication 22 December 2018)

Abstract. *This study investigated the food security status of female-headed households (FHHs) in Mubi north local government area (LGA) of Adamawa State, Nigeria. Specifically, the socio economic characteristics and determinants of household food security status of respondents were tested. Structured questionnaire was used to collect data from 80 female headed households using simple random sampling technique from five districts of Mubi north LGA. Analytical tools used were the food security index (FSI) and Binary Logit Regression Analysis. The results showed that majority (57.9%) of the respondents were middle aged, having 1-5 persons in their household and cultivating about 1-3 hectares of land. It further showed that most of the respondents (63.8%) were food insecure. The result further showed that age, household size, educational status, and access to input were significant and therefore regarded as the major determinants of food security in the study area. It also showed that extension service was not significant and thus not a determinant of food security among the respondents. The study concluded that female headed households in the study area were food insecure; it was thus recommended that NGOs, CSOs and other actors should focus more on agricultural activities by providing inputs so as to improve food production and household food security index, furthermore, the result showed that extension service did not influence food security status of respondents, thus, private extension service providers should be established to assist the government in the provision of intensive extension contact/services, this can help to improve food production and subsequent food security status of respondents.*

Keywords: food security, female-headed households, food security index, Mubi north

Introduction

Food security as a situation where people have physical and economic access to sufficient, safe, nutritious and culturally acceptable food to meet their dietary needs leading to a healthy and active life (Andrews et al., 2000). Food security may be defined as the ability of countries, regions, states or households to meet their target food consumption levels. The exact opposite of the above definition is termed as food insecurity in the context of this paper. Food crises does not just occur, they are precipitated by remote or immediate causes. Some of the causes are individual-induced, some societal problems, while others are national and international effects of some inadequacies and deficiencies (Fadiji and Omokore, 2010). Food insecurity could be caused by supply and demand-side factors. One of the supply side causes of food insecurity is food marketing problem (Idachaba, 2004). The food marketing problems are evidenced when farmers, (who are primary producers and who reside mostly in rural areas) could not get their produce to markets at the right time (thereby incurring considerable post-harvest loss) and are not given better returns for their efforts. Other causes of food insecurity include: (a) Population growth: an increment in the reproduction of humans without corresponding growth in the crop production. (b) Low food crop production: a low food production unable to match the demand for food, (c) Continuous rise in prices: a continuous increase in the price of food crop leading to low purchasing power, (d) War/conflicts

and crises (refugee increase): instabilities and crises in many parts of the world lead to refugee movement, displacement of work-force and abandonment of many families, (e) Environmental disaster, e.g. floods, desertification, global warming due to unexpected natural causes and (f) Over dependence on donations/aids/grants; many countries still depend on grants and aids from the advanced countries and could not harness their endowed resources.

Successive governments in Nigeria have made efforts to achieve food security in the country by trying to boost food production through the setting up of a number of Agricultural Development Institutions, Special Programmes and Projects, such efforts include: the National Agricultural Development Fund (NADF) in 2002; National Special Programme on Food Security (NSPFS) in 2002; National Food Crisis Response Program (NFCRP), Food Security Thematic Group (FSTG) in 2009, the Growth Enhancement Support (GES) under the Agricultural Transformation Agenda (ATA) in 2011 and the present Buhari administration has emphasized the need to go back to agriculture (operation back to land of 2016). However, despite these government efforts, many of these initiatives have not made enough impact to achieve the objectives for which they were initiated, leaving an overwhelmingly large proportion of Nigerians food insecure (Azubuike, 2012; Adepoju and Jerome, 2012 and Adejere, 2013).

Food insecurity has been on the increase in most rural areas in Nigeria, in fact, food insecurity is no longer simply seen as a failure of agriculture to produce sufficient food at the

*e-mail: madjustinealt@gmail.com

national level, but instead as a failure of livelihoods to guarantee access to sufficient food at the household levels (Ncube, 2010). Rural food shortages in Adamawa state result largely from low productivity, agricultural shocks and decreasing purchasing power (Fiona et al., 2011). This problem is being exacerbated by many factors, notably; population explosion and climate change, depleting soil fertility and recently the effect of insurgency due to Boko Haram attacks. In the last three decades, the land tenure system have been confronted with problems of fast population growth and competing economic use of land which resulted in reduced land to man ratio, reduced fallow periods and intensification of land use.

Many African countries of recent have witnessed a significant increase in the percentage of female-headed households (FHHs). Some of the major reason for this condition is male migration, the death of males in civil war/conflict (such as Boko Haram insurgency) and low male life span due to family/societal problems. There seems to be little dispute in Mubi north LGA over the fact that FHHs are disadvantaged in terms of access to land, livestock and other resources. Female land-owners commonly possess less land than their male counterparts; the underlying factors causing this inequality include inheritance, land tiling and access to formal credit markets. Women also suffer from access to education, health care and extension services. This situation is worsened with loss of their husbands who owned the resources thus making them female heads of households.

A lot of studies (Fiona et al., 2011; Adewuyi and Hayatu, 2011; Asogwa and Umeh, 2012; Adeniyi and Ojo, 2013; Adepoju and Adejare, 2013 and Adamu, 2014) have focused on the problem of food security from national to regional point of view. However, the main focus of this article was to analyze the food security status of female-headed households (FHHs) in Mubi north local government area (LGA) of Adamawa State, Nigeria, specifically, the socio economic features and determinants of household food security of respondents were identified.

Material and methods

Study area

Mubi north L.G.A. lies between latitudes 10°11'N to 10°32'N of the equator and longitudes 13°12'E to 13°35'E of Greenwich meridian. It has a total land mass of 506.4km² and a population size of 1 097 323 persons (NPC 2006 projected to 2017). The LGA is bounded by Borno state in the north, by Hong and Song LGA in the west and in the east by the Republic of Cameroon. It consists of five districts namely Mubi, Muchalla, Bahuli, Mayo bani and Ba'a. These are further divided into 11 political wards namely Mujilu, lokuwa, Mayo bani, Kolere, Muchalla, Digil, Yelwa, vimtim, Bahulli, Sabon layi and Betso. The vegetation type is referred to as combretaceous woodland savanna made up of grasses, aquatic weeds in river valleys and dry land weeds inter spaced by shrubs and woody plants. The area has an average annual rainfall range between 998 and 1262mm with an annual average maximum temperature of 39.7°C (Adebayo, 2004). Crops cultivated are rice, sorghum, maize, cowpea, groundnut and sugar cane

others include spinach, tomatoes, lettuce, Okra, pepper and onions via irrigation. Major livestock reared are cattle, goat, poultry and pig (Adamawa state dairy, 2009).

Sampling technique

Purposive and simple random sampling technique was used for this study. Female headed households (FHHs) were selected from five out of the eleven wards in the LGAs. The 5 wards were randomly selected to avoid biasness. Eight (80) FHHs were selected using simple random sampling technique from the sample frame obtained from the five wards in proportion to number of FHHs obtained in each ward. The sample selection is presented in Table 1.

Table 1. Sample of female-headed households (FHHs) in proportion to sample frame

Wards	Sample frame (FHHs)	Proportion sample (10%)
1	100	10
2	50	5
3	150	15
4	125	12.5=13
5	170	17
Total	595	80

Analytical technique

Simple random sampling technique was used to administer questionnaires to FHHs in the four districts in proportion to the sampling frame obtained in each district. Analytical tools used were non-inferential statistics i.e. means and percentages to analyze the socio economic characteristics. Others are:

1) Food security index (FSI): The FHHs were classified into food secure and food insecure households based on the food security line. The formula is given as:

$$FSI = \frac{(\text{per capital food expenditure for it household})}{(\frac{2}{3} \text{ mean per capital food expenditure of households})}$$

Where:

FSI = Food security index;

Per capital food expenditure =

$$= \frac{(\text{average expenditure per household for food})}{(\text{household size})}$$

$\frac{2}{3}$ mean per capital food expenditure = x per capital income.

When $FSI \geq 1$ = Food secure ⁱth household; $FSI \leq 1$ = Food insecure ⁱth household.

A food secure household is that whose per capita monthly food expenditure is above or equal to two thirds of the mean per capita food expenditure while a food insecure household is that whose per capita monthly food expenditure falls below two thirds of the mean monthly per capita food expenditure (Omonona and Agoi, 2007). The expenditure approach was chosen over other food security components because it is much easier to use with regards to the kind of respondents, they seem to give more accurate information about expendi-

ture than other components of food security.

2) Binary logit regression was used to analyze the determinants of household food security of the respondents. The food security status of a household which is bivariate, taking the value of one (1) for food secure household and (2) for food insecure household are used as the dependent variable (Adeniyi and Ojo, 2013). Socio economic variables as well as a food security indicator variable are used in the logit regression analysis and specified explicitly in the model as:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + u \dots,$$

Where:

Y = (dependent variable) = food security index;

β_0 = constant;

x_1 = Age of FHH;

x_2 = Household size;

x_3 = Educational status of FHH;

x_4 = Number of livelihood activities;

x_5 = Quantity of own production (kg or equivalent bags obtained);

x_6 = Membership in cooperative association;

x_7 = Farm size (ha);

x_8 = Access to extension services;

x_9 = Access to farm inputs (seeds fertilizers, herbicides, etc.);

x_{10} = Access to credit facilities;

u = Error term.

Results and discussion

Socio-economic characteristics of female-headed households (FHHs)

Table 2 shows the results of the socio economic status of respondents, the results show that the majority (57.9%) of the respondents were middle aged between 31-50 years, implying that they are more energetic and could engage in agricultural and other economic activities to contribute towards improved household food security. The result also revealed that most of the respondents (71.0%) had household sizes of 1-5 persons, which corresponds to the findings of Babatunde et al. (2007) meaning that their family size is moderate, that there are fewer mouths to feed and thus more food availability per head in the family. Furthermore, the table revealed that the majority (87.5%) of the respondents had one form of education or another. Implying that they were literate, this can enhance their food security status. This is in line with the findings of Adepoju and Adejare (2013) who opined that the literate status of the respondent can improve their food security status and adoption of improved farm practices. From Table 2 it is observed that most (71.4%) of the respondents had fragmented farm sizes between 1-3 hectares; hence food production is at subsistence level and may lead to food insecurity. This finding corroborates with those of Arene and Anyeaji (2010), and Oni and Fashogbon (2013) who observed that the majority of Nigerian farmers are small scale farmers cultivating less than 5 hectares of land, thus, the reason for food insufficiency. Table 2 further showed that respondents

had more (57.9%) access to seeds as inputs; such seeds are usually obtained from previous harvests, thus not improved varieties. Other inputs such as fertilizer and herbicides are less available; this may suggest reasons for food insecurity in the study area.

Table 2. Socio-economic status of respondents

Variables	Frequencies	%
Age (years)		
≤30	18	21.7
31-50	46	57.9
51-70	15	19.1
≥ 71	1	1.3
Total	80	100
Household size		
1-5	57	71.0
6-10	19	23.9
11-15	3	3.8
16-20	1	1.3
Total	80	100
Educational status		
Informal	10	12.5
Primary	14	17.5
Secondary	26	32.5
Tertiary	30	37.5
Total	80	100
Farm size (ha)		
< 1	19	23.8
1-3	57	71.4
4-6	4	5.1
> 6	0	0.0
Total	80	100
Access to inputs		
Seeds	46	57.9
Fertilizer	15	19.1
Herbicides	19	23.0
Total	80	100

Source: Field survey, 2018

Household food security status

The result of the food security index estimation using expenditure method is shown in Table 3. The total mean of the FSI was 20.712311; those who fall within the range of 0.00-0.25 were food insecure while those that fall within the range of 0.751-1.00 are food secured. This implies that, 63.75% of the respondents were regarded as being food insecure, about 31.25% of the respondents are moderately food secured and only 5% of the respondents are food secured. This is an indication that the majority of the households were unable to meet their expected food expenditure which implies the incidence of food insecurity among the respondents. This outcome is in agreement with the findings of Adepoju and

Adejere (2013) who reported that there is high incidence of food insecurity in rural Nigeria with the North East sub-region having about 56% food insecure households. This result could be as a result of the current insurgency ravaging the area which claimed the lives of more men than women, thus making these women heads of their households.

Table 3. Distribution of respondents according to food security status

Range	Frequency	%	FSI
0.00-0.25	51	63.8	7.714489
0.251-0.5	24	30	8.454803
0.51-0.75	1	1.25	0.625
0.751-1.00	4	5	3.918019
Total	80	100	20.712311

Source: Field survey, 2018; FSI - Food security index
Determinants of household's food security of the respondents

The variables that were found to significantly influence

the food security status as observed in Table 4 included: age, household size, educational status, and access to input. The age of the respondent (X_1) was 0.338393 which was positive and statistically significant at the 10% level. It reveals that the majority (35.2%) of the respondents were between 31 and 40 years of age. This by implication means that the majority of the respondents are more energetic and in their economic active age implying that they could afford to engage in on-farm and off-farm economic activities that will contribute towards improved household food security.

The coefficient of household size (X_2) was 1.2964, which was negative but statistically significant at the 1% level. This means that as the household size increases, food insecurity tends to increase. Specifically, a member increase in household size decreases the probability of household being food secure by -1.2964. The finding from this study indicates that there is a decrease in household food security of the study area because of increase in the household size. This may be attributed to the fact that the household size exerts more pressure on consumption than it contributes to production. This is in agreement with Adepoju and Adejere (2013) who found that an increase in one family member increases the

Table 4. Result of logit regression for the determinant of household food security status

Variables	Coefficient	Standard error	P >(z)
Age (X_1)	0.0338393	0.0219105	0.122***
Household size (X_2)	-1.2964	0.1662524	0.000***
Educational status (X_3)	-0.6435843	0.2364617	0.006***
Livelihood activities (X_4)	0.3194229	0.2311327	0.167**
Quantity of bags produced (X_5)	0.0214437	0.164787	0.193**
Membership of cooperative (X_6)	-0.235687	0.4687066	0.615*
Farm size (X_7)	-0.5277641	0.3960846	0.183*
Extension service (X_8)	0.5665981	0.6511233	0.384
Access to input (X_9)	-1.230776	0.5990342	0.040**
Access to credit (X_{10})	-4824487	0.5246584	0.358

Source: Field survey, 2018; *, **, ***, Significant at 1, 5 and 10%, respectively

chances of a household becoming food insecure by indirectly reducing income per head, increasing expenditure per head, and per capita food consumption.

The educational status (X_3) of a household is statistically significant at 1% and exhibits a positive relationship with food security status. Specifically, the probability of being food secure is increased by -0.6435843 for households whose heads had higher level of formal education. This suggests that increase in years of formal education increases the likelihood of households to be food secured and vice versa. This is in conformity with a priori expectation since the level of education should positively affect the income earning capacity and the level of efficiency in managing the household's food resources.

Access to input (X_9) has a positive and statistically significant (5%) relationship with food security. This signifies that for a unit rise in access to input, the level of food security will increase by -1.230776. This implies that, an increase in ac-

cess to input increases the possibility of a household becoming food secure due to the fact that access to input increases farm output and thus contributes to household income which would lead to increase in per capita food expenditure and consequently improved food security status of the households. The results corroborate those of Asogwa and Umeh (2012) who revealed that households with access to input have a lower probability of being food insecure.

Conclusion

This study revealed that the majority (57.9%) of the respondents were middle aged, between 31-50 years, they had family sizes of 1-5 persons cultivating about 1-3 hectares of fragmented lands. Most (87.5%) of them are literate but with little access to improved inputs such as seeds, fertilizer and herbicides. It was found that food insecurity is a problem in the study area by indicating that the majority (63.8%) of the

respondents are food insecure, furthermore the result shows that the variables found to significantly influence food security status were age, household size, educational status and access to input. In this connection, it is recommended NGOs, CSOs and other actors to focus more on agricultural activities by providing inputs and also by improving the educational status of respondents via adult education/extension education so as to improve food production and household food security index, further, the result shows that extension service did not influence the food security status of the respondents, thus, private extension service providers are encouraged to assist the government in the provision of intensive extension contact/services, this can help to improve food production and the subsequent food security status of respondents.

References

- Adamawa State Diary**, 2009. Publication of the Adamawa State Ministry of Information, Information Division, ABTI Press LTD, Yola, Nigeria.
- Adamu Y**, 2014. Food security situation in Nigeria: Dimensions, causes and effects. Thesis for PhD (unpublished), Department of Agricultural Economics and Extension, Modibbo Adama University of Technology, Yola, Nigeria.
- Adebayo AA**, 2004. Mubi Regions. A Geographical Synthesis, Paracklet publishers, Yola, Nigeria, pp. 32-38.
- Adeniyi OR and Ojo OA**, 2013. Food security status of rural farming households in Owo, Ayedire and Ayedaade local government areas of Osun State, South Western Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*, 13, 8209-8223.
- Adepoju AO and Adejere AK**, 2013. Food insecurity status of rural households during the post-planting season in Nigeria. *Journal of Agriculture and Sustainability*, 4, 16-35.
- Andrews M, Gary B and Steven C**, 1998. Household food security in the United States in 1995: Results from the Food Security Measurement Project "Family Economics and Nutrition Review", 11, 17-28.
- Adewuyi KA and Hayatu Y**, 2011. Effect of poverty on food security of rural households in Adamawa State, Nigeria. *Journal of environmental issues and agriculture in developing countries*, 3, 150-156.
- Arene CJ and Anyeaji RC**, 2010. Determinants of food security among households in Nsukka Metropolis of Enugu State, Nigeria. *Pakistan journal of science*, 30, 9-16.
- Asogwa CB and Umeh JC**, 2012. Food insecurity determinants among rural farm households in Nigeria. International conference on ecology, agriculture and chemical engineering (ICEAS), December 18-19, Phuket, Thailand.
- Azubuikwe G**, 2012. Food insecurity as a time bomb. Retrieved 12th July 2014. <http://allafrica.com/stories/201203110293.html>.
- Babatunde RO, Omotesho OA and Sholotan OS**, 2007. Socio-economic characteristics and food security status of farming households in Kwara State, North-Central Nigeria. *Pakistan journal of nutrition*, 6, 49-58.
- Fiona S, Maja G, Carolin H and Miguel N**, 2011. Food, finance and fuel: the impacts of the triple F crisis in Nigeria, with a particular focus on women and children: Adamawa State Focus. Overseas Development Institute, ODI, Nigeria.
- Idachaba FS**, 2004. Food security in Nigeria: Challenges under democratic dispensation. Paper presented at the 9th Agricultural and Rural Management Training Institute Annual lecture, Ilorin, Nigeria.
- Jerome A**, 2012. Nigeria's food security programs: Implications for MDG's goal of extreme hunger eradication. *International journal of business and social science*, 3, 243-253.
- Ncube A**, 2010. Impact of livelihood diversification on household food security: The case of Hurungwe district, Zimbabwe. Thesis for MSc (unpublished), Department of Development Studies, University of South Africa.
- NPC (National Population Commission)**, 2006. National Population Census, Federal Republic of Nigeria Official Gazette, 94, Lagos, Nigeria.
- Omonona BT and Agoi GA**, 2007. Analysis of food security situations among Nigerian urban households: Evidence from Lagos State. *Journal of Central European agriculture*, 8, 397-406.
- Oni OA and Fashogbon AE**, 2013. Food poverty and livelihoods issues in rural Nigeria. *African Journal of Agricultural and Resource Economics*, 8, 108-135.