

## Vulnerability and Food Insecurity Differentials among Male And Female-Headed Farming Households in Nigeria

<sup>1</sup>R.O. Babatunde, <sup>2</sup>G.M. Owotoki, <sup>2</sup>F. Heidhues and <sup>3</sup>G. Buchenrieder

<sup>1</sup>Department of Agricultural Economics and Social Sciences,

<sup>2</sup>Department of Agricultural Development Theory and Policy,  
University of Hohenheim, D-70593 Stuttgart, Germany

<sup>3</sup>Leibniz-Institute of Agricultural Development in Central and Eastern Europe,  
Agricultural Development Theory and Policy, Germany

**Abstract:** This study examines vulnerability and food insecurity differences among male and female-headed farming households in Kwara State, north-central Nigeria. It employed a three-stage sampling method to select 60 farming households consisting of 30 male and 30 female-headed households. Indices of households coping strategies and the weighted sum reflecting frequency and severity of households coping strategies were used as a proxy for indicating the vulnerability of male and female-headed households to food insecurity. Anthropometric measurement such as height-for-age, weight-for-height and incidence of stunting and wasting were measured and compared among pre-school children in male and female-headed households. The result shows that the female-headed households were more vulnerable to food insecurity than the male-headed households. There was higher prevalence of wasting and stunted growth among the female-headed households. This probably implies that female-headed households had less access to and utilization of food and are therefore more food-insecure than their male-headed counterparts. The result further showed that household became more vulnerable to food insecurity as the age of household head, household size, dependency ratio and susceptibility of households head to sickness increased. On the other hand, vulnerability to food insecurity decreases as the level of education of household head, total off-farm income, access to extension services, total value of crop produced, amount spent on food, size of land cultivated and number of labour hours increases. It is suggested that women should be given sufficient nutrition education, while, also enhancing the income generating and food production capacity of female-headed households.

**Key words:** Food insecurity, vulnerability, male-headed household, female-headed household, Nigeria

### INTRODUCTION

Gender differences in resource control, asset ownership, income earning, consumption and expenditure have been identified as important factors in household's food security (Owotoki, 2005). Despite improvement in building women's capabilities, gender gaps in entitlement, the resources which women and men can command through available legal means, continue to persist (Akinsanmi and Doppler, 2005). This is usually reflected in unequal right between men and women for both natural and physical capital which leads to inadequate and inappropriate use of resources; and limited alternatives, low income, poor diet and low living standard. These disparities have serious consequences for well-being not only for women themselves, but also for their families and

the society at large. In sub-Saharan Africa, women have less access to education, labour, fertilizer and other inputs than their men counterpart. The right to own, use and manage land resources is also limited among rural women (Quisumbing, 1996). Various studies (Aidoo, 1988; Kimhi, 2004; Panin and Brummer, 2000; Ellis *et al.*, 2006) have shown that women produce between 60 and 80% of the food in most developing countries and are responsible for half of the world's food production. FAO (1989) confirmed that while women are the mainstay of small scale agriculture, the farm labour force and day-to-day family subsistence, they face more difficulties than men in gaining access to resources such as land, credit and improved inputs.

In Nigeria, women play a major role in production of food crops and they also undertake processing, marketing

and livestock husbandry. A survey by Ukeje (2003) on the contribution of women in staple food crops production among the 'Ibos' of Abia state in Nigeria, showed that women contributed most of the labour in planting maize, cassava, cowpea, melon and rice. They are completely in charge of planting and harvesting of cowpea and melon. Apart from land preparation, women contributed more than 80% of the labour for planting, weeding, harvesting and storage of cassava in the study area. Despite the bias against women, empirical studies have shown that there would be an increase agricultural productivity, improved nutrition and health for children as well as reduction in food security when gender discrimination against women is eliminated in terms of access to productive resources (Blackden and Wodon, 2006).

Food security has been defined as a situation when all people, at all times, have physical and economic access to sufficient, save and nutritious food needed to maintain a healthy and active life (FAO, 1996). A situation where this does not occur indicates food insecurity. The definition integrates access to food, availability of food and the biological utilization of food and stability of these. These factors are interrelated. Having access to food, for example, means little if poor health status impinges on people's ability to utilise the food they consume. Likewise, earning income to purchase food (access) matter less if insufficient food is available in the market and a well-stocked market is irrelevant to those who do not earn income to purchase food. The concept of vulnerability in the food insecurity context refers to the propensity to fall, or stay below a pre-determined food security threshold in the future. Thus the term vulnerable groups is used to refer to both the potentially food insecure and the food insecure segment of the society. These could include the landless, migrant labour, women and children, the illiterates etc (FAO, 2004). Vulnerability is a function of exposure to risks/shocks and the resilience to these risks. Risks/shocks are event that threaten households' food access, availability and utilization and hence their food security status. Resilience in the food security context is determined by the effectiveness of risks management strategies (through prevention, mitigation and coping) and by the resources that can be drawn upon (FAO, 2004).

The aim of this study is to access vulnerability and food insecurity differentials among male and female-headed households in Kwara state of Nigeria. The need for gender analysis of vulnerability and food insecurity is based on the fact that men and women experience food insecurity differently and respond to it differently; indicating that the causes and consequences of food

insecurity are gender-related. The basic understanding here is that men and women are important factors in the society and they each play different roles. In this study, male and female-headed households were compared based on the level of vulnerability and food insecurity. This type of study is necessary because, it could guide policy makers in knowing the more vulnerable groups in the society to which future intervention strategies would be directed.

## **MATERIALS AND METHODS**

This study was conducted in Kwara state in the north-central agro ecological zone of Nigeria. Out of the six states in this zone, the state was purposely chosen based on knowledge of the prevailing situation. A 3-stage random sampling method was used to select a sample of 60 farming households consisting of 30 male and 30 female-headed households. Primary data were collected through a cross-sectional survey in 2005 using family interviews with structured questionnaire. The questionnaire was designed to collect information on socio-economics characteristics, resource availability, living standard, coping strategies and anthropometric data of pre-school children of the selected households.

Indices of household coping strategies and the weighted sum reflecting the frequency and severity of households coping strategies were used as measures for indicating the level of vulnerability among male and female-headed households to food insecurity. The weighted sum reflecting frequency and severity of household coping strategies is an index based on how the households adapt to the presence or threat of food shortages (Radimer *et al.*, 1990; Maxwell and Frankenberger, 1992; Maxwell, 1996; Hoddinott, 1999). This index was computed by using data generated from a series of questions regarding how households were responding to food shortages. Anthropometric measurement such as height-for-age, weight-for-height and incidence of stunting and wasting were measured and compared among pre-school children in male and female-headed households. The determinants of vulnerability of households to food insecurity was examined by applying an Ordinary Least Square regression model to estimate 12 regressors against the weighted sum reflecting frequency and severity of households coping strategies.

## **RESULTS AND DISCUSSION**

**Indices of households coping strategies:** According to Hoddinott (1999) indices of household coping strategies, directly capture notions of adequacy and vulnerability of

Table 1: Comparisons of coping strategies used to combat threat of food shortages of male and female-headed households

Coping strategies	Male-headed households n = 30	Female-headed households n = 30	T-test
Number of coping strategies	3.90 (0.31)	5.28 (0.23)	2.33**
Skipped meals a whole day	1.10 (0.29)	1.12 (0.31)	1.00 <sup>ns</sup>
Skipped meals in the last 7 days	2.03 (0.56)	3.13 (0.96)	1.69 <sup>†</sup>
Reduced quantity of food to children	2.41 (0.57)	2.44 (0.51)	0.80 <sup>ns</sup>
Reduced quantity of food to women	2.60 (0.62)	2.73 (0.52)	0.37 <sup>ns</sup>
Reduced quantity of food served men	2.57 (0.50)	2.77 (0.50)	0.13 <sup>ns</sup>
Consumption of less preferred	2.77 (0.50)	3.13 (0.68)	2.15**

Source: Own survey data, 2005. \* \*\* = Level of significance at 10 and 5%, respectively. ns = not significant; Numbers in parenthesis are standard deviations

Table 2: Comparison of frequency and severity of use of the coping strategies adapted by the male and female headed households

	Male-headed households n = 30	Female-headed households n = 30	T-test
Weighted sum reflecting use	13.3 (2.3)	14.9 (1.5)	2.98***
Weighted sum reflecting frequency and severity of use	32.6 (5.9)	36.2 (4.4)	1.99**

Source: Own survey data, 2005. \*\*\*, \*\* = Level of significance at 1 and 5%, respectively. Numbers in parenthesis are standard deviations

households. Households using a larger number of coping strategies or using more severe strategies are likely to be poor and more vulnerable to food insecurity; hence the higher the sum of the coping strategies the more food-insecure the household. Results on the coping strategies applied by households to address food shortages are shown in Table 1. The Table 1 showed that, female-headed households used a significantly higher number (average of 5.28) of household coping strategies to food shortage compared to male-headed households who used an average of 3.90. Further analysis showed that there was no significant difference in the use of skipped meals a whole day, reduced quantity to children, men and women as coping strategies to food shortages. There was however significant difference between the female and male-headed households in terms of use of skipped meals in the last seven days and the consumption of less preferred foods as coping strategies. The female-headed households used more of this severe coping strategy of skipping meals which indicates that female-headed households were more likely to be poor and more vulnerable to food insecurity than the male-headed households.

In addition, further analysis was done to determine the frequency and severity of use of the different coping

Table 3: Comparison of height for age and weight for height Z scores of preschoolers in male and female-headed households

	Male-headed households n = 15	Female-headed households n = 11	T-test
Mean height for age Z scores	-1.02 (1.36)	-1.78 (2.01)	2.32**
Mean weight for height Z scores	0.42 (1.26)	0.14 (1.52)	0.32 <sup>ns</sup>

Source: own survey data, 2005. \*\* = level of significance at 5%. ns = not significant; numbers in parenthesis are standard deviations

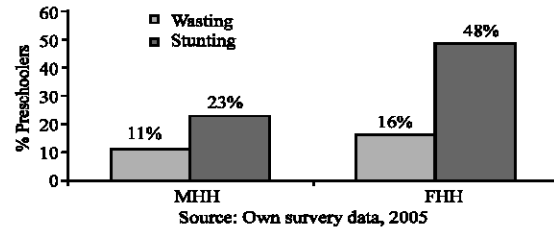


Fig. 1: Comparison of the wasting and stunting in preschoolers in male and female-headed households

strategies to food shortages among the male and female-headed households and the findings are summarized in Table 2. The female-headed households had a significantly higher weighted sum reflecting frequency and severity of use of household coping strategies with 14.9 and 36.2, respectively. The above revealed that the female-headed households were more vulnerable to food insecurity than the male-headed households.

**Anthropometric measurements:** In children, the 3 most commonly used anthropometric indices to assess growth status are; weight for height, height for age and weight for age. For the purpose of this study only the first two indices were adopted. The Z scores of weight for height and height for age were estimated in reference to the measured height, weight and age of the preschool children compared to the standard well-nourished individuals of same age and sex. The use of the mean Z scores has the advantage of describing the nutritional status of the entire group directly without resorting to a subset of individuals below a set cut-off (WHO, 1995). Table 3 shows that the mean height for age Z scores of both the preschoolers in the male and female headed households were less than zero reflecting that most of the preschoolers in the study area failed to reach linear growth potential. There was no significant difference in the mean weight for height Z scores for the preschoolers for both households.

On classifying the preschoolers into male and female-headed households (Fig. 1), 11 and 16% of the preschoolers in the male and female-headed households

Table 4: Determinants of households' vulnerability to food insecurity in both male and female-headed households

Variables	Coefficients	Standard error	T-value
Age of household head (years)	0.1765	0.1669	1.06 <sup>ns</sup>
Household size	0.1101	0.0556	1.98**
Dependency ratio	0.00551	0.0190	0.29 <sup>ns</sup>
Education of household head (years)	-0.1470	0.0259	-2.18**
Total off farm income (Naira)	-0.0031	0.0018	-1.73*
Total annual value of crops produced (Naira)	-0.0215	0.0046	-4.68***
Susceptibility of household head to sickness	0.0183	0.0426	0.43 <sup>ns</sup>
Access to extension services	-1.1563	0.3285	-3.52***
Household type (FHH = 0, MHH = 1)	0.2137	0.1891	1.13 <sup>ns</sup>
Amount spent on food (Naira)	-0.0006	0.0003	-2.00**
Farm size (acres)	-0.0265	0.0554	-0.48 <sup>ns</sup>
Number of labour hours	-0.2828	0.0972	-2.91

\*\*\*Source: Own survey data, 2005. Dependent variable: Weighted sum reflecting frequency and severity of use; ns = not significant \*, \*\*, \*\*\* = level of significance at 10, 5 and 1%, respectively, R<sup>2</sup> = 0.586; p = 0.053 FHH = Female-Headed Households, MHH = Male-Headed Households

were found to be wasting indicating a recent and severe process of weight loss, which is often associated with acute starvation and/or severe disease. The higher prevalence of wasting and stunted growth in the female-headed households indicates that these households had less access and utilization to food. This further supports the results from the coping strategies discussed above.

**Determinants of vulnerability of households to food insecurity:** In order to examine the determinants of households' vulnerability to food insecurity a model comprising of 12 variables was estimated. Table 4 present the regression estimates for the determinants of households' vulnerability to food insecurity. Table 4 shows that the household became more vulnerable to food insecurity as the age of household head, household size, dependency ratio and susceptibility of household head to sickness increased. On the other hand, the household became less vulnerable to household food insecurity as the education level of household head, total off farm income, access to extension services, total annual value of crops produced, amount spent on food, size of land operated and number of labour hours increased.

### CONCLUSION

This study has shown that food insecurity and vulnerability to food insecurity were higher in female-headed households than in male-headed households. This is believed to be partly due to bias in resource

ownership and allocation among men and women in the communities. To reduce the level of vulnerability to food insecurity among male and female-headed households, the education level of household's head, total off-farm income, access to extension services, total value of crop produced, amount spent on food, size of land cultivated and the number of labour hours put into farming should be increased.

### REFERENCES

Aidoo, A.A., 1988. Women and Food Security: The Opportunity for Africa Development. *J. Soc. Int. Dev.*, 273: 51-62.

Akinsanmi, A. and W. Doppler, 2005. Gender Inequalities and their Implications for Living Standard and Food Security among Male and Female Households in Imo State, Nigeria. *Deutscher Tropentag, University of Hohenheim, Stuttgart, Germany.*

Blackden, C.M. and Q. Wodon, 2006. Gender, Time Use and Poverty in Sub-Saharan Africa, World Bank Working World Bank, Washington DC., pp: 73.

Ellis, A., C. Manuel and C.M. Blackden, 2006. Gender and economic growth in Uganda: Unleashing the Power of Women, World Bank, Washington DC.

FAO, 1996. Food and Agricultural Organization, Rome declaration on world food security. *World Food Summit, Rome*, pp: 13-17.

FAO, 1989. Household Food Security and Forestry: An Analysis of Socio-economic Issues. Rome, pp: 88-99.

FAO, 2004. Food Insecurity and Vulnerability in Nepal: Profiles of Seven Vulnerable Groups, *ESA Working Paper Rome*, pp: 22.

Hoddinott, J., 1999. Choosing Outcome Indicators of Household Food Security. *IFPRI Technical Guide 7. International Food Policy Research Institute (IFPRI), Washington DC. USA: <http://www.ifpri.org/themes/mp18/techguid/tg07.pdf>.*

Kihmi, A., 2004. Gender and Intrahousehold Food Allocation in Southern Ethiopia. *Discussion Paper No. 9.04, the Center for Agricultural Economic Research.*

Maxwell, D., 1996. Measuring Food Insecurity: The frequency and severity of coping strategies. *Food Policy*, 21: 291-303.

Maxwell, S. and T. Frankenberger, 1992. *Household Food Security: Concepts, Indicators, Measurements. The United Nations Population Fund, IFAD and UNICEF. Rome, Italy.*

- Owotoki, G.M., 2005. Gender Differences in Households Resource Allocation and Its Impact on Food Security: A Case Study of Kwara State, Nigeria. Unpublished M.Sc Thesis, University of Hohenheim, Stuttgart, Germany, pp: 75.
- Panin, A and B. Brummer, 2000: Gender differentials in resource ownership and crop productivity of small holder farmers in Africa: A Case Study. *Quarterly J. Int. Agric.*, 39: 93-107.
- Quisumbing, A., 1996. Male-female differences in agricultural productivity. *World Development*, 24: 1575-1595.
- Radimer, K., C. Olson and C. Campbell, 1990. Development of indicators to assess hunger. *J. Nutr.*, 120: 1544-1548.
- Ukeje, E., 2003. Modernizing Small Holder Agriculture to Ensure Food Security and Gender Empowerment: Issues and Policy <http://www.g24.org/ukeje.pdf>.
- WHO, 1995. World Health Organization 1995 Physical status: The Use and Interpretation of Anthropometry. WHO Technical Report Series No. 854. Geneva. Switzerland.