

COMPARATIVE GENDER DIMENSIONS IN FOOD UNSECURED FARM HOUSEHOLDS IN ORSU LOCAL GOVERNMENT AREA OF IMO STATE, NIGERIA

Abstract

This Study was conducted to compare gender dimensions in farm households with challenges of food insecurity in Orsu local Government Area of Imo State, Nigeria. Cross sectional data from forty male-headed and forty female-headed farm households purposively selected from a random sample of ten out of 21 communities of Orsu Local Government Area of the state was subjected to descriptive and inferential statistical analyses. Male-headed farm households posted food insecurity line of ₦9,278.78 as against ₦5,243.67 shown by female-headed farm households. These household groups had head count food insecurity incidence (ratios) of 0.375 and 0.250 for male-headed and female-headed farm households respectively. The female-headed farm households were relatively more food secured than their male counter-parts. Food insecurity in male-headed farm households was determined by dependency ratio, education level, monthly expenditure, frequency of contact with agricultural extension agency, and status of farming. In the female-headed farm households, food insecurity was determined by household size, level of education, monthly expenditure, age of household head, and frequency of contact with agricultural extension agency. Farm households should enhance productivity of their food crops and livestock by adopting technologies recommended by agricultural extension outfit to help cushion devastating effects of food insecurity amongst them.

Keywords: Food insecurity, Farm household, Gender dimensions, Orsu, own foods.

1.0 Introduction

Most foods produced by poor farming households in Nigeria are consumed, or sold for cash only to be repurchased when household barns run short with supplies. This cyclic and unstable condition most times leaves such farm households in a state of insecurity with food supplies. Food security in a household truly refers to that amount of food available and to which members are entitled to (accessibility) in a household at any given time (Ering, 2011). A food secured household should have enough food available to ensure minimum necessary intake by all members (usage), with adequate capacity for effective demand for available food. Alamgir and Arora (1991) had observed that this minimum intake should relate to body weight, sex, size,

nature of work and for women, their state of pregnancy, and lactation. Unfortunately, food insecurity ranks high amongst household developmental problems in Nigeria (FAO, 2000; Babatunde *et al.*, 2007). A farm household in line with Anderson (2002) is that economic unit consisting of either a single person or a group of persons who live together and depend on common income and within the limits of that income, exercise choices in meeting specific objectives with at least one member describing their major occupation as farming. In different farm households males and females have their roles to perform as part of farm activities. Gender dimensions examined status, trends, gaps, extent, size, aspects and/or quality of involvements as well as tools or differentiated ways used by males and females in these activities and constitutes pertinent issues in emerging fight against hunger and starvation, providing indispensable tool for food policy planning, implementation, monitoring and assessment (FAO, 2010).

The problem remains that there are glaring differences in traditionally assigned roles to males and females in household food production, processing, and preservations such that issues with male-led and female-led decisions in matters of food security come out differently in explaining food insecurity. In matters of housekeeping and nutrition management college-educated women heading households have comparative advantage over their male counterparts who may though have higher incomes and controlling powers over production and purchasing power (FAO, 2010; Binkley and Golub, 2011). Women in agriculture work longer hour per day, earn less income than the men and provide better meals for their homes in Nigeria. Equally, gender disaggregated data food insecurity have quite rarely being reported in the country. Even food insecurity indices have rarely been reported in the state. This study therefore aimed at achieving the following specific objectives: (i) computing and compare food security indices among female-headed and male-headed farm households in Orsu Local Government Area of Imo State; (ii) determine and compare factors that influenced food insecurity in male-headed and female-headed farm households in the study area; (iii) articulate policy implications of activities of gender in alleviating food insecurity in Nigeria.

2.0 Methodology

2.1 Area of Study

This study was carried out in Orsu Local Government Area (LGA) of Imo State, Nigeria. Orsu LGA was by 1983 part of Orlu LGA but became a full fledged LGA in 1990. Orsu LGA shares

boundaries in the East with Orlu LGA, in the west with Oru East, in the South with Njaba all in Imo State and with Ihiala LGA in Anambra State of Nigeria. Orsu is located between Latitudes $5^{\circ} 10'N$ and $5^{\circ} 2'N$ of the Equator and between Longitude $6^{\circ} 32'E$ and $6^{\circ} 52'E$ of the Greenwich Meridian. It is situated within high populated Igbo eastern heartland with 120,003 inhabitants made up of 61,950 males and 58,053 females (NPC, 2006). Orsu LGA with headquarters at Orsu-Ihitteukwa has 21 autonomous communities namely Okwunamaralhe, Isiama, Okwefuruaku, Awo-Idemili, Etiti, Orsuihiteukwa, Eziawa, Etiti-Okabia, ElugwuOkabia, Amaebu, Ammannachi, Amazu, Emenyi, Amadiaba, Akumannanansa, Amanogu, Umuoka, AssahUbrilem, Amaruru, and Ebenesses. The area is notable for agricultural production, producing tree crops like oil palm, and Cashew. Livestock farming in the area involves production of poultry, pigs, goats, sheep and aquaculture. Food crops grown in the state are Cassava, sweet potatoes, Plantain, Banana, cowpeas, vegetables, melon, pineapples and maize. The commonest cropping system in Orsu is mixed cropping with most farmers operate in scales that classify them as smallholders. Many of the small farmers combine farming with petty trading, civil service jobs and capture fishery along Njaba River.

2.2 Sampling Technique and Data collection

Multi-stage random sampling technique was used to collect cross-sectional information on household socioeconomic, farm production, product processing and storage from selected farmers in the study area. In the first stage, ten autonomous communities were randomly selected from the twenty one autonomous communities that make up Orsu LGA. In the second stage, one village was selected from each of the chosen communities. In the third stage, eight farm households purposively: four male-headed and four-female headed were chosen from each of the villages. This gave a sample of eighty farm households consisted of forty male-headed and forty female headed involved in this study. Socioeconomic data collected included gender of household head, Marital status, age of household head, household age distribution, level of formal education, household size, number of very old members of household, number of invalid/bed-ridden members of a household, farm size, farm income, years of farming experience, major occupation of household, household monthly earnings, and household expenditure on foods.

2.3 Data Analytical Technique

A combination of statistical tools including frequency distribution, percentages, and means was used in analyzing the data collected for this study. While frequency, percentages and means were used to describe the socio-economic characteristics of the farm households, food security index and head count ratio were used to analyze food insecurity indicators (indices) in the households. Thus:

Food Security Index (F_1) = $\frac{\text{Per capita food expenditure for each of the household}}{2/3 \text{ mean per capita food expenditure of all households}}$

Where:

$F_1 \geq 1$... Food secured

$F_1 < 1$... Food unsecured (Omonona and Agoi, 2007; Adepoju and Olawuyi, 2012)

A food secured household therefore was one whose per capita monthly food expenditure fell above or was equal to two-third of the mean per capita monthly food expenditure of all the households. By same reasoning, a food unsecured household was one whose per capita monthly food expenditure was less than two-third of the mean per capita monthly food expenditure of all the households (Adepoju and Olawuyi, 2012).

Food insecurity incidence (head count ratio) = $\frac{\text{Number of food unsecured households}}{\text{Total number of sampled households}}$... (FAO, 2001; Omonona and Agoi, 2007).

Limited response dependent variable multiple regression probit model was used in analyzing factors that influenced food insecurity in farm households. The model of limited dependent variable used was as introduced by Tobin (1958) and as applied by Amamiya (1981) and corrected for bias (Heckman, 1976) in selection of respondents. This probit model was stated as follows:

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$$Y_{ij} = \alpha_j + \beta_j \sum_{k=1}^s H_{ijks} + \varepsilon_{ij} \quad \dots (1)$$

Where the H_{ijks} are vectors of s explanatory variables of the jth household apparently threatened by some degrees of food insecurity; Y_{ij} is a vector of binary variables such that $Y_{ij}=1$ if the jth household accepts being unsecured with food, and 0 otherwise. Since Y_{ij} can only assume two different values for the condition, 1 or 0. The expected probability was defined as follows:

$$E(Y_{ij}) = E \left[\alpha_j + \beta_j \sum_{k=1}^s H_{ijk} + \varepsilon_{ij} \right]$$

$$= \alpha_j + \beta_j \sum_{k=1}^s H_{ijk} E(H_{ijk}) \dots (2)$$

Equation (2) defines the proportion of households with characteristics (H_{ij}) likely to influence food insecurity. The empirical model was specified for food security thus:

$$EXP_{ij} = \beta_0 + \beta_1 \ln(AG_{ij}) + \beta_2 \ln(MS_{ij}) + \beta_3 \ln(HS_{ij}) + \beta_4 \ln(DR_{ij}) + \beta_5 \ln(ED_{ij}) + \beta_6 \ln(FS_{ij}) + \beta_7 \ln(ME_{ij}) + \beta_8 \ln(EC_{ij}) + \varepsilon_{ij} \dots (3)$$

Where explanatory variables (continuous and binary) are as defined in Table 1.0. The dependent variable for equation (3) is household's perception of status of food insecurity as defined in equation (1). It was hypothesized that (i) food insecurity in male-headed farm households would positively be influenced by: AG_{ij} ; MS_{ij} ; HS_{ij} ; DR_{ij} ; ME_{ij} ; SF_{ij} ; and (ii) that food insecurity in female-headed farm households would positively be influenced by: AG_{ij} ; MS_{ij} ; HS_{ij} ; DR_{ij} ; ME_{ij} ; SF_{ij} ; and (iii) that food insecurity in male-headed farm households would negatively be influenced by: MS_{ij} ; ED_{ij} ; FE_{ij} ; FS_{ij} ; EC_{ij} and (iv) that food insecurity in female-headed farm households would negatively be influenced by: MS_{ij} ; ED_{ij} ; FE_{ij} ; FS_{ij} ; EC_{ij} .

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Table 1.0 Description of Variables analyzed by Probit Regression Model

Variable	Variable Type	Expected Sign Eqn. 3	Description of Variable
EXP _{ij}	Binary		1 if the jth household perceived being food unsecured; 0

if otherwise Eqn. (3);

AG _{ij}	Continuous	+	Age of male or female head of household (years);
MS _{ij}	Binary	+/-	Marital status (1 if Married; 0 if otherwise)
HS _{ij}	Continuous	+	Household size (a single person or a group of persons living together and depending on common income and within limits of that income, exercise choices in meeting specific objectives and where at least one member describes their major occupation as farming);
DR _{ij}	Continuous	+	Dependency ratio (ratio of aged, infants, children of school age, and invalids to household size);
ED _{ij}	Continuous	-	Number of years of formal Education of head of household;
FE _{ij}	Continuous	-	Years of farming Experience
FS _{ij}	Binary	-	1 if size of farmland is at least 3.0 hectares or number of livestock is at least 100 heads; 0 if otherwise;
ME _{ij}	Continuous	+	Monthly Expenditure
EC _{ij}	Continuous	-	Number of times in contact with extension agents in a three months;
SF _{ij}	Discrete	+/-	Status of farming: Full time=1;Part-time=0;

3.0 Results and Discussions

3.1 Household Characteristics

Table 2.0 shows the general characteristics of male- and female- headed farm households involved in this study. The mean age of males who headed farm households was 49 years while that of females who headed farm households was 51 years. The distribution showed that 10.0% of the males who headed households early were aged at most 34 years as compared to 5.0% females in that stage of household responsibility. However, within the age bracket of 35-64 years, 85.0% female-headed households were observed compared with 67.5% male-headed households. Females dominated this category on account of cumulative effect of stable marriages, single female parenthood, and relative more female divorcees/remarriages within short intervals of separation than the case with males in the study area.

Table 2.0 Characteristics of Farm Households in Orsu LGA of Imo State Nigeria, 2012

Variable	Male-Headed Households M: (n=40)		Female-Headed Households F: (n=40)	
	Number	Percent	Number	Percent
Age of household head (Years):				

< 34	4	10.0	2	5.0
35-64	27	67.5	34	85.0
65 and above	9	22.5	4	10.0

Mean: M=49; F=51

Marital Status of household head

Married	24	70.0	34	85.0
Singles	4	10.0	2	5.0
Widower	8	20.0	n.a	n.a
Widow	n.a	n.a	8	20.0

Highest Formal Education of house head:

No formal Education	10	25.0	2	5.0
Primary Education	5	12.5	4	10.0
Secondary Education	9	22.5	4	10.0
Tertiary Education	16	40.0	30	75.0

Farming Experience (Years):

< 5	9	22.5	15	37.5
6-11	21	52.5	20	50.0
>12	10	25.0	5	12.5

Mean: M= 12 ; F=10

Household Size (Number):

1- 6	28	70.0	22	55.0
7 – 13	9	22.5	14	35.0
>13	3	7.5	4	10.0

Total: M=252; F=269

Mean: M= 6.3 ; F= 6.7

Household Dependants*:

School age Children	117	46.4	102	37.9
Invalids and bed-ridden	9	3.6	11	4.1
Persons above 70 years	10	4.0	12	4.5

Household Monthly Expenditure on food (₦'000):

10-19	19	47.5	30	75.0
20-30	14	35.0	8	20.0
>30	7	17.5	2	5.0

Mean: M= 20.9 ; F=11.8

Source: Field survey: 2012; * Aspart and proportion of household size; n.a= Not applicable
₦150.00 ≈ US \$1.00

Relatively larger proportion (85.0%) of females than males (70.0%) taking decisions in farm households were married. The more single male household heads existed as singles (10.0%), widower (20.0%) compared with 5.0% single female heads and 20.0% widows in the area. Literacy level was quite high with females showing the lead. Female household heads that

attained tertiary level of education constituted 75.0% as against 40.0% males at that level of education. There were 25.0% males with no formal education as against 5.0% females with no formal education. Females being on educational lead suggest a number of issues. First, the females stand better chances of combining their farm work with other formal wage paying employments in both public and the private sector than the males to help alleviate household poverty. Secondly, in their farms, they stand to receive and implement better technologies to increase their yield and even bargain for better prices for their products. However, a relatively cumulative larger proportion of males (77.5%) have had at least six years experience in farming compared to 62.5% of the females with that number of years of experience in farming. More females (37.5%) have less than 5 years experience in farming than males (22.5%) with such experience in the farm work.

Table 2.0 further showed that household sizes were more evenly distributed between the male-headed and female-headed farm households in the area. The mean household size skewed less in favour of male-headed (6.3) as against the female-headed (6.7) households. Many mouths to feed were indicative of responsibility and a drain to household income and savings. The male-headed farm households shouldered more responsibilities as they had relatively more dependants. These dependants were more (46.4%) in terms of children of school age and least (3.6%) in terms of invalids and bedridden members of male-headed farm households. The female-headed households had more dependants than the male-headed households in terms of invalids and bedridden (4.1%) and persons above seventy years of age (4.5%). This was plausible since women generally are better medical care givers in homes but expended relatively less cash on food than male-headed farm households. Cumulatively, male-headed households spent a mean of ₦20,877.25 as against a mean sum of ₦11,798.25 spent monthly on food and maintenance by female-headed households. These were measures of poverty line in the households.

3.2 Indices of Household Food Insecurity

Estimated food indices of observed household food insecurity are shown according to gender of heads in Table 3.0. The indices revealed that the households were food unsecured as the per month mean expenditure on food (food insecurity line) was ₦9, 278.78 for male-headed

households and ₦5, 243.67 for female-headed households. These estimates were comparable to the estimates of ₦7, 967.19 for Lagos State (Omonona and Agoi, 2007). The estimates showed that even where food items were available, the household budget line was quite low and inadequate for the area. The threshold budget line being lower in female-headed households suggested that women required a lower budget to provide nutritionally balanced foods for their households than did the men buying same food items required. The proportion of male-headed food secured households was 62.50% compared to 75.00% of food secured female-headed households. This left food unsecured male-headed households at 37.50% as against 25.00% female-headed households.

Table 3.0. Computed Food Insecurity Indices of Farm Households in Orsu Imo State, Nigeria

Variable	Male-headed household Index (n=40)	Female-headed household Index (n=40)
Food insecurity line (₦/Month)	9,278.78	5,243.67
Food Insecurity incidence	0.375	0.250
Food secured Household (%)	62.50	75.00
Food unsecured household (%)	37.50	25.00

Source: Field survey: 2012;
₦150.00 ≈ US \$1.00

4.0 Determinants of Food Insecurity in Farm Households

Estimates of probit regression model on variables hypothesized to influence household food insecurity are shown in Table 4.0. The model correctly predicted 71.0% and 74.0% of the variations in dependent variables by the independent variables at very significant LR Chi-square indices. The table revealed that five out of ten factors variedly determined food insecurity in male-headed farm households and another five out of the ten factors variedly determined food insecurity in female-headed farm households in Orsu, Imo state, Nigeria. The most significant ($P < 0.01$) of the five factors that determined food insecurity in male-headed farm households were dependency ratio, education level, and monthly expenditure. Monthly expenditure had positive effect suggesting that the more a household expends on needed items than it gets from

its own products, the more food unsecured it portrays. Both the dependency ratio and education level were negatively signed meaning that the higher the dependency ratio, and level of formal education the more the household was not food secured. Such affected farm households buy most of their needed foods with their off-farm cash income. The other two factors that influenced food insecurity but at high probability level ($P < 0.10$) in male-headed farm households are frequency of contact with agricultural extension agency, and status of farming. These factors exerted negative influences on household food insecurity. Full time farmers who are in regular contact with agricultural extension agency are less food unsecured because they adopted better technologies that helped increase and improved food productivity and storage.

Table 4.0 Probit Estimates of Factors Determining Food Insecurity in Farm Households in Orsu

Variable	Male-headed Household (n=40)			Female headed Household (n=40)		
	Coefficient	S. Error	t-Ratio	Coefficient	S. Error	t-Ratio
Constant	-3.404	2.607	1.31	6.162***	1.647	-3.74
Age	0.026	0.030	0.87	0.085**	0.030	2.83
Marital Status	0.057	0.772	0.07	-0.471	0.710	-0.66
Household Size	0.228	0.203	1.12	0.018***	0.002	9.00
Dependency Ratio	-0.281***	0.065	-4.32	0.398	0.341	1.17
Education Level	-0.524***	0.131	-4.0	-0.364***	0.084	-4.33
Farming Experience	-0.045	0.059	-0.76	-0.015	0.074	-0.20
Farm Size	-0.048	0.106	-0.45	0.281	0.332	0.85
Monthly Expenditure	0.0003***	0.0001	3.00	0.0001***	0.00003	3.33
Freq. of Extension Contact	-1.924*	1.000	-1.92	-0.089*	0.036	-2.47
Status of Farming	-2.059*	1.300	-1.60	0.077	0.516	0.15
Log. Likelihood	-52.142			-70.667		
LR Chi ²	30.77**			53.72**		
Correctly Predicted	71.0%			74.0%		

Source: Field survey: 2012;

***, **, and * denote significant at 1.0%, 5.0% and 10.0% alpha levels of probability respectively.

In the female-headed farm households (Table 4.0), the most significant ($P < 0.01$) of the five factors that determined food insecurity were household size, level of education and monthly expenditure. Household size and monthly expenditure had positive effects on food insecurity meaning that households with large number of members were more unsecured with needed foods

and also spend more on foods. When such is the case, all own produced foods are consumed with no surpluses for market. Sometimes, large proportions of incomes earned from off-farm employments are used in buying bulk of these needed foods to avoid starvation. Thus the expenditures on foods were high in food unsecured homes than when there are some good measures of food security. The level of education of household heads had negative effect on household food insecurity. This means that in households headed by highly educated female farmers, farming was done on part-time basis since such women had off-farm paid employments in civil service, public service, and other self-employments. They embarked on farming mainly to augment foods bought from the market as their households lacked stock of own foods. Other two factors that determined food insecurity at some lower probability levels ($P < 0.05$) and ($P < 0.10$) in female-headed farm households were age of household head, and frequency of contact with agricultural extension agency respectively. The age of the female farm household head had positive effect on food insecurity meaning that as female farm household heads advanced in age, the more food unsecured their households became. This is plausible, because aged women were less physically strong to undertake crop cultivation or livestock keeping characterized with drudgery. The frequency of contact with extension agency however had negative effect on food insecurity in female-headed farm households. More frequent contacts with agricultural extension agency suggested keeping abreast and adopting evolving farm technologies that increased farm yield and ensured food security.

5.0 Conclusions and Implications for Policy

Estimated food insecurity line in male-headed farm households were higher than in female-headed households. In terms of proportion (incidence) also, there were more food unsecured male-headed farm households than there were female-headed farm households in Orsu, Imo State, Nigeria. Women could use the same budget line to secure nutritionally balanced and required foods for their households than could their male counterparts. Five out of ten factors variedly determined food insecurity in male-headed farm households and also five out of the ten factors variedly determined food insecurity in female-headed farm households in Orsu, Imo state, Nigeria. The factors that determined food insecurity in male-headed farm households were dependency ratio, education level, monthly expenditure, frequency of contact with agricultural extension agency, and status of farming whereas in the female-headed farm

households, the factors that determined food insecurity were household size, level of education, monthly expenditure, age of household head, and frequency of contact with agricultural extension agency.

These imply that female-headed farm households are relatively more food secured with food insecurity remaining a problem associated with low farm productivity, poverty and/or poor home management. Farm households should enhance productivity of their food crops and livestock by adopting technologies recommended by agricultural extension outfits to help cushion devastating effects of food insecurity amongst them.

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