

Food Security Status and its Socio-Economic Determinants on Farming Households in Bondo District - Kenya

Okello G.
Moi University
godi.okello08@gmail.com

Onganya D.
Moi University
onganyado@yahoo.com

Ngode L.
University of Eldoret
lucasngode@yahoo.com

Ouma E.
Rongo University College
ochivao@yahoo.com

Musebe R.
Moi University
musebe.ro@yahoo.com

Arogo P.
Moi University
phyllisarogo@yahoo.com

Mulongo L.
Moi University
lmulongo@yahoo.com.

Abstract

In Kenya, like many Sub-Saharan African countries (SSA), food insecurity is a major threat to the livelihood of a majority of the people. In Bondo District, Kenya, there is lack of proper understanding of the determinants of the socio-economic factors and their influence on food insecurity. Therefore, this study examines the socio-economic determinants and their influence on food security of farming households in Bondo District, Siaya County, Kenya. A three-stage random sampling procedure was used to select a sample of 150 households for the study. A semi-structured questionnaire and focus group discussions were used to gather information and descriptive analysis conducted to describe the socio-economic determinants. Food insecurity was determined by the number of meals eaten per day. The results showed that household size, age, land size, educational level, gender of household heads and household income were key determinants of household food security status. 56% of households were found to be food insecure. Household with tertiary level of education took the longest time to exhaust their food stock. It was concluded that the design of food security strategies should focus on the identified determinants in an integrated way in order to achieve sustained food security.

Keywords: Food Security, Farming Households, Socio-Economic Determinants

Introduction

In many parts of Kenya, hunger continues to be widespread and the right of everyone to adequate food supply is extensively violated (MOA, 2012). The burden of food shortage for poor households has risen rapidly over the past few years. In order to adequately address the widespread food insecurity and poverty agenda in Kenya, the Millennium Development Goals (MDGs) were launched in 2002 with its first goal aiming at halving extreme poverty and hunger by 2015 (Migotto *et al.*, 2005). According to Oniang'o (2001), 89% of Kenyans who live in rural areas are food insecure and live below \$ 1. Majority of them are women engaged in subsistence farming. Other studies such as Sanusi *et al.*, (2006) show that Social and economic challenges including education, gender disparities, land sizes, and income levels hamper efforts by household to attain food security. Moreover, Socio-economic determinants and resources for individual households have been identified as basic factors influencing the food security status of households (Sanusi *et al.*, 2006).

The returns on land have been on the decline due to changes in weather patterns while human population has rapidly increased. Besides, income derived from farm activities alone has not been adequate to meet household needs (Ankinsami & Dopler, 2005). This situation has worsened the food security status over time. It is generally known that Poor socio economic conditions impede food availability and access (Sen, 1986). Moreover, researchers have observed that many people suffer from hunger because of lack of entitlements since they make provision for direct access to food or a means by which it is acquired (FAO, 2010). This implies that food security depends not only on own production but also the ability to buy food, market accessibility, foods prices notwithstanding. Therefore poor households have limited sources of entitlement and are food insecure.

Food security revolves around four pillars namely; food availability, food accessibility, nutritional factors and stability of food supply (Babatunde, 2007). Therefore in order to achieve food security, sufficient aggregate availability of physical supplies of food is paramount. Moreover it is prudent that households have access to those food supplies through their own production systems, existing market systems or other sources. Food accessibility is ensured when all households have sufficient resources to obtain appropriate foods for a nutritious diet.

Bondo district in Siaya County, is one among many districts experiencing severe food shortages throughout the year as a result of wide spread poverty and declining food production (MOA, 2011). According to the district poverty and food security assessment report 2010, over 47.2% of the population is poor while 41.1% of the household are food insecure. This translates into over half of the population being either hungry or are on the threshold of hunger (MOA, 2012). In order to contribute towards the improvement of food security in Bondo district, this study examined the socio-economic determinants and their influence on household food security and to establish the relationship between socio-economic determinants and household food security in Bondo District, Kenya.

Materials and Methods

Study area

The study was done in Bondo district of Kenya between January-April, 2013. Bondo is one of the twenty one districts that make up Nyanza province. The district has a total area of 1328 km² of which 577.2km² is land surface, while 751km² is covered with water of Lake Victoria. Bondo District lies between 0°26' and 0°90' South of the Equator and from longitude 33°58'E and 34°35'W. Its administrative divisions include; Usigu, Maranda and Nyang'oma. It has one constituency known as Bondo and it lies in Siaya County.

Two objective methods for food security assessment were used in this study. In the first case, the household food security was assessed from the number of meals eaten according to Maxwell and Frankenberger, 1992. In the second case, food consumption record was undertaken for individual members of a household each food mentioned was analyzed for calorie content, Migotto *et al.*, 2005. Duration of food stock from own food production was also used as an indicator of the status of household food security

Sampling procedure

Multi-stage simple random sampling was used to select locations, sub locations and households. Sample of 210 households was randomly selected for the study. Since Bondo district has 3 divisions, a sample of 70 households was obtained from each division for the study. A total of six locations and twelve villages were randomly sampled. A random sample of 3 households per village was done to select study population.

Data collection procedures and tools

A pre-tested semi structured questionnaire was administered to generate both qualitative and quantitative social information, which included sex, age, education, occupation, income, marital status and households' sizes. These variables were categorized and coded for subsequence quantitative data analysis. The questionnaire was administered by the researcher and assisted by two enumerators.

The dependent variable and the explanatory variables used in the study included:

Farm size: Farm size is the total land cultivated by the household measured in acres. The larger the farm size, the higher the production level. It is thus expected households with larger farm size are more likely to be food secure than those with smaller farm sizes.

Own food production: This is the total quantity of food produced by the household from their own farm in kilograms. It consisted only of food crops.

Age of household head: The age of the household is expected to have an effect on household food production. It is expected that the younger household members are stronger and able to cultivate bigger farm sizes and generate more income from off-farm employment. However, the expected effect of age could be positive or negative.

Household size: This is the total number of adult members in a household. The expected effect is negative.

Educational level of household head: Education is a social capital which could impact positively on household food security.

Occupations of household: This refers to additional source of income to household from off-farm employment. The expected impact of this is positive.

Gender of household heads: Gender inequalities aggravate food insecurity and poverty. Data analysis

Quantitative data was organized and analyzed statistically by use of frequency tables, mean and percentages. The Statistically Package for Social Sciences (SPSS) computer software version 11.0 was used to generate the descriptive data such as percentages, means and frequencies. The descriptive statistic helped to establish the centre and spread of the data hence its relationship with household food security. Simple regression analysis and analysis of variance (ANOVA) were used to determine the association and

influence of household socio economic variables on household food security. Significance was accepted at 5% probability level ($p < 0.05$).

Results and Discussion

Socio economic profile of households in Bondo district

The study revealed that 19% of the household heads were aged between 0 to 18 years while 40.2% were between 19 to 35 years. Household heads aged 36-55 years were 23.8% while those over 55 years were 17.0%. Majority of the household heads were aged between 19 to 35 years while the minorities were over 55 years. However, a large proportion of household heads (64%) were aged 19-55 years (Table 1).

Table 1. Socio-economic profile of studied households in Bondo District

Variables	Number	% age	Male (%)	Female (%)
Age of household heads				
0-55	175	83	57.1	25.9
>55	36	17	10	7
Education of household heads				
Nil	48	22.8	13.3	9.5
Primary	63	29.9	19.5	10.4
Secondary	51	39.9	30	9
Tertiary	8	8.5	4.3	4.2
Occupation of household head				
Farmer	147	70	47.8	22.2
Civil servant	50	23.8	15.8	8
Businessperson	13	6.2	3.4	2.8
Gender of household				
Male	141	67.1	-	-
Female	70	32.4	-	-
Household size				
6	148	60.4	-	-
>7	63	39.6	-	-
Land sizes (acres)				
<1	45	21	19.5	1.9
5	139	33	45.7	20.9
>5	27	12.9	8.1	4.7
Duration of food stocks (3 months)				
0-3	20	9.4	6.2	3.2
6	101	47.8	32	15.8
9	58	32.2	21.6	10.6
12	11	5.2	3.5	1.7
Number of meals eaten/day				
1	3	1.4	1	0.4
2	62	29.4	19.2	9.7
3	129	61.1	40.9	20.2
>3	17	8	5.7	2.3

Household heads with no education were 23.8% while those with primary level of education were 29.9%; this group exhausted their food stocks in 3 months. Household heads with secondary level of education were 39% while those with tertiary level of education were only 8.5%. Majority of the household's head only attained primary school education. Those with primary level of education also exhausted their food stocks within a short period (3 months). However, the households with secondary, post secondary and tertiary level of education took longer time (4-5 months) to exhaust their food reserves. These findings imply that improvement of education level of the people of Bondo district is a potential target for enhanced food security.

Households with less than one- acre farm were 20.9%, those with 1-3 acres 46.7% while others with 4-5 acres were 19.5%. The household with over 5 acres were only 12.9%. Households with less than one acre of land size exhausted their food stocks, on average, in about 2 months. On average, households with 1-3 acre land sizes exhausted their food stocks in 3 months while those with 4-5 acres of land exhausted food in about 5 months. Households with over 5 acres also exhausted food stocks in about 5 months. On household sizes, 11.5% of households had 1-3 members while 29.2% had 7-9 members. Households with 10-12 members were only 0.5%. Majority 58.9% of the households had 4-6 members. The human resources available to the farm household determine farm productivity and household income (Ankinsami & Doppler, 2005). From the above results, Majority of the farming community in Bondo District have low education levels hence may be a barrier to better off-farm activities within their reach. In addition, low education is known to impede transfer and adoption of agricultural innovations and this too may be a hindering factor to achieving optimal agricultural production amongst this community.

Determinants of food security status of households in Bondo

Results from the study presented in Table 2 revealed that four of the seven variables included in the regression model were significant in explaining the variation in the food security status of household in the study area. These variables were age, educational level, land size, and quantity of food and its duration.

Age: There were significant differences between age of household heads and food availability implying that Age is very important in determining production levels since there is inequality in the production capacity of young and old people. This study found that the most active group in food production were adults aged between 40-50 years. This group also found it necessary to involve in a more advanced commercialized agricultural practices as an intervention to the persistence of household food insecurity in the study area. Age is one of the factors that affect the efficiency of carrying out farming activities. Age is also associated with farmer's experience in farming practices as he or she gains experience overtime. Age of household head significantly influenced the adoption of new technology as younger and educated people are more inclined to adopt new farm practices.

Educational level: In this study, the association between education and duration of food stock was highly significant at 0.1% level. Education is significant in facilitating awareness and adoption of new agricultural technologies. Education increases managerial competence and therefore enhances ability to diagnose, assess, comprehend and respond to financial and production problems of the household. Higher level of education enhances the understanding of instructions given and also improves the farmer's level of participation in agricultural activities and perception on modern technologies which are geared towards the improvement of household food security (Table 2).

Table 2. Summary on the effects of socio economic determinants on food security

Source of variation	Do	Mean square	F- value	Significance
Age x food stock duration	3	1.682	3.241	0.032*
Education x food stock duration	3	4.427	10.259	0.001**
HH size x food stock duration	3	0.096	0.178	0.276
Land size x food stock duration	3	9.252	23.27	0.040*
Gender x food stock duration	1	0.296	1.902	0.170
Age x No. of meals	3	0.962	1.902	0.072
Education x No. of meals	3	1.701	3.167	0.002**
HH size x No. of meals	3	0.102	1.150	0.250
Land size x No. of meals	3	3.107	7.261	0.007**
Gender x No. of meals	3	2.016	1.218	0.165
Age x Acreage indigenous crops	3	0.137	0.867	0.021*

Note: *indicates significance at $p=0.05$, ** at $p=0.01$

Land size: The association between land size and duration of food stocks was highly significant. Land being one of the major factors of production, its size and productive capacity is directly related to the farming system and practices household adopt. The economic implication on the prevalence of small land holding among the majority of the farmers is that, household farm incomes cannot be increased through expansion of cultivated area but only through improved land productivity and value adding technologies. The study revealed that majority of farmers own small pieces of land and this significantly contributes to the household food insecurity in the area (Table 2).

Quantity of food and its duration: The study revealed that there is a positive relationship between the level of education and the duration food stock last. Further analysis showed that household with tertiary level of education took the longest time to exhaust their food stocks, the shortest duration to

exhaust harvested food were household heads with pre-primary education. However, there was no significant relationship between household member sizes and food stock showing that in this farming community the amount of food produced was proportional to the household size. The association between land size and duration of food stocks was highly significant. On educational level of household heads and number of meals consumed by day the relationship was significant. The study revealed no statistical significance between household's member's sizes and number of meals eaten. Therefore household socio-economic determinants including age, educational levels, and land sizes had significant influence on food stocks hence on household's food security in the study area.

Gender roles in food provisioning: The gender roles in food provisioning are shown in Figure 1. The study established that the role of women in food provision was 59.5% while that of men was 27.5%. The combined efforts of men and women accounted for 10% while workers contributed only 3%. Therefore, these findings revealed that though men were the majority household heads, women's contribution to household food provisioning was higher than men's in Bondo District.

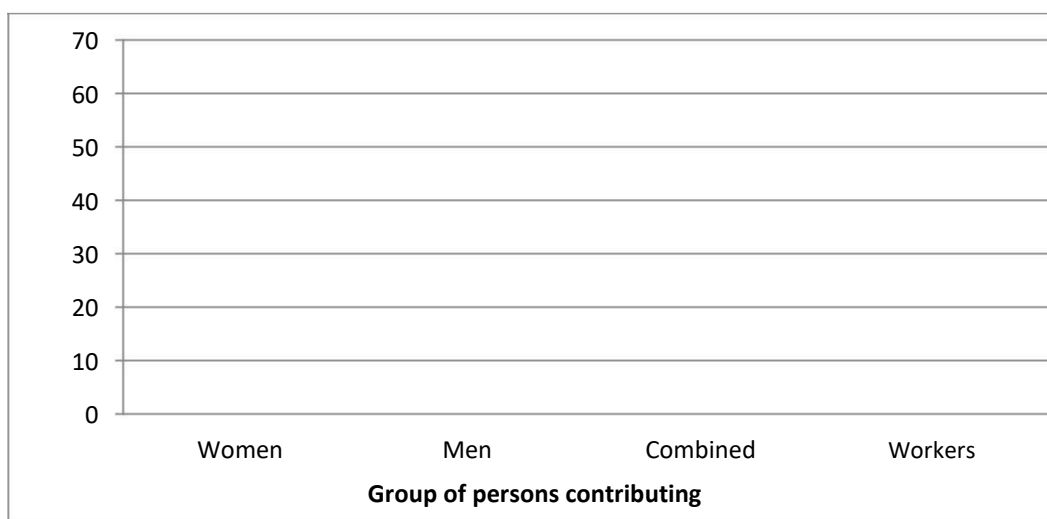


Figure 1. Proportion of men and women in food provisioning

Based on the recommended number of meals consumed per day, about 61% of the households in the area were food insecure and 39% were regarded as food secure. The area could also be regarded as food insecure given that majority of the households, 94.8%, exhausted their food reserves from their own production in less than six months. Given that the area has one of the highest poverty levels in the region, the ability of the residents to purchase food from the market is highly limited. Despite limited control over resources, 59.5% of women were responsible for food provision compared to men (27.5%) or combined effort by both gender (10%). Only 1.2% of land was registered under women in contrast to 81.3% by men.

Conclusion

This study has shown that the socio-economic variables of farming households have implications on their food security status. A large proportion of agricultural and food provisioning tasks were undertaken by women, who could be highly constrained in access to assets for food production such as land. Education, land size, age and food stocks were significant determinants for household food security among rural farming household in the study area. Majority of the residents had primary level of education. This low level of education impacted negatively on household food and nutritional status. Households cultivated between 0.1 and 2.9 acres of land therefore land area cultivated remains a major factor in food production, hence food security.

Recommendations

1. Stake holders should be encouraged to put more emphasis on promoting education in this region since it is a major factor that influences food security status of households.
2. Women should be empowered to fully participate in agricultural activities by involving them in the decision making and the ownership of the factors of production since they spend most of their time in the farm. Women are also the leaders in the household in terms of food storage and utilization. On the other hand, men should also be sensitized to be proactive in food production process since they are the major land owners.

3. It is also recommended that the household diversify food production to include growing of traditional food crops such as cassava, sweet potatoes and others that perform much better in the region. This is only possible by putting more land into agricultural production.
4. It is recommended that the households adopt some of the latest technologies which are geared towards increasing food productivity and household income. Such technologies include water harvesting, irrigation and greenhouse production of various short seasoned crops. This would only be possible if more effort is directed in education

References

- Ankinsami, A. & Doper, W. (2005). *Socio-economics and Food security of farming families in South East Nigeria*. Paper presented at Tropentag, 2005, Conference on International Agricultural Research and Development, University of Hohenheim, Stuttgart Germany. Pp 3-8.
- Eide, T. (1999). Globalization, universalization and human right to adequate food. in A. Oguniriade, R. Oniang'o, and J. May Toda *Not my bread alone, Food security and Governance in Africa*. Institute of Global peace and policy. Research, South Africa. Pp 8-14.
- Babatunde. R.O. (2007). *Socio-economic characteristics of food security of the farming households in Kwara state*. North, Central, Nigeria, Pak. Nutr 6: 49-58.
- FAO, (1996). *Food and Agriculture Organization, Rome Declaration on World Food Security*. World Food Summit, November 13-17, 1996, Rome.
- FAO (2002). *Women and land tenure*. Rome: FAO woman and population Division.
- FAO (2010). Socio-economic impact of smallholder farming household. *Journal of agriculture and food security in Africa*, Rome
- GOK.(1999). *1999 population census report*. Central Bureau of statistics, Nairobi Kenya.Pp11-42.
- GOK (2002). Economic and food security assessment: Ministry of planning and National Development report
- Maxwell, S. & Frankenberger, T.R. (1992). *Indicators and Data collection methods for assessing household food security*. Part 11 in Simon Maxwell and Timothy R. Review. New York and Rome: UNICEF and IFAD.
- GOK (2002). *Bondo District Development Plan Report 2002-2008*. Ministry of Finance and Planning, Nairobi, Kenya. Pp 12-40.
- Migotto, M. B., Davis, C. & Beegle, K. (2005). *Measuring Food Security using Respodents' Perception of consumption Adequacy*. FAO Agriculture and Economic Development Analysis Division (ESA) working paper No. 05-10. Pp3-6.
- MOA (2011). Ministry of Agriculture Annual report-Bondo District.
- MOA (2012). Crops and Food security report- Ministry of Agriculture Bondo District.
- Oniango. R.K (2011). Role of Africa's Agriculture in Poverty Alleviation, Food Security and Industrial Development.
- Sanusi, R.A., C.A. Badejo & B.O. Yusuf, 2006. Measuring household food insecurity in Selected Local Government Areas of Lagos and Ibadan, Nigeria.Pak.J. Nutri.,5:62-67.
- Sen, A.(1981). *Poverty and famines: An essay on entitlements and deprivation*. Oxford: Clarendon press.