

Mothers' and Households' Food Security Status in Kangai and Mutithi Locations of Mwea West Sub County, Kenya

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Abstract

The purpose of this study was to investigate household's food security status. The study was carried out in dry harvesting and wet planting seasons in the two locations of Mwea West Sub County, Kenya, namely, Kangai and Mutithi. The study design was comparative cross sectional survey while the data instrument was a structured researcher administered household questionnaire. Sampling techniques included probability proportionate to population. The data were analyzed by the use of Health Canada's, Household Food Security Survey Model (HFSSM). On the whole, the findings were that 39% of the households were food secure, 21 % were moderately insecure, while 40 % were severely food insecure. The general conclusion was that in as much as the households in the two locations were significantly different in terms of households' and mothers' food security status, they both experienced chronic food insecurity which did not change with the season. The study recommends food intervention for the 40 % of households that are severely food insecure.

Keywords: Food Security Status, Households' Food Security, Mothers' Food Security, Health Canada

1. Introduction

According to African Women's Studies Centre (AWSC, 2014), 7.1 million Kenyans (18 per cent of the population) are chronically food insecure and that they are always hungry. The food insecure people may be the poor in the communities, including urban poor, poor pastoralist, poor in drought prone zones and the resource poor households, that are, landless and unemployed. These people have been described as the most vulnerable to food insecurity because they have low purchasing power, and hence they have limitation in accessing food (GoK, 2005). Another category of the poor are the women. Studies have found that the proportion of female headed households, that have been ranked very poor, is normally higher than male headed households (Sharkey et al 2011; AWSC, 2014). Women have been considered as one of the food insecure vulnerable groups (Mbithi, 2000; FAO, 2014).

According to (FAO 2010, and Schmeer, 2015), household food insecurity is a critical public health problem, with one in eight people around the world lacking constant access to food to meet their needs for a health life. The food insecure households often have diets that are less diverse and of lower energy content, leading to poor nutritional status. Schmeer (2015), further points out that food insecurity poses a serious threat to individual wellbeing and undermines national level productivity especially in low income (developing) countries where many people are food insecure. Household food security status has hence been categorized by severity as well as duration of hunger. The presence of hunger within a household is evidenced by certain food consumption behaviors among the household members including: cutting size of meals; missing meals a whole day; eating less than required; feeling hungry but not eating; skipping meals; relying on one type of food and losing body weight. According to Kenya Urban Comprehensive Food Security and Vulnerability Analysis (KU – CFSVA, 2010), these behaviors are also referred to as coping strategies, which are applied by households when faced with low food security situations.

Several household food security measuring models have been developed by different organizations including the United States Department of Agriculture (USDA), Health Canada, United Nations Food and Agriculture Organization (FAO), World Food Program (WFP) and Republic of Kenya (ROK),

According to Kennedy (2005) and Andrews et al., (2000), Health Canada Household Food Security Survey Model (HFSSM) is qualitative method of measuring food security status. It measures the prevalence and severity of food insecurity. According to these authors, the technique has been validated by Unites States Department of Agriculture USDA, (2012) and has been used by many countries globally, including Orissa State India, (Holben, 2000), Mateveleland Zimbabwe, and Tanzania, (Satpathy, 2001), Kenya (African Women Studies Centre, 2014), Bangladesh, Ethiopia, Burkina Faso, and Guatemala (Kennedy 2005). The authors also argue that the technique is well grounded in science, it is quick to administer and analyze and that it is a more direct proxy measure of food security status.

The model, a qualitative measure of household food security status, has been described by Kennedy (2005) as having external validity as well as being a more direct measure of household food security status than any other proxy measure. Household Food Security Survey Model has been found to correlate significantly with the more traditional measures such energy intake per capita.

According to (Kennedy, 2005) data interpreted with HFSSM categorizes the food security situation experienced by households as food secure, food insecure, (moderate) and food insecure, (severe). Food secure households have access, at all times to enough food for an active, healthy life for all household members. The food insecure households are those who are uncertain of having, or unable to acquire, enough food to meet the needs of all their household members because they have insufficient money for food. In these households, adults or children or both adults and children experience food insecurity. Depending on the extent of the experience, households are either moderately food insecure or severely food insecure. Food insecure, (moderate) households are those with an indication of compromise in quality and or quantity of food consumed. On the other hand the food insecure (severe) households are those with an indication of reduced food intake and disrupted eating patterns. It should be noted that whenever the quality and quantity of food is compromised, both macro (proteins, carbohydrate and fats) and micro nutrients (minerals and Vitamins) will lack from the diet, hence, undernutrition whose ultimate result will be deficiency diseases.

2. Problem Statement

It has been reported that 60% of women are undernourished worldwide (WFP, 2009). However, limited studies have been done, in a poor rural community to assess women's food security status and micronutrient intake. Poverty is the most important cause of household food insecurity (Esturk, et al 2014; Jones, 2013; USAID, 2013; Temilope, 2012; Kakota et al., 2015, AWSC, 2014)). According to Tarasuk, (2001), since food insecurity results from poverty, poor disadvantaged members of the society should be studied with an aim of identifying their vulnerability and arresting the situations before they become too bad. In addition, other studies, for example, Olson et al 1996: WFP, 2009; 2011), have investigated the food security status of locations on the basis of existing poverty levels. There was need, therefore, for this study focusing on women in Mwea West Sub County for determining food security status among the participants. Furthermore, no other study on household food security status and micronutrient intake has been done in this specific area since national studies are not able to reach all sub counties.

Mwea West, which was the study area, is a poverty pocket in a county that has been found to have low food insecurity (6.1%) by a national study on household food security status (AWSC, 2014). However, the sub county has the largest proportion of poor people in Central Province at 49 % (GOK, 2009a). This means that, according to the definition given by the District Development Plan (DDP) of Kirinyaga County, 49 persons in every 100 lived on less than Ksh.1562/- a month per capita. This amount was what was needed for an individual to access basic food and non-food necessities by the time of the study. The sub county's poverty rate was higher than the current 42% national average (AWSC, 2014). Mwea West Sub County is in Kirinyaga County and covers an area of 204 square kilometers. It has 2 locations, Kangai and Mutithi as well as 4 sub locations (GOK-KCDP, 2013).

3. Hypothesis

H₀: There is no significant difference in household food access and consumption by households living in Kangai and those living in Mutithi

4. Methodology

4.1 Research Design, Target Population and Sampling

The study design was comparative and cross sectional in nature which facilitated collection of self-reporting data from the respondents. The target population included all the 12,909 households (GOK, 2009b). The sampling frame included all the mothers (with at least one child aged 2 to 5 years) in the households. The size of the sample was calculated using the formula proposed by Fisher et al., (1991) as indicated by the formula:

$$N = z^2 (PQ) \div D^2$$

Where: -

N= Desired sample size

Z= Standard normal deviate (1.96) corresponding to 95% confidence interval.

P= Current national prevalence rates for poverty (46%, GoK, 2005),

Q= 1- p which is the national population without poverty, 0.54%

D= degree of accuracy required (0.05)

$$N = 382 \text{ (Add 5\% for incomplete data =19)}$$

$$\text{Total} = 401$$

Probability proportionate to size of population sampling technique was then adopted as suggested by Turner (2003),

Table 0-1 Number of households and respondents by location (cluster)

Location	Total number of household	Number of respondents
Kangai	5,302	165
Mutithi	7,607	236
Total	12,909	401

Following Turner's guideline and with help of the Village in Charge, the research team approached the community from a market place, and moved from one homestead to the other administering the household questionnaires to the qualified respondents until the number of the respondents allocated to the location (cluster) was attained. This process was carried out twice, during the dry and wet seasons. The first set of data was collected in the months of January and February 2013. These months are dry and food crops planted during short rains (October / December) are expected to have matured. Data collection was repeated during a rainy / wet season (April/ May 2013).

4.2 Data and Data Methods

The study assessed food access and consumption behaviors of the mothers, and the households. An in depth household questionnaire was developed using the Health Canada Household Food Security Survey Model (HFSSM, 2012; Gunderson, 2008), which is a qualitative technique for measuring household food security status (appendix 1). This study had nine in depth questionnaire items, five for the mother and four for the household. However, all of them were answered by the mother. The five items specific for the mother addressed the mother's behavior as a result of food shortage while the four household items addressed the anxiety and perceptions that would be caused by anticipation that food would run out. The responses from the household's food access and consumption behaviors module were computed for frequencies and proportions using the SPSS software Version 20. Household Food Security Survey Model (HFSSM), a Health Canada Model, (2012), was used to establish the food security status of the households namely: severely insecure, moderately insecure and secure in both dry and wet seasons. The student's t-test ($\alpha=0.05$) was applied to test the hypothesis on whether there was any significance in differences in food security status between locations and seasons, for the households. Consequently all the independent variables in the study were cross tabulated with food security status and micronutrient intake to check for their association.

5. Findings

5.1 Mother's Food Access and Consumption Behaviour during the Dry Season

Table 2 Mother's food access and consumption behavior during the dry season

Access and consumption behavior	dry season				t-test p- value
	Kangai		Mutithi		
	F	%	F	%	
Cut size of meal	44	23.5	157	74.1	0.000
Did not eat a whole day	20	10.7	62	29.2	0.592
Ate less than felt was enough	59	31.6	150	70.8	0.000
Felt hungry but could not eat	42	22.5	57	26.9	0.008

The results indicated that, the mothers in Kangai, within a period of 3 months during the dry (harvesting) season: 23.5% had skipped a meal, 10.7% did not eat the whole day, and 31.6% had eaten less than they felt was enough, while 22.5% felt hungry but could not eat. Within the same period, results from Mutithi indicated that 69% skipped meal, 5.5% did not eat a whole day, 58% ate less than they felt was enough, and 5.5 % felt hungry but could not eat. The findings showed that there were more mothers in Mutithi than Kangai showing undesirable characteristics related to food insecurity. This may indicate that, although data were taken during the dry (harvesting) period, there was not enough food harvested by Mutithi mothers. When the t- test, was applied to all the responses relating to mother's food access and consumption behavior by location, it was established that the consumption behavior of the mothers from the two locations were significantly different except for one item.

In rural areas, majority of people depend on farming for food and other needs. This may mean that the food crops they harvest may be sold to get money for other non-food needs, for example education of the children, medical expenses among others. So a household that harvests only two bags of maize or beans may be at risk of not having enough food for quite a while until more crops are planted and given time to mature.

5.2 Mother's Food Access and Consumption Behaviour during the Wet Season

Table 03 Mother's food access and consumption behavior during the wet season

Access and consumption behavior	Wet season				t-test p- value
	Kangai		Mutithi		
	F	%	F	%	
Cut size of meal	74	36.8	138	69	0.602
Did not eat a whole day	45	22.4	11	5.5	0.009
Ate less than felt was enough	84	41.8	117	58	0.309
Felt hungry but could not eat	75	37.3	11	5.5	0.102

The findings for wet season (Table 13) indicated an increase in percentage of Kangai mothers who: - cut meals from 23.5% to 36.8%; did not eat a whole day from 10.7% to 22.4%; ate less than felt was enough from 31.6% to 41.8%; felt hungry but could not eat from 22.5% to 37.3 %; lost weight due to lack of food from 35.3% to 37.8%. On the contrary, a decrease in percentage was observed among Mutithi mothers who :- cut meals -from 74.1% to 69.0% ; did not eat a whole day – from 29.2% to 5.5% ; ate less than felt was enough from 70.8% to 58.5% ; felt hungry but could not eat from 26.8% to 5.5 % ; lost weight due to lack of food 74.5% to 63.0% . When the t- test, was applied to all the responses relating to mother's food access and consumption behavior by location, it was established that the consumption behavior of the mothers from the two locations were significantly different except for one item "did not eat a whole day". Households experience food shortages during the rain seasons because they are likely to have sold out food that was harvested during the previous season in order to take care of nonfood needs. Additionally, food becomes expensive in the market. These findings imply that the respondents face challenges of food access and consumption in both dry and wet seasons. It can therefore, be concluded that the respondents encounter chronic low food security.

5.3 Mother's Food Security Status by Location

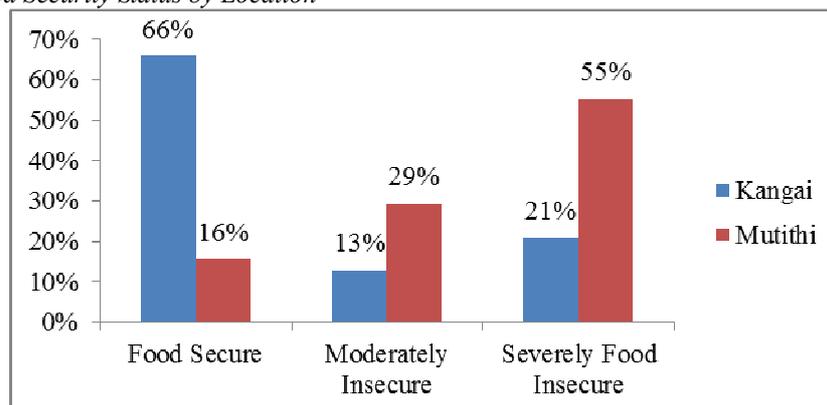


Figure 1 Household food security status by location

When comparing household food security status for Kangai and Mutithi respondents (mothers), the findings were that more of the Mutithi mothers (55%) were severely food insecure compared to 21% of the Kangai mothers.

5.4 Overall Mothers' Food Security Status

Using the Health Canada Adapted Model, the Household Food Security Survey Model (Health Canada, 2012) mother's food security status was as shown on Figure 4.7

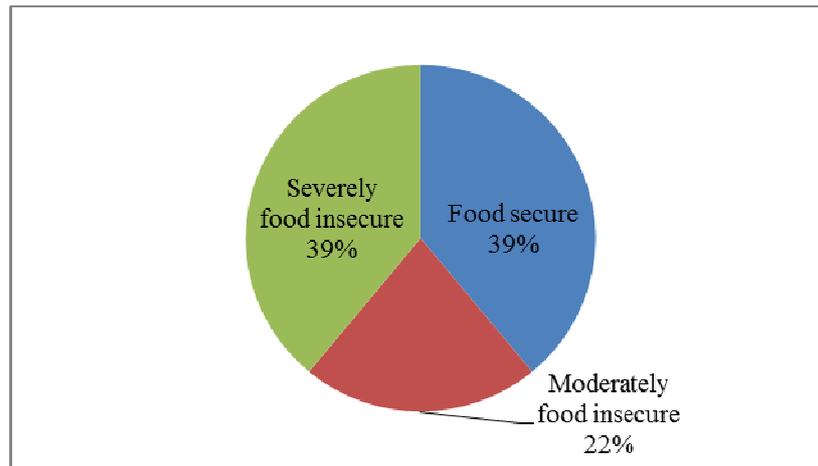


Figure 02 Overall Mother's Food Security Status

The findings were that 61% of the women (mothers) were food insecure, with 39% being severely food insecure and 22% being moderately food insecure. These findings are different from those of study on food insecurity done in Mwingi. In their study on household food insecurity in Mwingi, Kaloi et al (2005), found that 38% of their respondents were food insecure while 62 % were food secure.

5.5 Households Food Access and Consumption Behaviors during the dry season

Table 4 Results on household's food access and consumption behaviors by location

Food access and consumption variables		Dry season				t-test p- value
		Kangai		Mutithi		
		F	%	F	%	
Availability	Worried that food would run out before next crop	126	62.7	137	68.5	.268
Availability	Food harvested did not last	117	58.2	125	62.5	.159
Utilization	Could not eat more than one type of food	116	57.8	113	66.0	.224
Access	Borrowed money for food	88	43.8	109	51.4	.510

The findings for dry season, showed that households in Mutithi had a higher food access and consumption behavior than Kangai as follows: Worried that food would run out before next crop was ready (Mutithi 84.0%; Kangai 52.9%); food harvested did not last (Mutithi 77.4%; Kangai 45.4%); could not eat more than one type of food (Mutithi 71.1%; Kangai 28.4%); borrowed money for food (Mutithi 68.4%; Kangai 34.2%). The hypothesis that there was no significant difference in household food access and consumption by households living in Kangai and those living in Mutithi was tested using t- test. The t-test showed that there was no significant difference in food access and consumption behavior in the two different seasons.

5.6 Households' Food Access and Consumption Behaviours during the Wet Season

Table 5 Results on household's food access and consumption behaviors during the wet season

Food access and consumption variables		Wet season				t-test p- value
		Kangai		Mutithi		
		F	%	F	%	
Availability	Worried that food would run out before next crop	99	52.9	178	84.0	.000
Availability	Food harvested did not last	85	45.4	164	77.4	.000
Utilization	Could not eat more than one type of food	53	28.4	152	71.1	.000
Access	Borrowed money for food	64	34.2	145	68.4	.000

The findings were that mothers from both locations worried that: - food would run out before next crop was ready; food harvested did not last; family could not eat more than one type of food and also borrowed money for food. However, during the wet season, the percentages rose for Kangai while they decreased for Mutithi. Although households from both Kangai and Mutithi showed characteristics of low food security, there were more households in Mutithi showing those characteristics than in Kangai and the difference was significant ($p < 0.05$ at 95% confidence interval).

5.7 Household's Food Security Status by Location

The household's food security status by location was summarized as shown in Figure 3

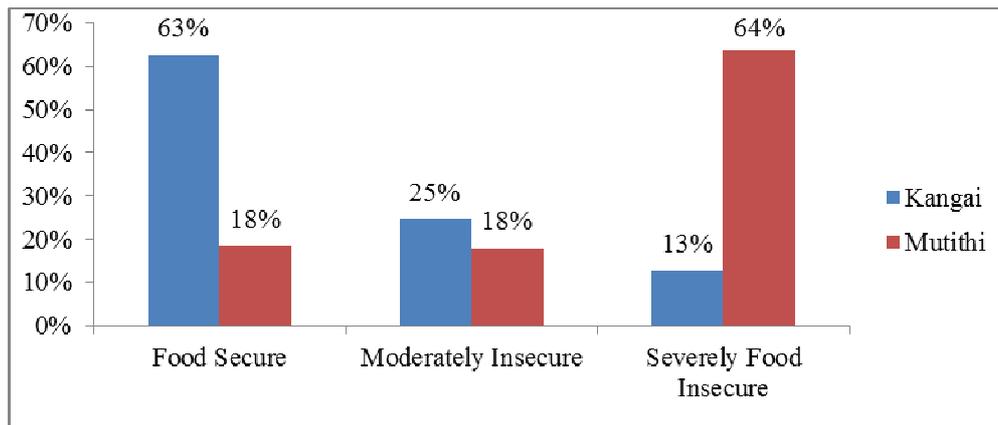


Figure 3 Household's food security status by locations

When comparing household's food security status for Kangai and Mutithi locations by examining anxiety and perceptions, the findings were that more of the Mutithi households (64%) were severely food insecure compared to 13% of the Kangai ones. On the other hand, more of the Kangai households (63%) were food secure compared to only 18% of the Mutithi ones.

5.8 Overall Households' Food Security Status

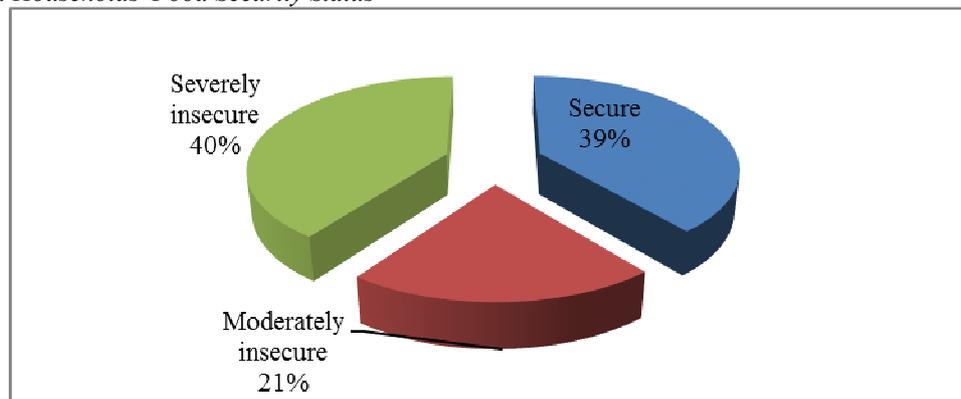


Figure 4 Household's food security status

On the whole, 39% of studied households were food secure, 21% were moderately food insecure while 40% were severely food insecure.

6. Conclusion

The t-test showed that there was a significant difference in food access and consumption behavior of the households and mothers in the two different locations in both dry and wet seasons. The null hypothesis was rejected. This study concludes that the low food security status evidenced by the data is of chronic nature and does not improve by season. (Orson, 2005; Tarasuk, 2001). As a result, mothers present characteristics of food insecurity and this can manifest into malnutrition. The problem seems to be out of the reach of the locals and therefore external food interventions were necessary especially for the 40% of the population that was severely food insecure. Further research was suggested on the demographic and socio economic characteristics of the two locations and their impact on food security status of the households and mothers in both locations.

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Appendix

Household Food Security questionnaire adapted from Health Canada Household Food Security Survey Model

Questions in mothers' food security module and what they measured adult scale

<i>No</i>	<i>Question</i>	<i>Behavior measured</i>
1	In the last 3 months, did you or other adults in your household cut the size of our meal or skip a meal because you did not have enough food and did not have money to buy? Yes, No.	Reduced food intake
2	In the 3 months, did you or other adults in your household ever not eat for a whole day because you did not have enough food and did not have money to buy? Yes, No.	Reduced food intake
3	In the last 3 months, did you ever eat less than you felt you should because you did not have enough food and did not have money to buy? Yes, No	Reduced food intake
4	In the last 3 months, were you ever hungry but did not eat because you did not have enough food and did not have money to buy? Yes, No.	Reduced food intake
5	Sometimes people lose weight because they do not have enough food to eat. In the last 3 months, did you lose weight because there was not enough food to eat? Yes No	Perception

Questions in households' food security module and what they measured adult scale

<i>No</i>	<i>Question</i>	<i>Behavior measured</i>
1	In the last 3 months, I worried whether our food would run out before the next crop was ready and before I could get money to buy more food. Yes, No.	Anxiety about quantity of food
2	The food that we harvested did not last and we did not have money to get more. Yes, No.	Anxiety about quantity of food
3	"We could not afford to eat more than one type of food."	Perception about quality
4	Have you borrowed money for food from anywhere in the last two weeks? Yes/ No	Anxiety about quantity of food

Scoring of food security status for mother and the household

<i>Food security level</i>	<i>Number of affirmative responses</i>	
	<i>Mother</i>	<i>Household</i>
Food secure	0	0
Moderately food insecure	1-3	1-3
Severely food insecure	≥ 3	≥ 3

Source: adapted from Health Canada HFSSM (2012)