An assessment of household food security and coping strategies in Uasin Gishu County, Kenya: A case of Kuinet Ward

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ABSTRACT: The study was done to assess household food security and coping mechanisms employed by households in Kuinet Ward, Uasin Gishu County, Kenya, in times of hunger. A non-experimental descriptive survey involving 81 households was done through interviewer-administered semi-structured questionnaires and Focus Group Discussions. Data obtained was analysed using the statistical package SPSS version 23.0 while the food consumption data was analysed using WFP (2008)Food Items, Food Groups and weights for calculation of the FCS. The results were presented using tables, percentages, frequencies and mean. Logit regression model was used to determine the relationship between socioeconomic factors and food security. Majority of the households (56.8%) were food secure, 34.6% had borderline food consumption and 8.6% of the households were food insecure. The study also found significant association between size of household, level of household income, size of household farmland, livestock ownership, level of education and employment status, and household food insecurity at 95% confidence level. The major coping strategies are selling of livestock, reducing portion sizes, doing casual jobs, obtaining food on credit, borrowing money in order to buy food, selling charcoal, consuming seed stock and reducing number of meals per day. In conclusion, employment or being educated or owning a business or having relatively higher income reduce the likelihood of using the coping strategies. Thus policy makers should improve food availability, education and increase family income to enhance quality of rural life.
Key words: Food security, coping strategy, households

I. INTRODUCTION

Food and nutrition security is one of the development priorities at the top of global agenda. Food security is achieved when all people, at all times, have physical and economic access to safe, sufficient, and nutritious food that enable them meet their food preferences and dietary needs for a healthy life (FAO, 1996; FAO, 2003). Globally, food insecurity impacts between 5% to 25% of the population in both developed and developing countries (Abbasi, Ghoochani, Ghanian, & Kitterlin, 2016). In spite of huge progress made in areas of nutrition, approximately 12% of world's population (842 million people) experienced chronic hunger in 2011-2013 (Butz & Wu, 2004; UNEP, 2008).In a study in Punjab, Pakistan, 27% of sample households were found to be food insecure (Khalid, Schilizzi, & Pandit, 2012). A study among palm-plantation households in Malaysia reported that 85.2% of the households were food insecure (Mohamadpour, Sharif, & Keysami, 2012).

In sub-Saharan Africa, 30% of the population was undernourished by 2010, but this varies widely at the country level (FAO, 2010).More than 80% of rural population in Rwanda is experiencing food insecurity as they still depend on subsistence farming done on small parcels of land (Musafiri, 2014).A study in Bono State Nigeria found out that 58% of sampled households were food insecure (Adejobi, 2006). Another study in North Central Nigeria found that 51.8% of households sampled were food insecure (Agada & Igbokwe, 2015). InTeleyayen, Ethiopia, 20.9% and 79.1% of households were found to be food secure and food insecure, respectively(Agidew & Singh, 2018). Quaye, (2008) reported that major staple foods could not last the whole year exposing households in Northern Ghana to several months of hunger.

In Kenya, agricultural sector contributes 27% of country's Gross Domestic Product (GDP) and Kenyan households spend a substantial amount on food, therefore vulnerability and poverty are manifested in the form of food insecurity(KDHS, 2014; Amendah, Buigut, & Mohamed, 2014). Agricultural production in Kenya is faced with various challenges such as unreliable climatic conditions, small pieces of land and unstable market prices (Chege, Lemba, Semenye, & Muindi, 2016; Kiptot, Franzel, & Degrande, 2014). About 75% of agricultural labor force in Kenya is constituted by women who face gender inequalities in land ownership and

other gender related barriers (Misselhorn, 2005; Chambo, 2009). This undermines agricultural production in Kenya.In recent years starting from 2008 post-election violence,Kenya has faced severe food insecurity problem, especially in rural areas. Approximately 3.8 million people (10%) in Kenya experience chronic food insecurity (USDA, 2009). This prompted the Government of Kenya to launch Kenya vision 2030 in 2008 as the new long term development blueprint for the country whose focus is to create high quality of life by 2030. A study in Kilifi sub-county, Kenya, reported that 80% of households were food insecure (Chege et al., 2016). He further reported that number of household members, age of household head, education level, income level and marital status influenced household food security status. A study done in Laikipia, Kenya, reported that 23% of the households faced chronic food insecurity(Wachira, 2013). Government of Kenya, reported that 68% of rural community of Coastal Kenya were food insecure(GoK, 2010). The authors hypothesized the food insecurity levels were due to diminishing food resources because of high population density and household social economic factors.Kumba, (2015) reported that 77.5% of households in Kisii Central, Kenya were food secure and 22.5% were food insecure. A study in Uasin Gishu County, Kenya, reported the prevalence of undernutrition among the elderly to be 41% and a strong relationship between food security and nutrition status of the elderly(Bore, Samuel, Wakhu-Wamunga, & Serem, 2019). A study in Kamkunji estate, Uasin Gishu County among 15,000 households reported that 16.2% of the households were food secure and that women-headed households were more food secure than male-headed households (Tioko, 2015).

Household food security is determined by the overall quantity of available food, uncertainty about food supply and experience of hunger in life and all these are influenced by socio-economic characteristics of the households(Tutunchi, Ostadrahimi, Mahboob, Mahdavi, & Tabrizi, 2011;FAO, 2003). It has been reported that low household income causes people to reduce the quantity of food eaten, limit dietary variety and go for processed foods that have high fats, empty calories and low in essential nutrients (Nnakwe & Onyemaobi, 2018; Sibrian, Seevalingum, & Jorge, 2008; Sibrian, 2008; Mohamadpour, Sharif, & Keysami, 2012).Abbasi et al., (2016)reported that food insecurity was significantly associated with education and income levels. The age of household head, gender of household head, household size, land size, livestock ownership, cooperative membership and total annual income was found to significantly influence household food insecurity (Musafiri, 2014; Agidew & Singh, 2018; Khalid et al., 2012; Odusina, 2014).A study done in Nigeria reported that households were food secure during harvesting period and became food insecure during the hunger period. Also, the households' dietary diversity was lower during the hunger period than during the harvest period(Odusina, 2014).

Vulnerability to food insecurity can be reduced by adopting coping strategies that reduce exposure to risks and shocks (Musafiri, 2014). A study in Northern Ghana reportedskipping a whole day meals, borrowing, buying food on credit, consuming seed stock and restricting adult intake in favour of children, as the major coping strategies of households(Chagomoka, Unger, Drescher, Glaser, & Marschner, 2016). In Rwanda, it was reported that casual labour, sale of assets, borrowing, and adjustment in food consumption were the main coping mechanisms adopted by households(Musafiri, 2014).Typically, small holder households in rural areas like in Kuinet Ward rely upon agricultural production to sustain their livelihoods hence a careful balance of production and consumptions if maintained enables them to survive throughout the year.The study therefore seeks to assess the food security status of households in Kuinet ward, Uasin Gishu County, Kenya and the coping mechanisms they adopt in times of hunger.

II. METHODOLOGY

Research design

The study adopted non experimental design using descriptive survey. This is a method of collecting information by interviewing and administering questionnaire to a sample of individuals. The design was appropriate in this study since the researchers' intention was to assess food security status of householdsand coping strategies at a given point in time and report the situation as it is.

Study area and population

This study was conducted in Kuinet Ward, one of the administrative units in soy constituency, Uasin Gishu County. It is approximately 65.90 km^2 in area and comprises Kuinet and part of Kamkunji sub locations of Uasin Gishu county. It is located along the Eldoret- Kachibora road 35 kilometers from Eldoret town and 330 kilometersnorth west of Nairobi, the capital city of Kenya (KNSB, 2013). The climatic and weather conditions of the ward is representative of Uasin Gishu County. The Ward receives annual rainfall ranging between 900-1,200 mm. It has a cool temperate climate with annual temperature ranging from 8.4 ^{0}C – 27^{0}C. The wettest season is between the months of April and May and the dry season is between the months of January andFebruary (Bore et al., 2019). The main economic activity in this region is large scale maize and wheat farming (the major cash crops), horticulture and sports tourism. Most households also keep domestic animals e.g. sheep and cow for subsistence use. Due to large farm lands the inhabitants live in minimally dispersed

settlements. The ward possesses a dense network of roads though majority is rough roads. Access to infrastructure i.e. electricity is limited to major highways.The study area has a total population of 12,130, out of which 6,047 are male and 6,083 are female(KNSB, 2013). It is a partially cosmopolitan region with the indigenous *Kalenjin* communities dominating. It has 2,446 households and a population growth rate of 3.8%(Bore et al., 2019).Kuinet is a partially cosmopolitan region with the indigenous Kalenjin communities having the highest settlement.Kuinet ward was a good area of study for this research because it's among the accessible rural areas in Uasin Gishu not being far from Eldoret town.

Sample size determination
The sample proportion in this study was drawn from the entire ward to capture low income population density area, medium and high income areas. A sample size from 2,446 households was determined by the method described by Mugenda et al, 2003 as follows:

$$n= \frac{Z^2pq}{d^2}$$

where:
n= the desired sample size
z= standard normal deviate of confidence level (1.96)
p= the proportion in the target population estimated to have characteristics being measured
q= 1-p
d= level of statistical significance set (0.05)

therefore, $n = \frac{(1.96^2)\,(0.05)\,(0.95)}{(0.05)^2}$

=0.182476/0.0025
= 73 households

A 10% increase was added to the sample size to account for non-response. Therefore the final sample size is 81 households.

Sampling procedure
Data was collected using the multi-stage sampling technique as described by Dudovskiy (2018). The first stage involved selecting threelocations from Kuinet Ward using lottery method. The locations selected weresogomo, mitimoja, and Kuinetcenter. The second stage involved identifying the smallholder farmers among the households forming two clusters of large scale and small scale farmers. In the third stage, the number of respondents was obtained by determining the proportion of the total number of smallholder farmer households in each location against the computed sample size of 81 households. In the fourth stage, a household was systematically picked after every 5th household per location. The household heads were interviewed to obtain the required information.

Data collection instruments and procedures
Data was collected using interviewer-administered semi-structured questionnaires. The questionnaires were designed in English but administered in *Kalenjin* language (local language of majority of respondents), English and *Kiswahili* languages, according to preferences of respondents. This enabled the interviewers to clearly explain all the variables, assist respondents who didn't know how to read and write and enabled researcher to obtain first-hand information. The questionnaires were designed to elicit responses on household demographics, socioeconomic factors, strategies of coping with shocks to food security as well as the Food Consumption Score (FCS) tool. A total of 11 Focus Group Discussions (FDGs), comprising of 6 members each (three men and three women) were conducted to obtain data on coping strategies.

Computing the household food consumption score
The household food consumption score was estimated using a typical 7-day food data set though categorising food items into food table. Food items were grouped into 8 standard food groups with a maximum value of 7 days per week. Subsequently, the consumption frequency of food items belonging to a particular group was added. A consumption frequency beyond 7 was captured as 7, and multiplied by the attained score for every food group by its weighing. Weighted food group scores were added together and finally obtaining the HFCS.

$$HFCS=\alpha_{staple}\beta_{staple}+\alpha_{pulses}\beta_{pulses}+\alpha_{veges}\beta_{veges}+\alpha_{fruit}\beta_{fruit}+\alpha_{animal}\beta_{animal}+\alpha_{sugar}\beta_{sugar}+\alpha_{dairy}\beta_{dairy}+\alpha_{oil}\beta_{oil}$$

Where;
β_i frequency of food consumption= number of days for which the food group was consumed during the past 7 days
α_i weight of each food group

The HFCS was then categorized into appropriate thresholds of food consumption groups as follows; 0-21 (poor), 21.5-35 (borderline), >35.5(acceptable).

Data analysis and presentation

Data obtained was analysed using the statistical package SPSS version 23.0 while the food consumption data was analysed using WFP (2008)Food Items, Food Groups and weights for calculation of the FCS. The results were presented using descriptive statistics such as tables, percentages, frequencies, mean, etc. to describe demographic and socio-economic characteristics of households. Data from FDGs were processed to produce frequencies and graphs. Numeric values were assigned to each category and the information was processed in excel.Logit regression model was used to determine the relationship between socioeconomic factors and food security(Adejobi, 2006). It was used instead of probit model due to its compatibility with logistic regression and its simplicity in the interpretation of its coefficients.

Ethical consideration

The research work was approved by the University of Eldoret, Department of Family and Consumer Sciences. Administrative authority in Kuinet ward was notified and agreed for the study to be done in the area. The informed consent of the respondents was fully obtained by allowing them to read and sign a consent form.Confidentiality was ensured by not including names of respondents in the questionnaires and holding FGDs in private rooms.

III. RESULTS

Social economic and demographic characteristics of respondents

Majority of the households were headed by males (66.7%, n=54) while female-headed households were 33.3%, n=27. Majority of the household heads (38.3, n=31) were of 20-35 age group, the mean age being 34.0±1.1 years. Average household size was 4.0±1.3 with majority of the households (38.5%, n=29) comprising of ≤3 members (Table 1). Households that had more than 10 members were only 11.1%, n=9. Thirty eight (46.9%) of the household heads had tertiary education, 24.7%, n=20 had secondary education, 18.5%, n=15 had primary education and only 9.9%, n=8 had no formal education (Table 1). Thirty nine (48.1%) of household heads were employed, 34.6%, n=28 were self-employed and fourteen (17.3%) were unemployed. On land access, 14.8%, n=12 had no access to land (they didn't own any title deed). Majority of the respondents (59.3%, n=48) had less than one acre pieces of land, while only seven (8.6%) had more than 5 acres. On monthly household income, majority (34.6%, n=28) of respondents earnedbetween 11,000-30,000Kenya shillings. Only nine (11.1%) earned more than Ksh. 50,000. Majority of respondents (75.3%, n=61) owned livestock while twenty (24.7%) had no livestock (Table 1).

Table 1: Socio-economic and demographic characteristics of respondents

Variable	Frequency (n)	Percentage (%)
Gender of household head		
Female	27	33.3
Male	54	66.7
Age of household head		
<20 years	3	3.7
20-35 years	31	38.3
36-50 years	23	28.4
51-65 years	14	17.3
>65 years	10	12.3
Marital status		
Single	13	16.0
Married	52	64.2
Divorced/separated	7	8.6
Widowed	9	11.1
Household size		
≤3	29	35.8
4-6	25	30.9
7-10	18	22.2
>10	9	11.1
Education level of household head		
Tertiary	38	46.9
Secondary	20	24.7

Primary	15	18.5
No formal education	8	9.9
Occupation of household heads		
Employed	39	48.1
Self-employed	28	34.6
Unemployed	14	17.3
Access to land		
No access	12	14.8
<1 acre	48	59.3
1-5 acres	14	17.3
>5 acres	7	8.6
Monthly household income (Ksh)		
1,000-10,000	25	30.9
11,000-30,000	28	34.6
31,000-50,000	19	23.5
>50,000	9	11.1
Livestock ownership		
Yes	61	75.3
No	20	24.7
*Ksh = Kenya shillings		

Food security status of respondents

Majority (56.8%, n=46) had acceptable food consumption, 34.6%, n=28 had borderline food consumption and only 8.6%, n=7 had poor food consumption. According to the FCS, households with poor consumption are regarded as food insecure, households with borderline consumption are categorized as moderate food insecure and households with acceptable food consumption are categorized as food secure.Therefore, majority (56.8%) of households in Kuinet ward were food secure and only 8.6% were food insecure.

Table 2: Household food consumption score of respondents

Household food consumption score(HFCS)	Frequency (n)	Percentage (%)
<21 (poor food consumption)	7	8.6
21.5-35 (borderline food consumption)	28	34.6
≥35 (acceptable food consumption)	46	56.8
Total	**81**	**100**

Determinants of household food insecurity

The study found significant association betweensize of household, level of household income, size of household farmland, livestock ownership, level of education and employment status,and household food insecurity. However, age, gender and marital status of household head did not determine food security status of the households (Table 3). The results showed that households with many members had a higher probability of being food insecure and vice versa. Also, households with less income were more likely to be food insecure than households with much income. Households which owned more acres of land were less likely to be food insecure and vice versa. Households with livestock were also less likely to be food insecure as opposed to households with no livestock. The higher the educational level of a household head, the more food secure the household is and vice versa. Households with employed heads were found to be more food secure than those with self-employed and unemployed heads (Table 3).

**Table 3:** Results of Logit regression for determinants of household food insecurity

Variable	All Households n=81	
	Parameter estimate	*t*-**test value**
Age of household head	0.180	0.128
Household size	0.371**	0.001
Household income	0.699**	0.000
Gender of household head	-0.032	0.786
Marital status of household head	0.092	0.441
Land ownership	-0.418**	0.000
Livestock ownership	-0.482**	0.000

| Education status of household head | -0.455** | 0.000 |
| Employment status of household head | 0.379** | 0.001 |

**** denote that the correlation is significant at the 0.01 level of significance (two-tailed)

Households coping strategies

Figure 1 below shows the coping strategies households in Kuinet Ward adopt during food insecurity period. The major coping strategies reported by respondents are selling of their livestock, reducing portion sizes, doing casual jobs, obtaining food on credit, borrowing money in order to buy food, selling charcoal, consuming seed stock and reducing number of meals per day. Other coping strategies are illustrated in Figure 1 below.
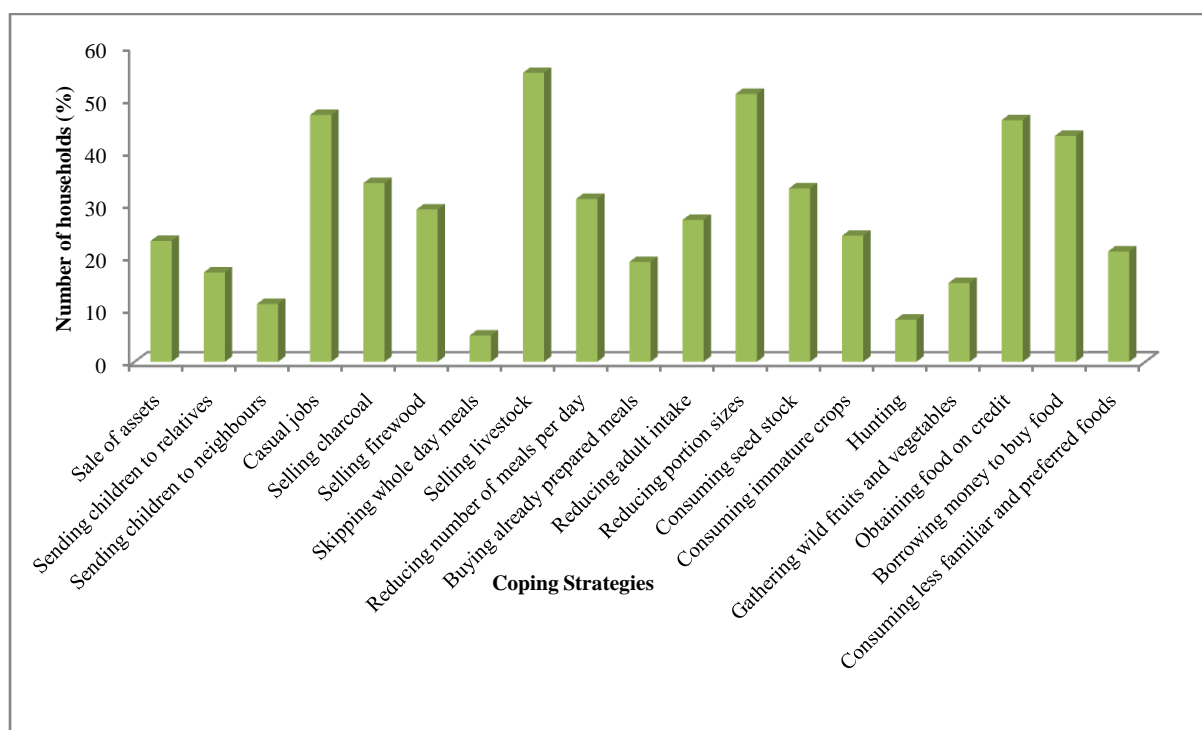
IV. DISCUSSION

Determinants of household food security

From the study, 56.8% of the households were food secure and 8.6% were food insecure. Adejobi, (2006), Kumba, (2015) and Khalid et al., (2012)reported more or less similar results to the present study as they reported 58%, 77.5% and 73% food security from sampled households, respectively. A study in Ethiopia reported that 79.1% of sampled households were food insecure (Agidew & Singh, 2018), a figure higher than the present study results of 8.6% food insecurity. Chege et al., (2016)also reported that 80% of all farmers in Kilifi sub-county were food insecure. They attributed the high food insecurity in the area to high population density putting pressure on farmland and land degradation.

The present study found that size of household, level of household income, size of household farmland, livestock ownership, level of education and employment status influence household food insecurity. However, age, gender and marital status of household head did not determine food security status of the households. The higher the number of less active members of household (children and elderly people) the higher the burden on the few active to meet the dietary needs of the household (Adejobi, 2006). More income and being employed give households more power to purchase food and farm inputs therefore become food secure. It also enables households to diversify into non-farm enterprises for more income.Large farmlands translate to higher harvests and availability of livestock provides an alternative ways of obtaining income from livestock sales. The income can be utilized to buy food in the household.

Results in present study are similar to a study done in Ethiopia where households who owned less than 1 ha of farmland were found to be food insecure (Agidew & Singh, 2018). They also noted that poverty, recurrent drought & climate change, shortage of rainfall and land degradation were determinants of food security in Ethiopia. Adejobi, (2006) reported that household size, education level and farm size influenced food security status of households in Nigeria. Households that depended only on farming were more food insecure than households that diversified into non-farming enterprises in addition to farming. A study done in Pakistan

reported that household income level and education level influenced food security(Khalid et al., 2012). Mohamadpour et al., (2012) reported a food insecurity prevalence of 85.2% among households in Malaysia.

However, age of household head and family size did not have any influence on household food security in the study in Pakistan. Mensah, (2018)reported that household size, farm size, off-farm income, credit access and marital status influenced food security in Ghana. A study in Kilifi sub-county reported that households which had at most two members were more food secure (10%) while households with ≥10 members were least food secure (2%) (Chege et al., 2016).

In contrast to the present study, Agidew & Singh, (2018) found that majority of households with younger heads were more food insecure. Chege et al., (2016) also reported that elderly farmers were 1% food secure while adults were 40% food secure. They also noted that female-headed households were more food secure than male-headed households. Chege et al., (2016),Kumba, (2015) and Mensah, (2018) reported that marital status influenced food security in their respective studies. A study done in Kamkunji estate, Uasin Gishu Kenya reported that female-headed households were more food secure than male-headed households. Women in Kamkunji estate were found to wake up early in search for money to buy food thus making them more food secure (Tioko, 2015). Agada & Igbokwe, (2015) reported that 51.8% of households in North Central Nigeria were food insecure. They also reported farm production output, farm income, annual income and household size as important correlate to food insecurity. Floro & Swain, (2012) noted that self-employed women in food insecurity high risk households are likely to engage in food-related enterprises in Philippines and Thailand.

Household coping strategies

Several studies have reported use of food coping mechanismsin times of hunger (Agada & Igbokwe, 2015;Maxwellet al., 2008; Amendah et al., 2014; Verpoorten, 2019; Yaffa & Campus, 2016; Awumbila & Ardayfio-schandorf, 2008; Chagomoka et al., 2016).The present study identified eight (8) major coping strategies used byhouseholds in Kuinet Ward, namely, selling of their livestock, reduction of portion sizes at meal time, doing casual jobs, obtaining food on credit, borrowing money in order to buy food, selling charcoal, consuming seed stock and reducing number of meals per day (Figure 1). The study revealed that coping strategies vary from every household. Chagomoka et al., (2016) categorized coping strategies as least severe, moderate severe, severe and most severe coping strategies. Hunting, occasional jobs, small trading and consumption of less preferred foods were categorized as least severe coping strategies. Gathering wild foods, consumption of immature crops, limiting portion sizes, buying already prepared foods and sale of livestock were considered moderate severe coping strategies. Selling charcoal/firewood, reducing number of daily meals and sending children to eat with neighbours were categorized as severe coping strategies(Chagomoka et al., 2016). Skipping whole day meal, restricting adult intake, consumption of seed stock, food purchase on credit and borrow food/money to buy food were further classified as most severe coping strategies. Households in urban areas use more severe coping strategies, whereas rural households employ less severe coping strategies (Chagomoka et al., 2016; Maxwell et al., 2008). In the present study, 33% of households reported consuming seed stock as a coping strategy. Chagomoka et al., (2016)reported that rural households avoid consuming seed stock because of risk of lacking money for replacement. Fifteen percent (15%) of households reported wild food gathering as a coping strategy. Chagomoka et al., (2016) reported that more than 40% of households employ gathering of wild plants as a coping strategy during hunger.Forty seven percent (47%) of households employ casual jobs as a coping strategy in the present study. This is supported by Chagomoka et al.,(2016) who reported that women in Northern Ghana engaged in casual market jobs as market women in order to get money to buy food for their families. Awumbila & Ardayfio-schandorf, (2008)also reported that young girls in Ghana move from rural to urban areas to look for casual jobs as female porters in order to get money for food.Floro & Swain, (2012)emphasized that women were engaging in food enterprises to get money for food. Sale of livestock was the most reported coping strategy in Kuinet at 55%. Studies in Ghana, Rwanda and Gambia have reported sale of livestock as a coping strategy (Chagomoka et al., 2016;Yaffa & Campus, 2016;Verpoorten, 2019; Quaye, 2008). Present study also identified consumption of less preferred foods as a coping strategy. This is similar to studies by (Maxwell et al., 2008).Agada & Igbokwe, (2015) reported that 95.8% of households in North Central Nigeria rely on consumption of less preferred foods in times of hunger, 83.5% of the households limit food portions at meal times. Quaye, (2008) observed that during hunger periods households in Northern Ghana migrate to Southern Ghana for wage labor, seek support from relatives and friends, sell livestock and household valuables, reduce food intake and consume less preferred foods. A study in Nairobi, Kenya reported that 69% and 52% of households studied reduced their food consumption and used credit to obtain food, respectively (Amendah et al., 2014). Formal employment, owning a business, rent-free housing, membership to a social safety net, reduced the likelihood of a household using a coping strategy in times of hunger. Exposure to economic shocks and larger number of children under 15 years increased the probability of a household using a coping strategy (Amendah et al., 2014).

V. CONCLUSION AND RECOMMENDATION

The study show that majority (56.8%) of households in the study area are food secure, 34.6% are at borderline food consumption and only 8.6% of the households are food insecure. Significant association was found between size of household, level of household income, size of household farmland, livestock ownership, level of education, employment status, and household food insecurity in the area. The responsibility for ensuring that citizens attain food security lies with county and national governments. However, individuals need to be educated in order to make informed decision on food and nutrition security matters. Households must ensure they have sufficient quantities of food necessary for a balanced diet; the means to acquire this food, whether through cash incomes or access to productive resources; education in order to provide proper nutritional care; clean water and adequate sanitation; and effective health services in order to achieve maximum food security. The major coping strategies among the households are sale of livestock, reduction of portion sizes, casual jobs, obtaining food on credit, borrowing money in order to buy food, sale of charcoal, consuming seed stock and reducing number of meals per day.Being employed or being educated or owning a business or having relatively higher income appear to reduce the likelihood of using thecoping strategies. Thus policy makers should improve food availability, education and increase family income to enhance quality of rural life. Such policies include those that reduce food price inflation, improving decently paying job opportunities for the rural dwellersand steady and reliable source of income. In addition, full implementation of free primary school education in the rural areaswill free parental income.

Conflict of interest
The authors declare no conflict of interest

Authors' contributions
All authors were involved and agreed on the final manuscript before publishing. Ogega Jael Kemunto: development of proposal, data collection, analysis and manuscript writing. Kevin Omondi Aduol& Linda Aura Amaya: supervisionof general research work and manuscript review before submission for publishing.

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