

Effect of Food Insecurity and Coping Strategies among Rural Households in Kakamega County, Kenya

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Abstract

Food insecurity is a very serious concern globally as it has affected social economic lives as the world population increases. Kenya is one of the Nations faced with the challenges of ensuring that her population, particularly the urban poor and rural households, are food secure. This study sought to determine effect of food insecurity and coping strategies in rural household in Kakamega County. This county is selected due to its expansive area and dense population with a record of high food prices and food insecurity of up to 51% hence rising poverty levels. The study adopted the cross-sectional survey design. The target population was 433,207 households in Kakamega County and Krejcie & Morgan, sample size determination table was used to determine the sample size of 384 households. 12 Agricultural Extension Officers were purposely selected since they form key informants on matters related to food security in all sub-counties in Kakamega County. The actual number of households was selected through simple random sampling. Data was collected using an interview schedule from critical informants and a questionnaire for households. The data were subsequently analyzed using SPSS version 23. The results of the study would support the Government in decision-making on matters related to the resolution of food insecurity, policy formulation by the government agencies, adoption of new strategies by stakeholders on securing food and finally, the addition of new knowledge to the academic body in securing new food challenges. Food insecurity's determinants were uncovered, food security status was determined and the households' challenges while addressing food insecurity were elucidated. Finally, the study offered suggestions for further studies and recommendations based on the generalizations made in the study. It also addressed the food insecurity challenge in Kakamega County.

1.1 Introduction

Globally, any developed or developing country with stable economic growth is expected to have sustainable food security for the entire population. However, approximately 870 million people across the world were food insecure, with the number of malnourished increasing to 374 per year (FAO & WFP 2021). This was spurred by both local and international lockdown to contain the spread of the covid-19 pandemic. Like other countries in Africa, Kenya had set an objective of achieving sustainable development goals. So far, securing food countrywide is still a challenge as many households in the country are food insecure. This has resulted from under financing sectors responsible for food production and inaccessibility of farm inputs, for instance, fertilizer, seedlings or high prices on farm inputs and implements. Furthermore, the prevalence of food insecurity in Kenya has increased to 38% among rural household population (Meckonnen & Amede, 2022). This was aggravated by the Covid-19 lockdown and droughts that have struck over 75% of the country's land mass. In line with this, the situation is still wanting, given the strategies employed in climate change mitigation. Subsequently, these challenges were not addressed due to the state's failure to achieve universal goal on food security that was in tandem with the SDGs set to be attained by 2015 (Khorsandi, 2022). Kakamega County has not been exceptional; despite the fertility and vastness of its land mass supposedly producing enough food, 51% of households suffer chronic food insecurity (Chepkurui, 2014) and this makes Kakamega County more vulnerable compared to other counties in the region if this issue is not addressed. This was indicated by underutilized farm land by smallholder farmers whose farm proceeds have lost market value by 50%. The subsistence farming practiced to meet domestic consumption is far below household

dietary needs that have led to malnourished households, thus pushing poverty levels to 53 % (FAO, 2021). In regard to this, how households in Kakamega County can fail to achieve food security is not well documented; surveys of available literature have not revealed the prevalence level of food insecurity and interrogated coping strategies in use. Therefore, this study sought to investigate food insecurity status and coping strategies in Kakamega County, Kenya

The effect of food insecurity in rural households globally is high as over 870 m people experience hunger and 2.6 M children are food insecure, UN report, 2022. Nevertheless, there is limited documented literature on how food insecurity has affected rural households especially in Kenya. AFI and AMA (2022) have documented that Food insecurity has typically resulted in poor nourishment, where people lack access to all or some of the vitamins and minerals needed for healthy living. This phenomenon has not been considered as a major outcome of food insecurity in the past hence subjecting households to hunger. According to global food security index 2022, India has a high prevalence of undernourished population of 16.3%, 30.9% of children are stunted, 33.4% underweight and 3.8% obese

In Africa, a research study showed that exposure to extreme vagaries of climatic change has a heavy bearing on the prevalence of food insecurity across the East African countries: Kenya, Tanzania, and Ethiopia. Further, the Horn of Africa (HoA) has approximately 40% of its population undernourished, and millions are food insecure (FAO, 2022). This is very true because most of this countries lie in semi-arid or arid areas of Africa or in Sahara desert of the northern Africa and high chances of food shortage are likely to be recorded.

Consequently, African countries face serious food deficiency challenges in the regions with high intensity of food insecurity, this is indicated by Fraval et al., and (2019). Food deficiency arises when households cannot access, avail, utilize or sustain adequate food supply. This has impacted heavily on regions low economic growth hence rising poverty level. Prosekov & Ivanova, (2018) who further indicated that short fall in food supply, cuts across in both rural and urban households in rural and urban setting in the region

The continent has consistently faced an ever-increasing challenge of food insecurity (Wolayta, 2012) whose remedying strategies have not been established due to dynamic changes witnessed on demographic characteristics and unpredictable climate change characteristics.

Studies conducted by Fraval et al., (2019); Prosekov and Ivanova, (2018) on food security revealed that the African continent faces an ever-increasing challenge of food insecurity and Kenya is not excluded from this matrix of countries with structural food insecurity. This has been evidenced by sharp price increases in foodstuffs since 2007, 2017, and 2018 where rural households face challenge of access and affordability of basic stuffs. For all this period, little has, in terms of mitigation been done to alleviate the situation as most countries still wallow in poverty. The subsistence farming practiced to meet domestic consumption is far below household dietary needs that have led to malnourished households, thus pushing poverty levels to 53 % (FAO, 2021). Low technological advancement and expertise knowledge

FAO, (2021) noted that, Kenya witnessed increased poverty levels, resulting from pressure on food insecurity challenges. This has been worsened by prolonged droughts leading to failed rains, loss of livestock, flooding and decline of crop production which has left more than 6 million hungry. The net effect has led to increased poverty levels up by 45% of the population which faces chronic or acute food insecurity (FAO, 2021). The general status in the country is projected to be more severe as the trends indicate coming of droughts, famines, floods and diseases are likely to adversely accelerate issues related to food security.

In relation to Kakamega County, studies on households' engagement with sustainable food production are not commensurate with examining and evaluating their sustainable food access and utilization practices. What has come out is household engagement through women and cooperatives seeking to improve food production (Lokuruka, 2020). Still, the question of sustainability has not been checked in the entire process.

In Kenya, food insecurity in the Arid and Semi-Arid Lands (ASAL) is projected to worsen the dire food situation. For example, the county government of Turkana in northern Kenya has reported that over 4

million livestock is in danger of starvation due to drought (Turkana County Government, 2021). Kenya as a whole has faced challenges of food insecurity across the 47 counties. Food security rate varies from one county to another, for instance, Muranga, UasinGishu, KiambuKisii, Nyamira and Trans Nzoia, Bungoma Counties have relatively sufficient food due to climatic advantages over others who are in ASAL areas. Despite this, other counties rely on food that is produced from this counties hence reducing food security.

Kakamega county despite being an eco-agro county, it still records high food insecurity rate of between 50-70% (RotichChepkui, 2017). Regarding the same, there was need to identify the peculiar determinants of food insecurity that specifically apply to the region. It is not an ASAL area, and the factors that cause food insecurity may be different from what is witnessed in the northern frontier counties. While the livestock situation in Turkana County is projected to increase food insecurity cases, how livestock keeping in Kakamega County affected food insecurity in households has not been well documented in a survey of available literature.

This study therefore aimed at filling the gap that currently exists that links the impact of food insecurity on rural households. Previous research in the area by different researchers (Lokuruka, 2020) has focused on several other aspects surrounding food insecurity which included coping strategies, sustainable food access and utilization practices. Kakamega county despite being an eco-agro county, it still records high food insecurity rate of between 50-70% (RotichChepkui, 2017). Regarding the same, there was need to identify the peculiar determinants of food insecurity and impact felt to the region.

2.1 Methodology

The research design that was used during the study was cross sectional survey design. This is because of the vast region and high population in order to focus on the household heads and key informants for provision of the needed data at appoint in time (Lavrakas, 2008).

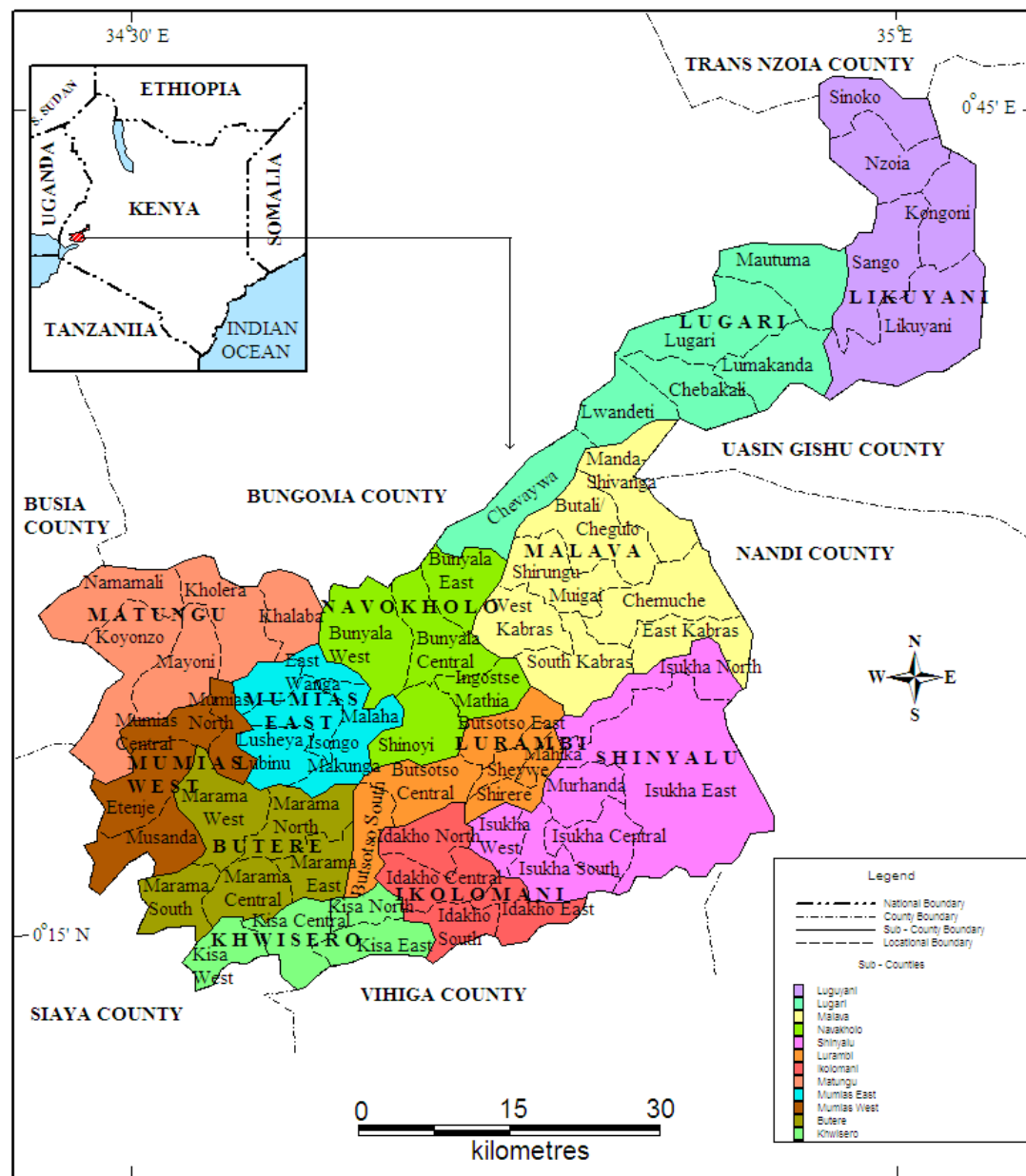
2.2. Study site

Kakamega County is in the former western province of Kenya. This county was selected purposively due to its vastness compared to other neighboring counties, geographical location, and accessibility.

The county is bordered to the south by Vihiga County, to the east by Nandi and UasinGishu Counties, to the north by Trans-Nzoia County, and the west by Bungoma and Siaya Counties (County Government of Kakamega, 2022). The county is located northwest of the capital city of Kenya, Nairobi, and its headquarters is Kakamega Town. The county lies between the coordinates: 0.283333°N 34.75°E GPS Coordinates of Kakamega County, Kenya. Latitude, (2022). It is the 10th largest town in Kenya, with an average altitude of 1,553 meters above sea level (Saaluet al., 2019). The County has 12 sub counties which include: Likuyani, Lugari, Malava, Navakholo, Mumias West, Mumias East, Matungu, Khwisero, KakamegaSouth, Butere, Kakamega Central Kakamega North and Kakamega East. The average household size in the county is 4 people; 51.1% of the people are employed, which is slightly higher than the national average of 48.6%.

The county has an average population density of 668 people per square kilometer of land with an area of approximately 3033.8 sq. km. The rainfall is evenly distributed throughout the year, March to July being the peak, while December to February gets the least ranging from 1280 mm to 2214 mm. Poverty rates stand at 53% (FAO, 2021), and agriculture is the main economic activity in the region. Maize, sugarcane, and tea are the main cash crops grown, while many households practice subsistence farming. Some rural households in the county are engaged in small-scale gold mining to supplement their income.

The county has rich fertile land suitable for agriculture and good climatic conditions that favor livestock keeping. This includes cattle, goats, sheep, poultry, bees, and pigs. Food security is expected to be safeguarded when livestock farming is combined with crop production. However, Chepkurui et al. (2014) reported that 51% of the county population is food insecure. This justifies why Kaakamega County is an ideal site for this research study.



KNBS (2023)

2.3 Data Collection

Both primary and secondary data were collected. Primary data included the responses and views of households and the agricultural extension officer's perceptions on food insecurity and its prevalence. The information was gathered using the questionnaires that were administered to the households' heads. Interviews schedules were held from the key informants to gain information on impact of food insecurity prevalence and the effectiveness of the control measures currently being used. Those interviewed comprised of the AEOs from 12 Sub county in Kakamega County.

2.4. Sample procedure

The study used Krecjie & Morgan's (1970) sample size determination table to decide the sample size. According to the determination table, a sample population of above 100,000, a sample size of 384 was appropriate, thus a population of 433,207 households as distributed per sub county on table 2.1; the study extracted 384 respondents as appropriated per each sub county indicated on table 2.1, which was adequate to get a confidence level of 95%

Moreover, Agricultural Extension Officer (AEO), based on Kakamega County Executive Cabinet Secretary for Agriculture, each sub-county has an Agricultural Extension Officer (Geoffrey Nafukho Omulayi, personal communication, 16th March 2022). This study purposely picked 12 AEOs for the study. Therefore, the sample of extension officers (12) AEOs and 384 households which totaled to 396 respondents. The table below shows the sample size determination from each sub-county proportionately using Krecjie & Morgan's (1970) sample size determination table.

Table 2.1: Distribution of Population, Number of Households, and Average Household Size by Sub-County

Sub- county	Population	Number of Households	Sample Size
Butere	153,926	36,243	33
Kakamega Central	185,625	52,015	48
Kakamega East	166,288	39,589	36
Kakamega North	238,093	51,083	48
Kakamega South	111,608	26,964	25
Khwisero	113,294	27,681	25
Likuyani	151,773	35,322	32
Lugari	122,584	27,862	25
Matungu	166,755	36,457	33
Mumias East	116,712	26,049	24
Mumias West	114,601	27,671	25
Navakholo	153,918	32,315	30
Total			384

Source: KNBS (2022)

2.5 Sampling Strategy

Based on the vastness of the county and the nature of the data to be collected, all the 12 sub-counties were included in the sample size. Since each sub-county has one agricultural extension officer, the 12 AEOs were purposely selected to allow the study to pick respondents with the required qualities that meet the study's objectives. These AEOs were selected based on the concentration of agricultural activity areas or less across the county.

After the selection of the sub-counties forming part of the sample population based on geographical considerations and considering the population spread of Kakamega County, the study considered the population of each sub-county (Sedgwick, 2015), proportionate simple random sampling was used to select households in rural areas of each sub-county in Kakamega County. This was repeated until the required population of the study was sufficiently covered, which was repeated when a given household lacked the specific characteristics required for the study.

3.1 Data analysis

The collected data were subjected to both qualitative and quantitative analysis with the help of standardized statistical packages that included Microsoft Excel and SPSS version 24 to extract needed information on

household characteristics, impact and health status on the questionnaires and interviews. Quantitative analysis of data from the households units and health impacted areas were analysed quantitatively. Microsoft Excel and SSP were used in generating graphics on impact of insecurity trends in the county. Qualitative analyses using SSP was carried on data collected using questionnaires and interviews on the household heads and AEOs practitioners' perception on food insecurity prevalence, on the society and the success on mitigation measures.

3.1 Results and discussion

Food insecurity has a far-reaching impact on rural households, including people's social, health, and economic welfare. This study aimed at establishing whether food insecurity affects people's livelihoods in rural households. Of the 345 respondents, 235(68%) indicated that food insecurity has drastically impacted their livelihood. This situation is indicated by malnourished families caused by consumption of unbalanced diet; this has led to reduced life expectancy thus lowering farm activities. In particular, about 75(22%) of the children in Kakamega County were suffering from deficiency related diseases based on their age and diet due to poor nutrition and chronic infections due to weak immune systems. Furthermore, hunger elucidates anger; therefore, families have experienced conflicts that have culminated in civil strifes. This is in contradiction with the second goal of the UNs 17 sustainable development goals which declares end of hunger, achieve food security, improved nutrition and promotion of sustainable growth of agriculture (UN, 2022a)

The study further sought to establish whether or not households with higher income can equally be food insecure due to unavailability and accessibility. Of the 345 respondents interviewed, 203(59%) indicated that they were food insecure due to inaccessibility and availability on the market during certain times of the year. Foods like tomatoes, cabbages, Irish potatoes, and traditional vegetables are either expensive or inadequately supplied on the market. This has been precipitated by supplies outside the region, increasing logistical costs and storage, moreover, most of this foods are perishable and they are affected because of long distance transit and the mode of transport used. Other aspects cited in the study were food theft, feeding on a single meal daily and poor health due to malnourishment. This has been discussed in the following subsections below.

Table 3.1: Effects of Food Insecurity on Rural Households in Kakamega County

Insecurity affects	Respond rate
Household income	235(68%)
Theft	207(60%)
Feeding on a single meal in a day	276(80%)
Health	276(80%)
Food availability	203(59%)

Source: Survey data, 2023

3.2 Theft and its Effect on Household Food Insecurity

The study sought to establish whether food shortage has elicited effects on household farmers in Kakamega County. Of the 345 respondents who interacted, 207(60%) households who practiced farming experienced theft of food crops in their farms and, even after harvesting, in the granaries. Theft involves stealing of crops while still in the farm or harvested food in the store. This was resulted from negative attitude on farming by some household members and intensive hunger drive that increased food theft in rural Kakamega County.

This has affected crop harvest and some farmers opting for off farm activities and this has caused the rise of food insecurity rate among rural households. Security being a critical factor in food production, the prevalence of food insecurity has escalated security in rural households where farmers lose crops while still on the farm or are stolen after harvest. As a result, after incurring losses, they opt to undertake off farm activities.

The study further used interviews to get more information about the effects of food insecurity on rural households. Respondents interacted with confirmed that increased theft directly impacted on food production and its security in rural households. Households have relied on food produced within the region; this has been highly affected by theft, lowers the crop production rate, and raises food insecurity levels. However, theft can be handled by ensuring all stakeholders participate in food production activities and therefore this information has indicated that food insecurity has been influenced by insecurity issues especially from rural areas in Kakamega County.

Further analysis sought to establish from respondents on daily feeding frequency in rural households. Of the 345 respondents interviewed, 276 (80%) households could afford one meal a day, which is starch (Ugali). This has resulted from rising poverty levels among the households, peasantry farming which is unsustainable for livelihood and farming domineered by maize crop perennially. As a result, food insecurity has caused households to feed on one meal due to insufficient supply or no purchasing power to acquire a maximum of three meals a day. These findings are in agreement with the findings of Mutie et al (2020) on rising poverty levels resulting from pressure on food insecurity in Kenya.

3.3 Effects of Food Insecurity on Health Status in Rural Households

The study sought to establish whether food insecurity has effect on health status of rural households. Respondents were asked to state whether food shortage has effect on health status based on body malnourishment, nourishment in relation to food consumed. The data collected from respondents were indicated on Table 3.2.

Table 3.2: Effects of food insecurity on health status among households

Respondents	Frequency	Rate
Malnourishment	242	70%
Nourishment	69	20%
No Relation	4	10%
Totals	345	100%

Source: Researcher (2023)

Table 3.2 shows distribution of respondents on health status and food insecurity in rural households. Of the 345 respondents interviewed 276(80%) households indicated that there was a relationship between body malnourishment and food adequacy, as opposed to 20% who said the contrary. This was attributed to households feeding on carbohydrates because these foods are cheap on market to acquire, available, and easy to prepare. As they feed on carbohydrates alone, the body lacks a balanced diet essential for body growth and body defense from disease. Consequently, they suffer from deficiency diseases which lower body immunity and impair households' health status. Malnourishment is a consequence of food insecurity. This findings agree with the United Nations, 2022c) which reported that 2.37 billion were neither with food or lacked a means of having healthy balanced diet consistently.

The study further used interviews to get more information about the effects of food insecurity on rural households. Respondents to the interview confirmed that food insecurity affected the health status among households in the county. Interviews conducted on AEOs indicated that Households have relied on maize crop, which contains starch because it's commonly planted by farmers in the county; therefore, its advised

to practice intercropping or varying crops to acquire a balanced diet. This result is contrary to the UN, 1948 who sought to give all human beings a right to good quality life by feeding on balanced diet. This data informs this study that malnutrition is a consequence of food insecurity which results from imbalanced diet on meals consumed. This implies that rural households practice subsistence farming due to low income.

4.1 Conclusion and recommendation

4.2 Summary

Further analysis indicated that food insecurity had affected most households in Kakamega County. Of the 345 respondents, 235(68%) indicated that food insecurity greatly impacted households' livelihoods, health status whose body immunity has been lowered due to consumption of imbalanced diet. Furthermore, inadequate food has caused violence in some families which has resulted in divorce, bodily harm or even death. Based on this, it has had a very negative impact on the social and economic growth of our country and the world at large.

4.3 Conclusion

In view of the findings of this study, it was concluded that food insecurity has affected many households' social welfare. This comprises health status, declining household income and rising theft cases which have been caused by high food insecurity level in Kakamega County. This is due to feeding on an unbalanced diet and financial deficit or affordability of food on the market.

4.4 Recommendation

Training based on good farming practices, the County government to facilitate sustained public awareness through county Agricultural Extension Officers on sustainable smart farming methods to enhance food production. Finally, theft can be controlled by engaging households in extensive farming activities as well as off farm activities to cater for their own livelihoods. In line with these, the study further recommended that health status can be improved through encouraging households to consume a balanced diet derived from our farms. This can be encouraged through sustained farming where all variety of food is produced.

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