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## Effect of COVID-19 on Food Pricing and Coping Strategies Among Households in Kakamega County Kenya

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## Abstract

Food price shocks exacerbated by the COVID-19 pandemic have the potential to threaten food security, especially among low-income households. The aim of this study was to assess the effect of COVID-19 on food prices and the coping strategies of households in Malava and Lurambi Sub-Counties of Kakamega County, Kenya. The researchers adopted a descriptive survey design for this study. A semi-structured questionnaire was developed using KoBo Collect and synchronized to the Open Data Kit (ODK) server and used to collect data from a sample size of 200 households. Data was analyzed using Statistical Package for Social Sciences Version 26 to generate descriptive statistics. Results reveal that food prices significantly affected households as they depended on the market for food supply, with nutritious food items such as meat, vegetables, milk, and fruits exposed to significant food price shocks arising from COVID-19. Coping strategies included a reduced number of meals per day, reduced dietary diversity, and lower expenditure on health and education, calling for State and County Government interventions to provide food relief and transfer payments for vulnerable households.

**Keywords:** COVID-19, food security, households, pricing, Kakamega

## Introduction

In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. The pandemic led to adverse economic and welfare effects on households globally, with low-income developing countries being particularly vulnerable. The pandemic, in addition to healthcare concerns, has negatively affected food systems in terms of availability, utilization, and stability (Laborde et al., 2020). It has threatened access to nutritious food through loss of income and supply chain disruptions, leading to distortions in food prices. According to the World Bank (2021), the Global Agricultural Commodity Price Index peaked on July 16, 2021, approximately 30% higher than in January 2020. The prices of maize, wheat, and rice have increased by 43%, 12%, and 10% respectively, above their January 2020 levels (World Bank, 2021). The price increase was significantly affected by macroeconomic conditions, currency devaluation, and COVID-19-related supply disruptions due to a cessation of movement, social distancing

measures, and the closure of market centers, among other factors. Higher food prices and reduced incomes mean that most households are forced to cut down on the quantity and quality of food consumed. Households in low-income countries are more adversely affected by rising food prices since they spend a larger proportion of their income on purchasing food (World Bank, 2021).

Similar studies conducted in the Pacific region by Richardson et al. (2021) reveal that food prices increased by 24% to 44% during this period, primarily affecting local produce due to transport disruptions. This is matched by the Food and Agriculture Organization (2021) food price index, showing a peak in food prices in May 2021. According to Niles et al. (2020), households in Vermont experiencing high food security challenges had higher chances of facing food access barriers aggravated by COVID-19, both physical and economic. In addition, it was observed that coping strategies to price shocks differed between consistently food insecure households and newly food insecure households. Studies done in Kenya by GAIN (2021) reveal that poor urban households were adversely affected by COVID-19 food security shocks, with 76% of farmers reporting an increase in the prices of inputs. This resulted in crisis coping strategies such as reducing the number of meals and engaging in illegal activities. There is limited data from local studies addressing COVID-19 food price shocks and coping strategies by urban and rural households in Kakamega County. Therefore, this study aims to assess the effect of COVID-19 on food pricing and coping strategies of households in Kakamega County.

## **Objective**

The main objective of the study is to assess the effect of COVID-19 on food pricing and evaluate the coping strategies of households in Kakamega County, Kenya.

## **Materials and Methods**

The study was carried out from March to June 2021 in Kakamega County, located in the Western part of Kenya. The County covers an area of 3,051.3 KM<sup>2</sup> and is the second most populous county after Nairobi, with the largest rural population (KCIDP, 2018). The County comprises twelve Sub-counties, sixty wards, one hundred and eighty-seven Village Units, and four hundred Community Areas (KCIDP, 2018). Most of the people in this region are small-scale farmers; however, land size for agricultural production has been reduced over time because of

population expansion (KCIDP, 2018). The need for settlement has increased pressure on the limited land available, resulting in food insecurity in many parts of the region (Musotsi et al., 2017).

The total population of Kakamega is 1,682,239, with a total of 378,386 households. The population density is 580 persons per square kilometer (KNBS, 2019). The target population was households in Kakamega County. Two sub-counties, from an urban and rural setting, were purposively selected for the study: Kakamega Central and Malava, with the latter having a higher percentage of rural population. To minimize bias, the researchers envisioned comparing variables under study for the two study populations. Stratifying sampling was used in order to eliminate bias in age and gender. The researchers used a descriptive survey design. The sample size was calculated using Fischer's formula, and a sample size of 314 households was obtained. However, due to COVID-19 protocols and restrictions, the researchers were not able to access all the households and/or respondents. Eventually, data collection was done in 200 households only. Masks and sanitizers were used to protect the enumerators and respondents, and social distancing protocols were observed. The target population was household heads who responded to the questionnaires. Stratified random sampling was used in selecting the households.

A household survey was conducted, based on a stratified random sampling of household heads, to evaluate the effect of COVID-19 on the pricing of food and coping strategies. Secondary data was obtained from household baseline studies, national policy reports, and global and national statistics. Information was sought regarding household demand trends, food pricing, income, and behavioral responses to food access in light of adjusted food prices.

A descriptive data analysis was done to explain household characteristics, consumption patterns, food prices, and access to food systems. Data was exported to Microsoft Excel Spreadsheet 2016, where it was cleaned and coded. Statistical analysis of data was done using SPSS Version 26. Cross-tabulation was used to generate descriptive statistics using frequencies and percentages for analysis. Results and recommendations were presented using tables and charts.

### ***Ethical considerations***

The National Commission approved the study for Science, Technology and Innovation Kenya License number NACOSTI/P/21/8406. The study had informed consent that addressed all the ethical concerns that could arise and was explained to the study participants. The purpose of the research was explained to the study participants before they consented, and they had the option to agree or decline to participate in the interview. Data was collected from household heads who consented to participate in the study.

### **Results**

#### ***Basic Household Characteristics***

Among the 200 household heads sampled, 58.5% (n=117) were male, with 41.5% (n=83) female. Most respondents were aged 31-50 years (57.0%; n=114). Married respondents represented 75.5% (n=151) of respondents, while 23.0% (n=46) reported being single, divorced, or widowed. The highest level of education attained is secondary education (33.5%; n=67). Regarding the occupation of household heads, most are farmers (52.5%; n=105), while 24.0% (n=48) are involved in small business enterprises. In addition, 13.0% (n=26) work in the private sector, 11.5% (n=23) are casual workers, and 10% (n=20) are unemployed. Regarding monthly household on-farm income, a significant proportion reported an income below sh.3000 per month (15.5%; n=31), and a slightly larger proportion earning 3,000-10,000 per month (16.5%; n=33). Income earned off the farm averaged below Ksh.20,000 (51.5%; n=103) while 24.5% (n=49) earned between Ksh.20,000 to 40,000 monthly, indicating a higher income from off-farm livelihood compared to farm income. This corresponds with studies by Giri et al. (2021) indicating that small farmholders tend to rely more on off-farm income compared to large farms, with off-farm income contribution of 82% to household income.

#### ***Changes in Food Prices in Kakamega County***

Figure 1 presents perceived changes in food prices in Kakamega County as a result of COVID-19. Most respondents, 87.5% (n=175), reported that COVID-19 led to an increase in prices of either one or more of the food commodities. The increase was slightly higher in Malava (45.0%; n=90) than in Lurambi Sub- County (42.5%; n=85). This implies that, corresponding with World Bank (2020) findings, rural

household members were significantly affected by market food prices in light of COVID-19 and dependent on the market for food products.

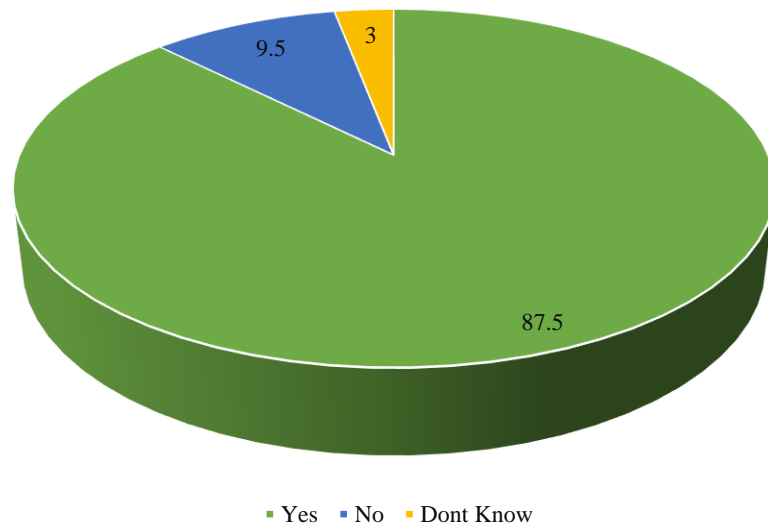


Figure 1. Reporting Changes in Food Prices

### ***Increase in Prices for Specific Food Groups***

Table 1 summarizes increased prices for specific food groups as reported by household heads. Findings reveal that the nutritious food groups are significantly affected by increased prices, with food items like cooking oil, sugar, spices reporting the highest rate of increase (n=125, 62.5%; Mean % price increase=26.2%) followed closely by vegetables (n=104, 52.0%; Mean % price increase=25.1%), cereal and cereal products (n=146, 73.0%; Mean % price increase 19.2%) and milk and milk products (n=100, 50.0%; Mean % price increase=15.3%) products (13.9%). The least affected food product was meat and meat products (n=127, 63.5%; Mean % price increase=13.9%). This further enhances the vulnerability of low-income households, as they are forced to cut back on nutritious food, with an adverse impact on the health of children, lactating or pregnant mothers, and invalids who are recovering from COVID-19 and other related health challenges. This is supported by a Global Alliance for Improved Nutrition Report (2021) indicating a significant increase in food inflation in Kenya by 11.89% in March 2020

**Table 1**

## Increase in Prices for Specific Food Groups

	<b>n</b>	<b>%</b>	<b>Mean% of price increase</b>	<b>SD</b>
Meat and meat products	127	63.5	13.9	9.5
Cereals and cereal products	146	73.0	19.2	10.2
Vegetables	104	52.0	25.1	16.9
Milk and milk products	100	50.0	15.3	8.1
Fruits	132	66.0	14.4	8.1
Other food items (Cooking oil, spices, sugar)	125	62.5	26.2	13.8

*Socio-economic Effects of Changes in Food Prices*

Information was gained regarding household perceptions regarding the socio-economic impact of increased food prices. Most households (75%; n=150) were concerned, in the recent past, that they would not have enough food due to COVID-19, while 70.5% (n=141) were concerned that they will not have enough food in the coming months due to COVID-19. A significant number of respondents (39.0%; n=78) bought food in larger quantities than usual during the COVID-19 pandemic in anticipation of increased food prices, as summarized in Figure 2. This concern, which results in rationing behavior, as expressed in the United Nations Policy Brief (2020), can adversely affect income and nutritional outcomes.

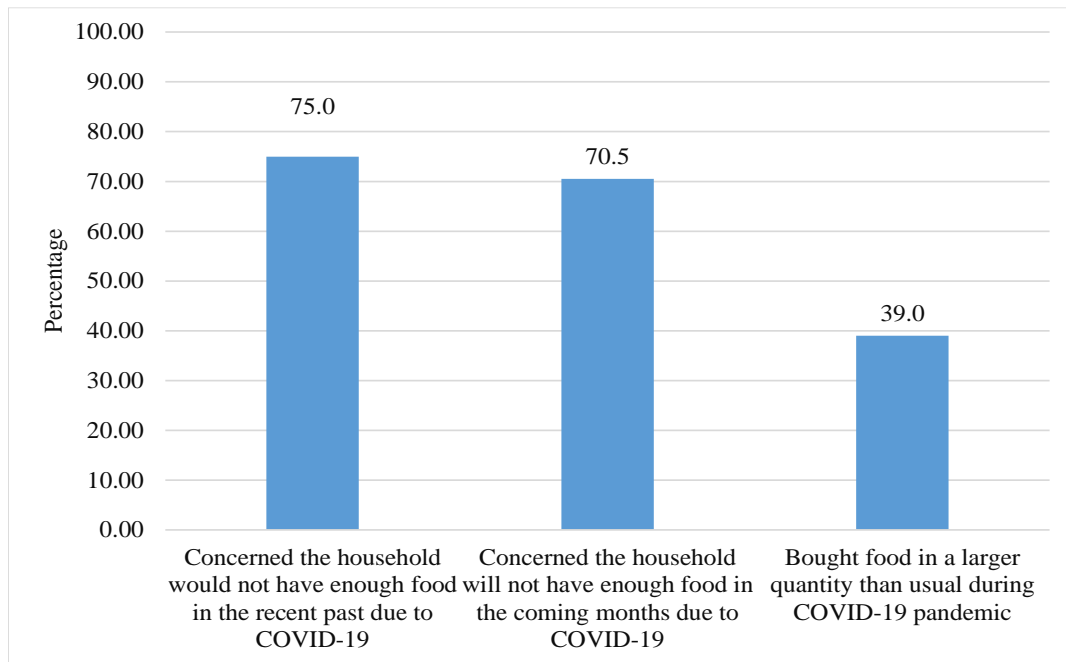


Figure 2. Effects of Changes in Food prices

Figure 3 explains the effect of price increases on food intake. Most households (47%) resorted to a reduction in the number of meals eaten in a day, while a significant portion of households (23.5%) reported they had reduced the number of meals eaten. This corresponds with a household study conducted in Tanzania by Mbegalo and Yu (2016), indicating that low-income households faced with food price shocks tend to shift towards the consumption of cheaper food that may have lower nutritional value.



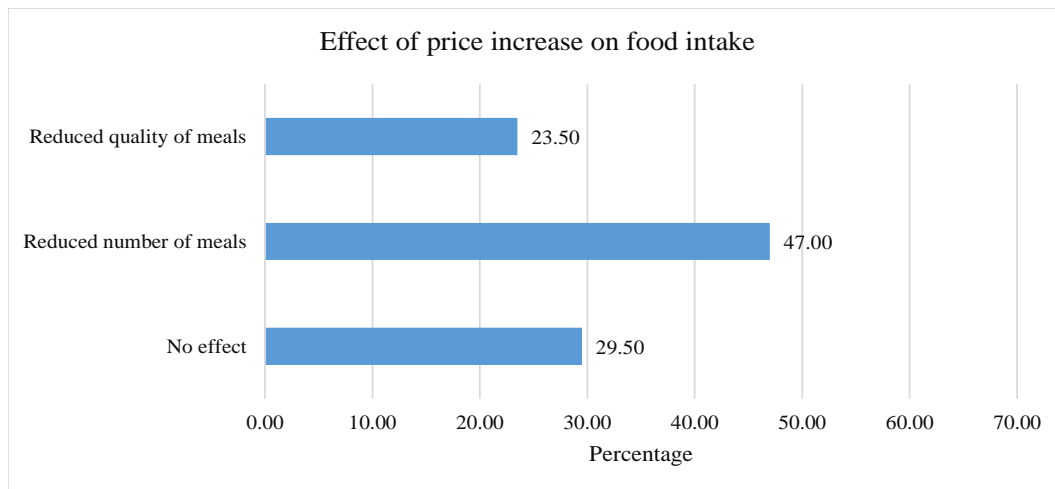


Figure 3. Effect of Price Increase on Household Food Intake

### *Challenges in Food Access Faced during COVID-19*

The inflated price of food items also contributed significantly to food access by households, as reported in Table 2. Most households reported access to food of lower quality (36.5%; n=73) and less variety of foods in the area (30.5%; n=61) and limited quantity of food in the local area (14%; n=28), while a significant number of households were constrained by food rationing (12.5%; n=25) and difficulty in accessing clean water (8%; n=4.0) causing residents to resort to water from nearby springs and rivers leading to adverse health effects from waterborne diseases. Table 2 summarizes the challenges faced by households in terms of food access. Other challenges in food access mentioned included poor access to nutritious food due to the high cost, limited finances to buy food varieties, low market activity, and shortages of meat and fish due to the pandemic.

**Table 2**

#### Challenges in Food Access during COVID-19

Access to food of less quality	73	36.5
Access to less variety of foods	61	30.5
Limited quantity of food available in my area	28	14.0

Food rationing	25	12.5
Difficulty in accessing clean drinking water	8	4.0
Having to walk a longer distance to access food	1	0.5
Other challenges	4	2.0

### *Household Coping Strategies*

The study sought to assess how households have dealt with limited food access due to increased prices during COVID-19, with findings presented in Table 3. Most households (90.5%; n=181) opted to consume simple food, such as maize and beans. A significant number of households (42.5%; n=85) resorted to borrowing from friends, neighbors, or relatives, while adults opted to skip meals by eating once a day (14%; n=28), with 13% (n=26) of households resorted to selling their assets to get food. Similar studies by Tandon and Landes (2014) reveal that coping strategies among low-income households faced with increased food prices include decreased dietary diversity, delayed medical expenditure, and reduced expenditure on clothing and durable goods.

**Table 3**

Coping Strategies Arising from Increased Food Prices

<b>Coping strategy</b>	<b>n</b>	<b>%</b>
Borrowing from friends, neighbors, and relatives	85	42.5
Stick to simple food such as maize or beans	181	90.5
Reduce expenditure on health	5	2.5
Reduce expenditure on education	7	3.5
Adults skip meals once a day	28	14
Selling of household assets,	26	13
Other strategies	7	3.5

## Discussion

The study reveals that most household heads in the targeted area were male, with relatively low off-farming income being their main source of livelihood, ranging from Ksh 3,000 to 10,000 per month, making low-income households more vulnerable to food insecurity. This corresponds with local studies by Emongor (2011) indicating that virtually all low-income households in Kenya spend large portions of their income on food, exposing them to severe poverty and malnutrition in the event of food price shocks. Over 85% of respondents reported that COVID-19 has led to an increase in food prices. This is linked to World Bank (2021) and GAIN (2021) findings indicating that rural and urban household members dependent on the market were most affected by food price shocks resulting from the pandemic. Nutritious and staple foods such as vegetables, milk and milk products, fruits, and cereals were most adversely affected by food price increases, making households more vulnerable to food price shocks and adverse health outcomes from COVID-19. This corresponds with the Global Alliance for Improved Nutrition report (2021), which indicates a significant increase in food inflation in Kenya to 11.89% in March 2020.

The perceived socio-economic impacts of increased food prices by over half of households included concerns about the availability of food in the recent past and near future, leading to rationing and over-stocking of food. This concern, as reported in the United Nations Policy Brief (2020), can have adverse effects on access to nutritious food, driving low-income households into severe poverty and poor nutritious outcomes. Most households reported limited market access to food varieties, food quality, and quantities during COVID-19, implying a shift away from healthy food consumption during this period. This is in line with studies by Niles et al. (2020) revealing adverse health and nutrition impacts from reduced food access. The study reveals significant adverse effects of increased food prices on household food intake as the number of meals was reduced in 47% of the respondents while the quality of meals was reduced in 23.5% of the respondents. This is a significant percentage of the population, showing that price has an impact on the number of meals consumed as well as the quality of meals selected. Reduced quality of meals meant eating less preferred foods that had minimal nutritional value in most cases, substituting healthy foods with any other available food, and adopting cooking methods that may destroy food nutrients. For instance, fat-soluble vitamins, such as food rich in vitamins A or its precursors, D, E, and K, require the

presence of fats/oils for optimal absorption. These vitamins may be minimally absorbed in the absence of fats/oils if households are unable to afford them. A person eating foods rich in fat-soluble vitamins in the absence of fats/oils may suffer related micronutrient deficiencies due to malabsorption. According to National Guidelines for healthy diets and physical activity, adolescents and adults should have at least three meals per day, which should be selected from at least 3-4 food groups (Ministry of Health, 2017). In addition, children will require a higher number of meals than adults. Thus, food price shocks have a negative impact on food intake among low-income households as it reduces the quality as well as the number of meals taken.

Principal coping strategies by households included dietary restrictions to consumption of simple, accessible foods such as maize and beans, skipping of meals by adults, borrowing food and money from neighbors and friends, and selling household assets. This corresponds with studies conducted in India by Tandon and Landes (2014), indicating that expansionary food pricing has significant adverse socio-economic impacts on low-income households. Questions, however, arise about the temporal nature of food price shocks arising from COVID-19. Evidence from IFPRI (2022) reveals that the global increase in aggregate food prices was largely attributed to expansionary food demand from the COVID-19 recession and temporary logistical disruptions rather than severe food supply shocks. However, the study notes that even a relatively temporal price surge will adversely affect food security for vulnerable households in low-income countries that have inadequate food relief systems. Therefore, this indicates the need to strengthen sustainable food supply systems and household resilience.

## **Conclusion**

The study reveals a significant increase in food prices, affecting both urban and rural households in Kakamega County as a result of COVID-19, compounding the existing food security problem for low-income households in this region. This had the potential to affect the welfare, nutrition, and health status of communities as households resorted to food intake reduction and diversion of income. There was also limited access to food varieties, qualities, and quantities, creating a shift away from healthy food consumption and exposing households to adverse health outcomes. Coping strategies by households largely included a reduced number of meals, borrowing of food and money from neighbors, and sale of household assets.

To mitigate this effect, the State and County Governments can make policy interventions in partnership with non-governmental institutions to ensure that food relief reaches the most vulnerable households, including low-income, single parents, the aged, and households with vulnerable dependents. Additional fiscal measures include transfer payments to low-income households and tax rebates on essential food products in the region.

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