

COVID-19 IMPLICATIONS ON FOOD SECURITY AND NUTRITION IN PERI-URBAN HOUSEHOLDS, KAMIU, EMBU COUNTY, KENYA

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Article Info	ABSTRACT
<p>Article history:</p> <p>Received: Feb 4, 2022 Revised: Mar 12, 2022 Accepted: 6 March 2022 Published: 1 April 2022</p>	<p>The study investigated the implications of COVID -19 Pandemic on Food Security and Nutrition in peri-urban households-Kamiu, Embu County, Kenya. It intended to assess the effect of movement restrictions on food security and nutrition in peri-urban households, to assess the effect of curfew on food security and nutrition in peri-urban households, and determine the effect of social distancing on food security and nutrition in peri-urban households. The study employed a quantitative approach and used a cross-sectional survey design. The sample size for the research was 285 households out of the target population of 1002 households in the Kamiu peri-urban area. A cluster sampling was employed to collect specific households, while purposive sampling was used to reach the respondents, targeting household heads. Ninety-five questionnaires were administered to households in each of the three subunits to ensure the sample was representative of the study area, using the snowball sampling technique. Data were collected using questionnaires and analyzed using descriptive statistics. The analyzed data was presented in tables, figures, charts, and bar graphs. The findings revealed that food security and nutrition had been significantly affected by Covid 19 pandemic concerning measures undertaken to contain it. However, the effects were below average, as denoted 39.5%. A coefficient of Pearson correlation test indicated revealed that ($r = - 0.46$) an indicator that there was a negative relationship between the factors under consideration that is restriction of movements, social distancing and imposition of curfew during Covid 19 pandemic and food supply, availability, accessibility, and affordability. In collaboration with national government initiatives, the study recommends that the county government enhance social safety programs and policies like cash transfers policies, tax relief's policy, and strategic food reserves and distribution programs to cushion the vulnerable citizens during the Covid 19 pandemic and future cases of the pandemics.</p>
<p>Keywords:</p> <p>Curfew Covid-19 Implications Food Nutrition Food security Peri-urban Restriction of movement Social distancing</p>	

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INTRODUCTION

Globally, the number of people facing extreme food insecurity will grow by 50% in 2020. Extreme weather and conflicts generate famine in about 100 million people and 16 million people, respectively. Then came the Covid-19 epidemic. One hundred fifty-five million people in 55 countries suffer acute food insecurity, with famine-like circumstances in some areas (GRFC, 2021). The Covid 19 pandemic's secondary socio-economic repercussions threaten food security in at least 25 countries, including Lebanon, Yemen, and South Sudan. Latinos in need of food assistance are predicted to double by 2020 (FAO, 2017). Anti-Covid-19 measures have delayed planting, preventing Afghan farmers from sowing their crops on time, while food prices are rising in urban areas, posing a serious concern.

Interconnected dynamics influencing food systems, food security, and nutrition include production, distribution, income and livelihood, social protection programs, and demand disruptions. The Covid-19 pandemic's health, economic, and social effects are havoc in most African countries. The food system has been badly disrupted, affecting all levels of supply chains (Love et al., 2021). For this reason, the Covid-19 epidemic affects food security and nutrition primarily through loss of income and assets, jeopardizing people's capacity to buy food.

Confusion over Covid-19's spread led to a strict lockdown and physical distance rules, and street market closures cost jobs and money (FAO, 2020). A slowing economy and disruption of supply chains triggered new dynamics that affected agricultural systems, food security, and nutrition. Low wages and rising food prices have made food unaffordable for many, jeopardizing their food rights.

Regulatory responses to the epidemic, such as lockdowns, have impacted economic outcomes and stability, increased extreme inequalities, social injustices, food supply, and security (Chiwona-Karlun et al., 2021). Food supply chain interruptions reduce food availability and access, especially for poor and vulnerable households who rely on regular purchases of fresh produce (Reardon et al., 2020).

The definition of food security by UN Committee on World Food Security, is a situation where everyone has access to adequate food that is safe, nutritious, and meets their dietary needs for an active and healthy life. The pandemic has inflicted disorder on the world's food systems, threatening supply, accessibility, use, and stability (Laborde et al., 2020a). Disruptions to food transfer programs, demand shocks, and supply constraints contribute to declining nutritional status in low-and middle-income countries (Laborde, Martin, & Vos, 2020).

Increasing food insecurity is reversing years of development progress. Global Food Security and Nutrition Report (FAO, 2020) estimates that almost two billion people faced moderate or severe food insecurity prior to the pandemic. This number has risen substantially since 2014, reaching 60 million in five years. Pre-Covid-19 hunger rose due to conflict, socio-economic conditions, natural calamities, and pest infestations. The Covid-19 epidemic has rapidly spread across the globe since late 2019, threatening food security and nutrition. Food systems encompass all aspects of food production, distribution, preparation, and consumption. Food systems include food supply chains, food ecosystems, and consumer behavior (FAO, 2017)

Covid-19 is a respiratory infection that does not appear to be food-borne (ICMSF, 2020). The virus's spread and the measures adopted to combat it have impacted food security, nutrition, and food systems. Obesity makes people more susceptible to Covid-19. The confusion over Covid-19's spread led to a tight lockdown and physical distance limits in some countries. Furthermore, this new dynamic emerged, with cascading effects on food supply systems, people's access to food, and a general effect on food security and nutrition (Scudellari, 2020). The worldwide health crisis lockdowns have caused enormous food supply network disruptions and a significant global economic depression. These crises have reduced earnings and increased food costs, putting many people out of reach, diminishing the right to food, and impeding efforts to attain the SDG of zero hunger (Ghebreyesus, 2020).

The disease-containment lockdowns create complicated dynamics that cause significant disruptions in food systems, resulting in increased hunger. The pandemic will affect 83-132 million people (FAO 2020), including 38-80 million individuals in low-income nations who rely on food imports (Torero, 2020).

The following are the main concerns to national food security: Higher retail prices and lower wages increase household food consumption. Many countries are experiencing significant retail food price inflation because of Covid-19 social distancing policies, currency devaluations, and other issues. People in middle and low income countries were more affected by rising food prices than high-income countries.

Covid-19 was projected to worsen severe food insecurity in 2020-2021 considerably. WFP estimates that 272 million people are food insecure or at risk of becoming so. Acute food insecurity occurs when a food shortage threatens a person's life or livelihood. As of September 2020, 6.22 million Kenyans are stressed, in crisis, or food insecure, according to the Food Security Information Network (FSIN, 2021) and the Global Network Against Food Crises. The covid-19 epidemic has disrupted agri-food supply networks, affecting millions of people who depend on the food system and citizens who buy food.

Early Covid-19 pandemic interrupted supply channels and increased demand for locally farmed crops. A GAIN poll (n=49) in May 2020 found that 8% of businesses have stopped production, 63% have drastically lowered output, and 26% have decreased moderately or little. Most enterprises (n=29) have drastically decreased their sales pricing, citing lost sales as the significant impact of Covid-19. Due to travel restrictions and city lockdowns, including accessing farms and markets, traders and transporters faced significant challenges; this resulted in an 80 percent reduction in the number of trucks approved per day, resulting in food waste as perishables rotted while drivers were tested and certified. Especially near the Kenyan-Tanzanian border, food delivery delays resulted in the loss of perishable commodities (Wageningen University, 2020).

Food availability, accessibility, and affordability have all been impacted by the Covid -19 epidemic. Delays in food supply chains, lost income and livelihoods, increased inequality, changes in food environments, and unpredictable food costs locally (Clapp & Moseley, 2020; Klassen & Murphy, 2020; Laborde et al., 2020). The harshness and period of the pandemic and containment methods may also pose future concerns to food security and nutrition, including reduced food output and production.

Food security is defined as having social, physical and economic access to sufficient, safe, and nutritious food that meets their tastes and dietary needs for an active and healthy life at all times. According to a poll done in 12 countries south of the Sahara, Covid-19 control measures have caused anxiety about food security as health, economic, and human rights/wellness issue (Wamala-Larson et al., 2021). Furthermore, roughly one out of every three Kenyans is food insecure; rural areas had a higher percentage of food poverty, with 35.8% of the population living in poverty, compared to 28.9% in peri-urban areas and 24.4 percent in urban areas (Kenya National Bureau of Statistics (KNBS, 2018). As a result, the government and other development actors should analyze the impact of covid-19 disruptions on food security and nutrition. This study aimed to see how the Covid-19 outbreak influenced peri-urban households' food security and nutrition. The following research questions were sought to be answered by the study; What are the consequences of movement restrictions on food security and nutrition in peri-urban households? What impact does curfew have on peri-urban households' food security and nutrition? What influence does social isolation have on peri-urban households' food security and nutrition?

LITERATURE REVIEW

This paper reviewed literature relevant to the study. It includes theoretical ideologies of the effect of the Covid-19 pandemic on food security and nutrition, as stated with the study's objectives. Food security is implicitly believed to be a sub-category of poverty (commonly referred to as "food poverty") under this approach, i.e., a lack of sufficient income to purchase the food required under particular conditions (Sibrian et al. 2007; Sibrian 2008). Food insecurity is defined as a shortage of calories in the population that falls below a threshold set by international nutritionists. It is theoretically possible to estimate food consumption using household surveys that offer income data assuming that poorer households spend a more significant proportion of their income on food. As a result, food is converted into calories: if the supply of household calories falls short of the minimum "required," some or all home members are food insecure.

Many applied economists have assessed the calorie content of each food and then aggregated it to deliver total calories to household members. Individuals' future earnings could be forecasted using the analysis unit. However, there are concerns about children whose food security is dependent on adult earnings. The Covid-19 pandemic, which led to movement restrictions, curfews, and social isolation, impacts people's income, resulting in reduced purchasing power, affecting food security and nutrition. The conceptual framework is depicted in the diagram below. The independent variables are the effects of the Covid-19 pandemic, including movement restrictions, curfews, social isolation, while dependent variable is food security and nutrition. The study conceptualized that there is a potential relationship between the two aspects.

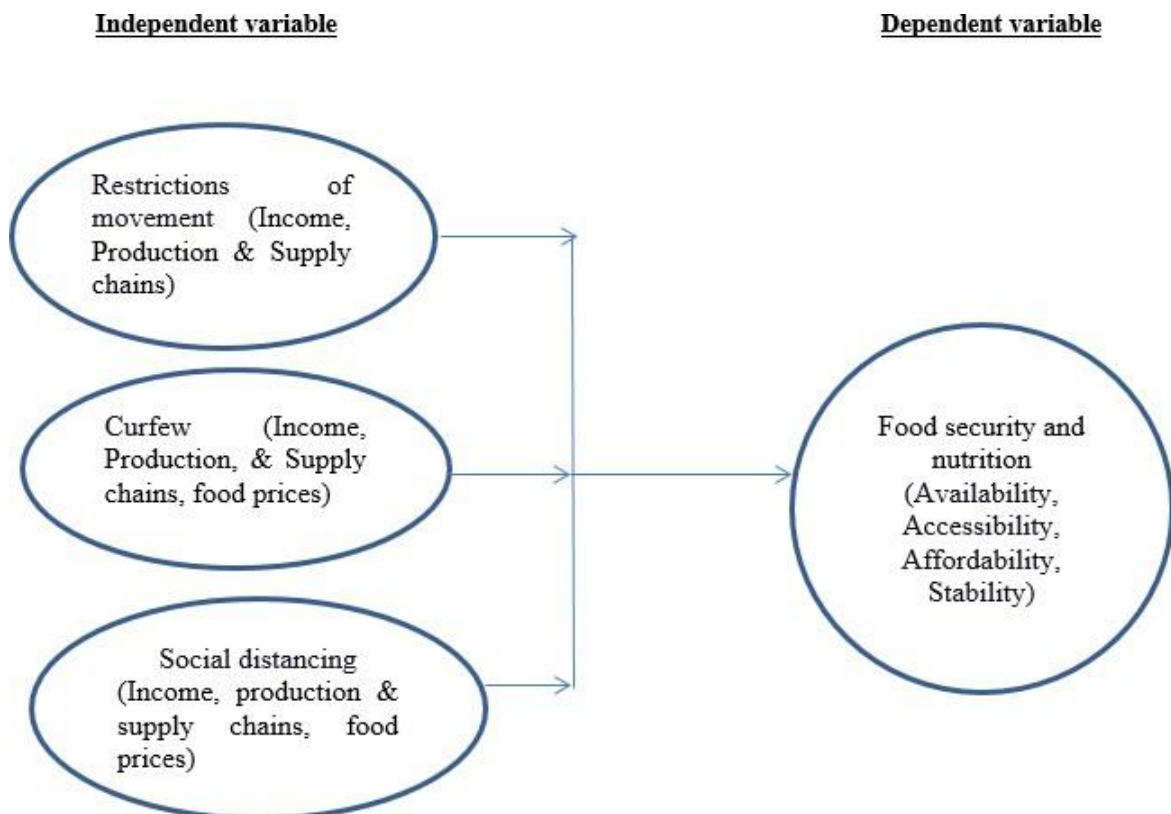


Fig.1 Conceptual framework,
Source: Authors (2021).

The social distancing restrictions' implications on food security

For food production, farms must engage personnel at critical stages in the cultivation cycle. Work access was restricted due to potential workers' unwillingness to travel to jobs or severe social distancing laws. With the social distancing, there is a decrease in total output because of the implementation of transitions and the reduction of workers in a convenient business timeframe (Tarasuk, Fafard St-Germain, & Loopstra, 2020). Social distance might impair food production even when agricultural employment is excluded (World Bank, 2020).

When customers buy food in the formal sector, physical access to food is maintained. Most food markets and retail stores are open throughout the lockdown, and consumers can leave their homes to buy needed supplies. However, crowd size restrictions have led to the closure of major informal marketplaces where the middle and lower classes buy much of their food, particularly in cities; this is especially problematic for perishable goods like fruits, vegetables, and meats, reducing the quantity and quality of food accessible for consumption. Official food vendors in South Africa could reapply for trade permits after a two-week public debate on the hazards to health and hunger (CCSA, 2020).

The government is helping NGOs fight food insecurity. Many of these tribes have been fighting hunger for some time. For example, food banks are currently struggling to sustain and increase their capacity to combat hunger. Food banks are vital for most food-insecure families. Families who use food banks are low-income and food insecure (Tarasuk, Fafard St-Germain, & Loopstra, 2019). According to Deaton (2020), Covid-19 also disrupted public food, nutrition, and health initiatives for the poor. The national lockdown restrictions required schools to close, suspending school meal programs. Public assistance programs, for example, risked spreading the infection by gathering big crowds at distribution stations. Unlike prior income shocks, Covid-19's health impacts pose additional concerns. Social and health issues hampered efforts to combat the pandemic. Many support services, such as cash transfers and tax breaks, helped individuals in need.

Acute food shortages increased dramatically as the Covid-19 epidemic affected livelihoods and revenue opportunities, causing shortages of staple foods in select urban marketplaces; panic purchasing contributed to early pandemic commodity shortages. The national and local governments banned public transportation, local traffic, closed many markets, and disrupted supply chains and livelihoods. The main impact of food flows from rural to urban and cross-border was that informal traders had no formal registration and could not obtain official documentation to facilitate movement.

A Weiser et al. 2020 study found that nearly half (47%) of urban households relied on wage employment for income, followed by non-farm businesses (31%), and other sources included farming, property income, and remittances. With the Covid-19 outbreak, most non-farm trade-dependent households lost income (58%) or had their total (28%).

Similarly, 34% of wage-earning households lost all or part of their income. Nationally, 55% of households interviewed reported a revenue loss (51%) or a total loss (4%) since the Covid-19 outbreak. In metropolitan areas, around 60% of households reported income loss. Households relied on savings (34%) and reduced food consumption (13%). (10 percent).

The pandemic was declared a Formidable Epidemic Disease on 27 March 2020, and a series of restrictions and social-distancing rules were issued. During the lockdown, household income was directly impacted by reduced employment and rental revenue due to reduced economic activity. Lower household income may have translated into reduced consumer demand. The study was conducted in the Kamiu community, Embu County, Kenya.

Effect of curfew on food security and nutrition

Since 2 August, the global epidemic COVID-19 has killed almost 18 million people. USA (4.8 million, 158,000 deaths), Brazil (2.7 million, 94,000 deaths), and India (1.8 million, 38,000 deaths) (Christian Johns Hopkins, 2020). Although total shutdowns were not implemented across the region, governments took many measures. Curfews were enforced across Covid-19 hotspots like Nairobi, Mombasa, Kwale, and Kilifi. In July, travel restrictions in all impacted zones were lifted (Al Jazeera, 2020).

The study determined the effects of the imposition of curfews on food security and nutrition in the household units revealed that Covid-19 has substantial, far-reaching, and unprecedented nutritional effects. The WFP found that as the price of nutritious goods rises, the number of individuals who cannot afford healthy meals rises (WFP, 2020). Acute food insecurity increases as Covid-19 continues to disrupt livelihoods and revenue opportunities. The International Growth Center anticipated that by the end of the 8-week lockout in May, around 20% of the population in Sub-Saharan Africa may be unable to afford their pre-Covid-19 consumption. 3.6 percent, or 31.8 million people, can no longer eat 50% of the food poverty criterion, indicating severe hunger (Teachout & Zipfel, 2020).

Effects of Covid-19 restrictions of movement on food security and nutrition.

Food supply system disruptions impacted food availability, cost, and quality (Barrett, 2020). Some restaurants and other foodservice businesses closed due to decreased demand for perishable commodities such as milk, potatoes, fresh fruit, chocolate, and high-value meat cuts (Terazono and Munshi, 2020). As a result of the collapsed demand or difficulty obtaining food on the markets, food

products have been dumped or replenished in the field since March-May 2020. (Yaffe-Bellany and Corkery, 2020). Farmers could not sell their goods due to a shortage of freezer storage. Lockdowns impeded food transportation through international commerce. Food farmers reliant on remote export markets for their goods, such as fresh fruits and vegetables or specialty commodities like cocoa, were particularly vulnerable when borders were closed and demand for certain foodstuffs fell (Clapp and Moseley, 2020).

Some countries, particularly those with high levels of food insecurity (FAO et al. 2019), rely heavily on food imports and commodity exports, making them vulnerable to supply chain disruptions. During the Covid-19 outbreak, particular food-exporting countries prohibited the export of vital goods such as rice and wheat, causing disruptions in global food supply and higher prices for these products (Laborde et al., 2020). Export restrictions were lifted by August 2020, with the risk of re-imposition based on the severity of any future illness outbreaks.

The first Covid-19 infection in Eastern Africa was detected in Kenya on 13 March 2020, with more cases reported daily. Following WHO guidelines and global practice, East African states imposed many restrictions on disease spread within their boundaries. Interdiction of international passenger flights, restriction of public meetings, and closure of all educational, hotel, and restaurant establishments, as well as houses of worship (Steverding & Margini, 2020). Economic constraints were imposed in Nairobi, Mombasa, and Busia on the Kenya-Uganda border, where COVID-19 cases were concentrated. The Kenyan government announced many policy ideas and financial incentives to combat the pandemic's economic effects. The Government of Kenya (KPMG, 2020) announced a lowering in the resident income tax rate (PAYE) from 30% to 25% for persons earning KES 24,000 (USD 230) or less per month. It also reduced VAT by 16% and allocated KES10 trillion (USD 95 million) to the elderly, orphans, and needy groups (KPMG, 2020). The GOK announced in May 2020 a 53.7 billion shilling (\$503 million) post-COVID-19 economic stimulus package to help affected enterprises. This program sought to help small businesses and promote tourism.

However, it is not a panacea for the economic impact of COVID-19 on citizens. The informal sector accounts for 83.6% of all work in Kenya, with most of the relaxed urban population living every day (UEWEA, 2020). These households may benefit more from social support programs, such as direct cash or in-kind household transfers and utility bill waivers, according to Miller et al. (2020) and Ozili (2020). Because of practical challenges, social protection measures were rarely executed, resulting in minimal relief.

COVID-19 outbreak control or mitigation has already impacted global food supply networks. For example, border bans and lockdowns are slowing, affecting millions of seasonal workers and food shipments to markets. COVID-19 outbreaks among workers force many fleece processing and food outlets to close. Farms buried peregrinate items or dumped milk due to supply chain issues. Today, many people struggle to find fresh produce, milk, meat, and seafood in cities. Thus, the study sought to assess the impact of movement restrictions on food security and nutrition.

Less evidence was available to generalize the effect of the Covid -19 pandemic on food security and nutrition, especially in peri-urban settings. Acute food insecurity increases as COVID-19 continues to damage lives and revenue opportunities. According to the International Growth Center, over 20% of people in Sub-Saharan Africa can no longer afford their pre-COVID-19 consumption (Teachout & Zipfel, 2020). Food supply network disruptions have impacted food availability, pricing, and quality (Barrett, 2020). A study on the implications of the Covid-19 epidemic on food security and nutrition was required in Kamui peri-urban, Embu County.

METHODOLOGY

This study used a cross-sectional survey approach, where the researcher collects data throughout time (Creswell, 2013). The study used quantitative methods to assess the impact of the Covid 19 pandemic on food availability, accessibility, affordability, and supply stability. Quantitative data was obtained via surveys and analyzed statistically to answer the research questions in the month of August 2021.

The proposed study area was Kamiu peri-urban, Kangaru, Embu West-Sub County, Kenya. It is a sub-administrative village. The village is 130 km north of Nairobi on the tarmac Road B6 from Nairobi to Meru. A mix of concentrated and scattered communities follows topographical ridges. It covers 3 km2 and has a population of 4300 (KNBS, 2019). This cluster has 1002 households (KNBS, 2019).

The researchers used Yamane’s 1965 sample size formula to get the sample size; the study sample size is 285 households.

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{1002}{1 + 1002(0.05)^2}$$

$$n = 285 \text{ households}$$

Two hundred eighty-five households were studied. Upper Kamiu, Kamiu Central, and Lower Kamiu are the three peri-urban sub-units. A cluster sampling design was used to divide the units into three, while purposive sampling was utilized to reach the household heads, and data was collected using the snowball sampling technique. For the representation of the area, 95 questionnaires were sent to families in each of the three subunits.

Before collecting data, researchers got an introduction letter from the Kenya School of Government management and the area administration. The researchers next surveyed the households’ heads. Participants in the study filled out the structured questionnaire.

The data were organized, processed, and analyzed using SPSS version 22. The linkage between the variables was established using inferential and descriptive statistics. Figures, tables, charts, and bar graphs depict data.

RESEARCH FINDINGS

Gender analysis

About 220 responded to this study. From the total number of respondents (220), a higher number of females (118) represented by 56.7% took part in the study than their male counterparts, whose number stood at 102 and a percentage rate of 43.3%, as shown in the table below.

Table 1. Gender

	Frequency	Percentage	Cumulative Percentage
Male	102	43.3	43.3
Female	118	56.7	100.0
Total	220	100.0	

4.2 Household head

A total of 170 respondents were household heads representing 58.3%, compared to 41.7% representing those not heads of the households. The figure below is a presentation of this interpretation.

Table 2. Respondent position in the household

	Frequency	Percentage	Cumulative Percentage
Household head	170	58.3	58.3
Others	150	41.7	100.0
Total	220	100.0	

4.3 Age of the respondents

Table 3 shows a higher number of respondents who took part in this study were between 36-60 years, and they were 53 in total, a percentage rate of 44.2%, this was closely followed by those between the age brackets of 18-35 years of age were 36 respondents representing 30.0%. Those above the age of 61 years were 31 respondents yielding 25.8%.

Table 3 Respondents Age

	Frequency	Percentage	Cumulative Percentage
18-35 Years	36	30.0	30.0
36-60	53	44.2	74.2
61 and above	31	25.8	100.0
Total	120	100.0	

4.5 Household members

The response per household indicated that those with four household members are the highest with a percentage of 28.3%, whereas those with five household members come second with 15.0%. Three household members came in the third position representing 15.8%. The rest of the household had members ranging from nine to twelve constituted less than 10%.

4.6 Education level

Table 5 below shows that most of the respondents (108) had post-secondary education levels, yielding a rate of 49.0%. Thirty-nine respondents (33.3%) had secondary level of education, the rest (40) respondents had primary level education (17.5%).

Table 5 Respondent Education Level

	Frequency	Percentage	Cumulative Percentage
Primary	40	17.5	17.5
Secondary	72	33.3	50.8
Post-secondary	108	49.2	100.0
Total	220	100.0	

Descriptive statistics on the effect of restriction of movement on food security and nutrition

There were extensive media reports of food products being discarded or replenished due to collapsed demand or difficulties in procuring food on the market. Table 6 below indicates that most respondents agreed to statements on the effect of restriction of movement on food security and nutrition, registering a mean of 3.68 (40.5%). For instance, the statement on income reduction during pandemic negatively affecting household food budget had the highest mean of 48.3%. However, most respondents disagreed that food prices remained the same before and during the pandemic registering a mean score of 2.81 and a rate of 29.2%; this aligns with Yaffe and Corkery (2020) that pandemic lockdown in several countries which occurred in March-May 2020.

Table 6 Descriptive statistics on the effect of restriction of movement on food security and nutrition

	N	%	Mean	Std. Deviation
Restriction of movement negatively affected food supply in our village	220	32.5%	3.63	1.243
There was inconsistent food supply in our area due to the covid-19 pandemic	220	46.7%	3.87	.978
The income I was receiving was reduced during the pandemic, which negatively affected our household food budget	220	48.3%	4.06	1.169

Low earning due to Covid-19 has affected access to a balanced diet in the household	220	45.8%	4.03	1.163
Prices of food remained the same before and during the pandemic	220	29.2%	2.81	1.563
Valid N (listwise)	220			

Descriptive analysis on the effect of curfew on food security and nutrition

Table 7 below shows that most respondents strongly agreed that the imposition of curfew led to increased food prices within their area, as recorded, a mean of 4.07 (45.0%). Of the respondents, 55.8% agreed that the imposition of curfew reduced food supply in their villages, while 50.0% of the respondents believed that the imposition of curfew reduced person-hours, lowering food production. On average, about 50.27% believed that imposition of curfew affected food security and nutrition; this is in line with the WFP (2020) analysis that demonstrated a considerable increase in the proportion of people who cannot afford healthy diets for each rise in the price of nutritious foodstuffs during curfew imposition.

Table 7 Descriptive analysis on effects of curfew on food security and nutrition

	N	%	Mean	Std. Deviation
The imposition of curfew reduced food supply in our village	220	55.8%	3.91	.889
The imposition of curfew reduced person-hours lowering food production	220	50.0%	3.87	1.028
The imposition of curfew led to increased food prices within the area	220	45.0%	4.07	1.113
Valid N (listwise)	220			

Descriptive statistics effect of social distancing on food security and nutrition in peri-urban households

Table 8 below shows that loss of jobs occasioned by social distancing led to the loss of income, affecting food access, recording a mean of 4.0 with a response rate of 39.2%. Reduced labor availability negatively affected food production in the village, and social distancing led to limited access to food commodities in the market with a mean above 3.0 and a rate of 49.0% and 40.0%, respectively, meaning that they did agree with these two statements. On average, about 42.8% of respondents believed social distancing affected food supply, availability, accessibility, and affordability; this agrees with Tarasuk et al. (2020), who found that social distancing led to a decrease in food production because of the implementation of transitions and the reduction of workers in a convenient business timeframe.

Table 8 Descriptive statistics effect of social distancing on food security and nutrition in Peri-urban households

	N	%	Mean	Std. Deviation
Reduced labor availability negatively affected food production in our village	220	49.2%	3.70	1.120
Loss of jobs occasioned by social distancing led to the loss of income, affecting food access	220	39.2%	4.03	.983
Social distancing led to limited access to food commodities in the market	220	40.0%	3.88	1.109
Valid N (listwise)	220			

Descriptive statistics on the general effect of the covid-19 pandemic on food nutrition and security

As indicated in Table 9 below, most respondents strongly agreed that the covid-19 pandemic had affected the affordability of food (48.3%), availability of food 35.8%, accessibility of food 40.8%, and stability of food supply 33.3%. On average, 39.55% of the respondents were affected negatively by Covid 19 pandemic regarding food availability accessibility, affordability, and food supply.

Table 9 Descriptive statistics on the general effect of the covid-19 pandemic on food nutrition and security

	N	%	Mean	Std. Deviation
Covid-19 pandemic has affected the availability of food in our village	220	35.8%	3.95	1.003
Covid-19 pandemic has affected the accessibility of food in our village	220	40.8%	3.87	1.042
Covid-19 pandemic has affected the affordability of food in our village	220	48.3%	4.16	.970

Covid-19 pandemic has affected the stability of food supply in our village	220	33.3%	3.73	1.207
Valid N (listwise)	220			

Correlations between the covid-19 pandemic and food nutrition and security

A coefficient of Pearson correlation test indicated revealed that ($r = -0.46$) an indicator that there was a negative strong relationship between the factors under consideration during Covid 19 pandemic and food security and nutrition in kamiu peri-urban area. Restriction of movement, social distancing and imposition of curfew during Covid 19 pandemic had a negative impact on food availability accessibility, affordability, and food supply in Kamiu peri urban area.

DISCUSSIONS

Restriction of movement on food security and nutrition

The study endeavored to investigate the effect of restriction of movement on food security and nutrition. Most respondents agreed that the effect of restriction of movement on affecting food security and nutrition registering a mean above 3 out of 5; this aligns with Yaffe and Corkery (2020) that pandemic lockdown in several countries which occurred in March-May 2020, there were extensive media reports of food products being discarded or replenished due to collapsed demand or difficulties in procuring food on the markets.

Imposition of curfew on food security and nutrition

The research pursuit to establish the imposition of curfew on food security and nutrition had most respondents strongly agreeing that the imposition of curfew affected food affordability in the village, registering a mean of 4.07 out of 5. The imposition of curfew also reduced food availability and accessibility in the village., this is in line with the WFP (2020) analysis that demonstrated a considerable increase in the proportion of people who cannot afford healthy diets for each rise in the price of nutritious foodstuffs during curfew imposition.

Social distancing on food security and nutrition

The study aimed to ascertain the effect of social distancing on food security and nutrition; research findings revealed that social distancing led to the loss of jobs and income, affecting food accessibility and affordability; this agrees with Tarasuk et al. (2020), who found that social distancing led to a reduction in food production because of the implementation of transitions and the reduction of workers in a convenient business timeframe.

CONCLUSION AND RECOMMENDATION

Given the research findings, the study concludes that food security and nutrition have been significantly affected by Covid 19 pandemic concerning measures undertaken to contain it. A coefficient of Pearson correlation test indicated revealed that (r) was (-0.46) an indicator that there was a negative relationship between the factors under consideration that is restriction of movements, social distancing and imposition of curfew during Covid 19 pandemic and food security and nutrition in Kamiu peri-urban area. The respondents strongly agreed that the covid-19 pandemic negatively affected availability, affordability, accessibility, stability of food in the peri urban area, registering a mean of above 4.0. The findings concur with Barrett (2020) that substantial disturbances in food supply networks have disrupted food availability, pricing, and quality.

5.3 Recommendations

1. The study recommends that the local administration have a solid mechanism to identify the vulnerable early enough and empower them when they are young to avoid suffering in old age.
2. The county government of Embu should review land use policy to avoid the change of use and further sub-division of arable land to ensure sustainable agricultural production in the area.
3. The Embu county trade department should promote the market for locally produced agricultural products to avoid food loss and increase household income levels.
4. The study recommends further research be conducted to establish other aspects that may affect food security and nutrition in Kamiu village since the study concluded that only 39.5% is attributed to covid-19 pandemic restrictions.

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