

Assessment of Household Food Security Situation during the Covid-19 Lockdown in Kenya

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Abstract Food security remains a key challenge in Kenya. A household is considered to be food insecure when they lack physical and economic access to safe, sufficient and nutritious food that meets their dietary needs and food preferences for an active and healthy life at all times. In the last six months or so, vulnerability to food insecurity has been exacerbated by the raging effects of COVID-19 pandemic, which pushed the Government of Kenya to impose a partial lockdown in the month of April, 2020, in the counties of Nairobi and Mombasa. This survey sought to assess the effects of the ongoing COVID-19 lockdown on household food security situation in Kenya. A survey was conducted from June to July 2020 through a structured questionnaire which was administered through online social networks. A total of 444 responses were received, but only 80 were completely filled. Quantitative data were collected on the socio-demographic characteristics, dietary practices and coping strategies based on a set of questions to assess behavioral responses to manage incipient household food shortage. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 23.0. Descriptive statistics such as mean, percentages and frequencies were carried out; relationships between the variables were assessed using chi-square test, Pearson correlation and multiple linear regression. Significance levels were determined at 95 percent confidence interval where a p-value of less than 0.05 was considered significant. The prevalence of low, medium and high dietary diversity scores were 7.5 percent, 17.5 and 75 percent, respectively, implying that the majority of the respondent households were food secure with pockets of food insecure households within the Nairobi Metropolitan region. There was a significant relationship between household dietary diversity and household income source ($\chi^2=7.71$, $p=0.02$), household perceived economic pressure during the COVID-19 lockdown ($\chi^2=20.37$, $p<0.01$), and household perceived ability to meet their food needs ($\chi^2=18.01$, $p<0.01$). Consumption of less preferred and less expensive foods was the most (30 percent) often used coping strategy against food insecurity. The study recommends putting up mitigation strategies to support pockets of food insecure households during lockdowns imposed by state agencies in the wake of the COVID-19 pandemic.

Keywords: food security, COVID-19 lockdown, dietary diversity, household income, household economic pressure, household food needs

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1. Introduction

Insufficient access to nutritionally adequate and culturally appropriate foods to maintain a healthy and active lifestyle is referred to as food insecurity [1]. As of 2019, more than 820 million people were already classified as food insecure worldwide [2]. Highest (22.8 percent) prevalence of under nourishment as of 2018 was reported in Sub-Saharan Africa [2]. Kenya, like other Sub-Saharan countries, faces food insecurity with approximately 3.4 million people in 2017 being acutely food insecure and in need of humanitarian assistance [3].

The situation is likely to worsen due to the COVID-19 pandemic and the associated global economic recession, which is expected to considerably increase the number of food insecure households by the end of 2020 [4]. Efforts to halt the spread of the disease, including travel restrictions and lockdowns, have an impact on economic and market systems in ways that have affected the food security situation including difficulties of getting food products to markets, panic purchasing of food items, and rising prices of food items as supplies dwindle [5]. In addition, work stoppages and labour shortages have had impacts on food productivity and availability with people experiencing poor nutrition being at an increased risk of contracting diseases [6]. The broader economic recession

that accompanied the lockdowns resulted in widespread redundancies and economic hardships for many people, exacerbating inequalities in socioeconomic systems, which in turn affected food security [7].

The COVID-19 pandemic has disrupted both rural and urban food systems worldwide, posing a number of challenges for cities and local governments that are obliged to deal with rapid changes in food availability, accessibility and affordability that strongly impacts the food security and nutrition situation of especially urban populations. The majority of the urban population in developing countries relies on informal sector activities and casual labour, including those related to food systems (street food vendors and those selling groceries), and have access to limited or no assets or savings. Policies to limit the effects of the virus such as lockdowns, or physical distancing can spell disaster for the livelihoods of those individuals and their families leading to food insecurity and deficient nutrition [8]. The Government of Kenya imposed a partial lockdown in April, 2020, in the major urban counties of Nairobi and Mombasa following the upsurge of the COVID-19 pandemic. The aim of this study was to determine the household food security situation in Nairobi Metropolitan areas and Mombasa in Kenya during the COVID-19 lockdown.

2. Methodology

2.1. Study Design

An online cross-sectional survey was conducted to assess the socio-demographics, dietary practices and food security status of households. Quantitative data was collected from June to July, 2020 with response received from 80 study participants, 49 of these study participants were from Nairobi Metropolitan areas and Mombasa region in Kenya. Snowball sampling technique was used with the researchers promoting the survey through social networks.

2.2. Research Variables

The independent variables in this study were: socio-demographic factors (age, gender, place of residence, education level, household size, household monthly income and expenditure on food); dietary practices as measured by frequency of food consumption; and food security status measured by the coping strategies employed during food stress. The dependent variable was food security status as measured by the household dietary diversity score.

2.3. Data Collection

A pretested, self-administered and structured questionnaire distributed online via social media outlets was used for collecting data. The questionnaire collected socio-demographic data on age, gender, place of residence, education level, household size, household monthly income and expenditure on food. Food security assessment was done by use of household dietary diversity score (HDDS). A food frequency questionnaire consisting of 16 food groups [9] was used to obtain information about usual food

consumption pattern in the household over a 24-hour recall period. The list of 16 food groups included cereals; white roots and tubers; Vitamin A rich vegetables and tubers; dark green leafy vegetables; other vegetables; Vitamin A rich fruits; other fruits; organ meat; flesh meat; eggs; fish and sea food; legumes, nuts and seeds; milk and milk products; oils and fats; sweets and sugar; and condiments and spices were used as recommended by FAO [9]. However, for purposes of analysis, sweets and condiments were excluded, leaving an effective 14 food groups used in the study [9]. The two food groups were excluded as they are usually consumed in very small amounts. The food frequency questionnaire consisting of 14 food groups [9] was also used to obtain information about usual food consumption pattern in the household over a seven-day recall period. Respondents were asked to state the number of days they consumed each food group in a week. Consumption of a food group at least thrice a week was considered regular intake while less than three days consumption was irregular [10].

Aggregation of food groups to 12 was done to create the HDDS based on the list of 14 food groups consumed in the preceding 24 hours as follows: cereals; white roots and tubers; vegetables (combines vitamin A rich vegetables and tubers, dark green leafy vegetables and other vegetables); fruits (combines vitamin A rich fruits and other fruits); meat (combines organ meat and flesh meat); eggs; fish and sea food; legumes, nuts and seeds; milk and milk products; oils and fats. This score was then recoded to a three-level categorical variable based on cut-off values indicating low dietary diversity (consumption of ≤ 3 food groups), medium dietary diversity (consumption of 4-6 food groups) and high dietary diversity (consumption of ≥ 7 food groups) categories. There is no international consensus on which cut-off values to use for recoding [11]; thus, in this study, we have used HDDS less than or equal to three as low dietary diversity group and between four to six as medium category while HDDS greater than or equal to seven as high diversity score category. We considered HDDS ≤ 3 as low dietary diversity score because, as a general rule, consumption of all four food groups over 24 hours is considered a good dietary diversity [12].

The households were asked about the coping strategies they resorted to during food shortages in the previous 30 days. Four general categories of coping were measured: dietary change (eating less preferred but less expensive food); increasing short-term food access (borrowing food, or relying on help from a friend, relative, neighbors or church, consuming seed stock, purchase food on credit, sell household assets to buy food); decreasing numbers of people to feed (send household members to eat elsewhere, send household members to beg); and rationing strategies (limiting portion size at mealtimes, restrict consumption by adults in order for small children to eat, feed working members of the household at the expense of non-working members, rationing the money available and buying prepared food, skipping meals).

2.4. Data Analysis

Data were entered in Microsoft Excel and subsequently transferred to SPSS (version 23) (Chicago, IL, USA) for

statistical analysis. For socio-demographic data, frequencies and means of continuous and discrete data were computed and presented as percentages. Chi square tests were also done to show associations between categorical variables. Pearson correlation analysis was done to establish the strength of association between non-categorical variables. Significance levels were determined at 95 percent confidence interval where a p-value of <0.05 was considered significant. Multiple linear regression was used to explain the relationship between the independent and the dependent variables when all the variables with the statistically significant relationships were brought together. The dependent variable considered was the household dietary diversity score and the independent variables considered were the socio-demographic variables and coping strategy variables as stated in the regression model equation below:

$$\hat{Y} = b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p \quad (1)$$

$[\hat{y} = b_0 + b_1(\text{Age}) + b_2(\text{gender}) + b_3(\text{Education level}) + b_4(\text{occupation}) + b_5(\text{total household average monthly income}) + b_6(\text{coping strategy})]$. Nagelkerke R Square values was used to provide an indication of the amount of variation in the dependent variable explained by the model (from a minimum value of 0 to a maximum of approximately 1) with the addition of each independent variable.

3. Results

The online survey received complete response from 80 study participants with 49 of the respondents majorly residing in Nairobi Metropolitan areas and Mombasa region, Table 1. The target population for the study was residents of Nairobi Metropolitan region and Mombasa where a lockdown had been imposed between March and July 2020. However, there were challenges in physically accessing the study participants which was mitigated by distributing the questionnaires online through social contacts.

Table 1. Distribution of Study Respondents by Place of Residence

Place of residence	Frequency (N=80)	Percent
Nairobi and Mombasa	49	61.25
Outside Nairobi and Mombasa	31	38.75

3.1. Demographic and Socio-economic Characteristics of Respondents

Demographic and socio-economic characteristics of respondents are summarized in Table 2. The study respondents ranged from age 18 to 73 years. The mean age was 27.06 ± 11.44 with a mode of 20. The study respondents consisted of 27 men (33.75 percent) and 53 women (66.25 percent). Majority (61.25 percent) of the respondents resided in the two major metropolitan cities of Nairobi and Mombasa that were under lockdown following the COVID-19 pandemic, while 38.75 percent resided in counties that were not under lockdown. The average household size was 5.70 ± 8.59 . Results also showed that majority (85 percent) of the household heads

had college/university level of education, 5 percent held a high school certificate only, and 8.75 percent had a primary school certificate only with 1.25 percent having no formal schooling. Majority (51.25 percent) of the household heads were employed, 30 percent were self-employed, and the remaining 18.75 percent were casual laborers or unemployed. The main income source for most (62.5 percent) households was wages and salaries. About 15 percent of the households derived their income from farming, another 15 percent from trading and assets such as rental income, while 7.5 percent mainly depended on relatives for financial assistance. More than half (56.25 percent) of the respondents indicated an average total household monthly income range of KShs 5,000-50,000, with majority (23.75 percent) spending 21-30 percent of their household monthly income on food.

Table 2. Demographic and Socioeconomic Information of the Households

Socio-Demographic Characteristics	Frequency (N=80)/Mean	Percent /SD
Age	27.06	± 11.44
Gender		
Male	27	33.75
Female	53	66.25
Household size	5.70	± 2.59
Educational level		
College/University level	68	85
Completed Secondary school level	4	5
Completed Primary level	7	8.75
None	1	1.25
Occupation		
Employee	41	51.25
Self-employed	24	30
Laborer/unemployed	15	18.75
Main Income Source		
Wages and salaries	50	62.5
Farming	12	15
Trading and assets	12	15
Assistance of relatives	6	7.5
Monthly household income		
KShs 5,000-KShs 50,000	45	56.25
KShs 50,000-KShs 100,000	16	20
KShs 100,000-kShs 150,000	9	11.25
>KShs 150,000	10	12.5
Monthly household expenditure on food		
<10 percent	8	10
11-20 percent	8	10
21-30 percent	19	23.75
31-40 percent	14	17.5
41-50 percent	13	16.25
>50 percent	18	22.5

SD-Standard Deviation.

Results on study respondents' perceived household economic pressure showed that majority (35 percent) of households were moderately stressed, 30 percent were minimally stressed, 22.5 percent felt the economic pressure was normal, while 12.5 were highly stressed. Study respondents' perception of the extent to which their households were able to meet the food needs since the lockdown was imposed showed that majority (42.5 percent) perceived their household's ability as moderately adequate, 38.75 percent perceived their household ability

as adequate with only 6.25 percent perceiving their household ability as inadequate (Table 3).

Table 3. Household Economic Pressure and Ability to Meet Food Needs

Variable	Frequency (N=80)	Percent
Perceived Household economic pressure		
Normal	18	22.5
Minimally stressed	24	30
Moderately stressed	28	35
Highly stressed	10	12.5
Perceived ability to meet household food needs		
Adequate	31	38.75
Moderately adequate	34	42.5
Slightly adequate	10	12.5
Inadequate	5	6.25

3.2. Household Dietary Practices

Respondents were asked on the frequency of consumption of food from various food groups over a 24-hour and 7-day recall period. Table 4 represents the patterns of consuming foods from different food groups over a 24-hour and 7-day recall period. The data revealed that food groups with the highest levels of consumption in the 24-hour period preceding the survey were cereals (96.25 percent), followed by oils and fats (90 percent), vitamin A rich vegetables (78.75 percent) and other vegetables which are not vitamin A rich (87.5 percent). Based on the 24-hour recall period, food groups with the lowest consumption were organ meat (28.75 percent), fish and sea food (31.25), and Vitamin A rich fruits (42.5 percent). Food groups with highest regular consumption in the 7 days preceding the survey were cereals (87.5 percent), followed by oils and fats (80 percent), and other vegetables which are not vitamin A rich or dark green leafy (78.75 percent).

Table 4. Household Food Consumption Patterns

Food Group	Consumed past 24hrs N (percent)	Irregular consumption (<3 times per wk.) N (percent)	Regular consumption (≥3 times per wk.) N (percent)
Cereals	77 (96.25)	10 (12.50)	70 (87.50)
White roots and tubers	34 (42.50)	64 (80.00)	16 (20.00)
Vitamin A rich vegetables and tubers	58 (72.50)	44 (55.00)	36 (45.00)
Dark green leafy vegetables	66 (82.50)	23 (28.75)	57 (71.25)
Other vegetables	70 (87.50)	17 (21.25)	63 (78.75)
Vitamin A rich fruits	34 (42.50)	60 (75.00)	20 (25.00)
Other fruits	60 (75.00)	42 (52.50)	38 (47.50)
Organ meat	23 (28.75)	75 (93.75)	5 (6.25)
Flesh meats	46 (57.50)	66 (82.50)	14 (17.50)
Eggs	47 (58.75)	67 (83.75)	13 (16.25)
Fish and sea food	25 (31.25)	75 (93.75)	5 (6.25)
Legumes, nuts and seeds	55 (68.75)	51 (63.75)	29 (36.25)
Milk and milk products	68 (85.00)	23 (28.75)	57 (71.25)
Oils and fats	72 (90.00)	16 (20.00)	64 (80.00)

Hrs=Hours; wk=week.

3.3. Food Security Status of Households

Food security status was measured based on HDDS and coping mechanisms adopted to avert food insecurity. The mean HDDS score was 7.69 ± 2.09 , implying that most respondent households had high dietary diversity and were food secure. Majority (75 percent) of the households fall within high dietary diversity category (Table 5). This implies that about 8 percent of the households do not have adequate dietary diversification and could be considered as food insecure.

Table 5. Household Dietary Diversity Status

Category	Frequency (N=80)	Percent
Low dietary diversity (≤ 3 DDS)	6	7.5
Medium dietary diversity (4-6 DDS)	14	17.5
High dietary diversity (7-14 DDS)	60	75.0

DDS-Dietary Diversity Score.

Data on coping strategies that the households employed during times of food shortage or absolute lack of food was collected. The information was based on a 30-day recall period and the findings are summarized in Table 6. Out of the various coping strategies used by households, consumption of less preferred and less expensive foods was the recourse most often resorted to (30 percent) against food insecurity. Purchasing food on credit was the second most commonly used coping strategy (48.75 percent), while sending members to beg (87.5 percent) or to eat elsewhere (82.5 percent) were less commonly adopted coping strategies during the COVID-19 pandemic.

Table 6. Food Insecurity Coping Strategy by Households

Coping strategy	Never N (percent)	Once in a while N (percent)	Often N (percent)
Relying on less preferred and less expensive foods	13 (16.25)	43 (53.75)	24 (30.00)
Borrowing food, or rely on help from others	54 (67.50)	22 (27.50)	4 (5.00)
Purchasing food on credit	32 (40.00)	39 (48.75)	9 (11.25)
Selling household assets to buy food	59 (73.75)	18 (22.50)	3 (3.75)
Consuming seed stock held for next planting season	49 (61.25)	24 (30.00)	7 (8.75)
Sending household members to eat elsewhere	66 (82.50)	11 (13.75)	3 (3.75)
Sending household members to beg	70 (87.50)	8 (10.00)	2 (16.25)
Limiting portion size at mealtimes	42 (52.50)	27 (33.75)	11 (16.25)
Restrict consumption by adults for small children	52 (65.00)	21 (26.25)	7 (8.75)
Feed working members of HH as priority	63 (78.75)	12 (15.00)	3 (3.75)
Ration the money to buy prepared food	48 (60.00)	28 (35.00)	4 (5.00)
Reducing number of meals eaten in a day	39 (48.75)	29 (36.25)	12 (15.00)
Skip entire days without eating	58 (72.50)	19 (23.75)	3 (3.75)

N=80; HH=Household.

3.4. Factors Associated with Household Dietary Diversity

The associations and relationships between the independent study variables such as socio-demographics and coping strategy mechanisms against the dependent variable HDDS are indicated in Table 6. Results of the Pearson correlation indicated that there was a weak correlation between HDDS and household size, which was not significant ($r = 0.13$, $p = 0.92$). Chi square test results showed that there was a significant relationship between HDDS and household income level ($\chi^2=7.71$, $p=0.02$), HDDS and household perceived economic pressure ($\chi^2=20.37$, $p<0.01$) and HDDS and household perceived ability to meet their food needs ($\chi^2=18.01$, $p<0.01$) during the COVID-19 lockdown. Moreover, Chi square test results showed that there was no significant relationship between HDDS and place of residence ($\chi^2=0.08$, $p=0.78$), HDDS and education level of household head ($\chi^2=3.53$, $p=0.06$), HDDS and occupation of household head ($\chi^2=0.64$, $p=0.73$), and HDDS and household monthly expenditure on food ($\chi^2=1.10$, $p=0.58$).

Table 7. Socio-demographic Factors Associated with HDDS

Socio-demographic factor	Household Dietary Diversity Score (HDDS)	
	Chi-square (χ^2)/Correlation*	P-value
Place of residence	0.08	0.78
Household size	0.13*	0.92
Educational level	3.53	0.06
Occupation	0.64	0.73
Household income source	7.71	0.02**
Household monthly income	0.30	0.86
Expenditure on food	1.10	0.58
Perceived HH economic pressure	20.37	<0.01**
Perceived HH ability to meet food needs	18.01	<0.01**

*Correlation values; ** Result significant at $P<0.05$.

Results of the chi square test to assess the relationship between HDDS and various coping strategy mechanisms (Table 8) showed that there was significant relationship between HDDS and selling household assets to buy food ($\chi^2=5.47$, $p=0.02$), HDDS and consumption of seed stock held for next planting season ($\chi^2=5.43$, $p=0.02$), HDDS and sending household members to eat elsewhere ($\chi^2=10.86$, $p<0.01$), HDDS and sending household members to beg ($\chi^2=17.40$, $p<0.01$), HDDS and restricting consumption by adults in order for small children to eat ($\chi^2=6.66$, $p=0.01$), HDDS and feeding working members of the household at the expense of non-working members ($\chi^2=5.69$, $p=0.02$) and HDDS and skipping entire days without eating ($\chi^2=4.99$, $p=0.03$). The chi square tests also showed that there was no significant relationship between HDDS and relying on less preferred and less expensive foods ($\chi^2=0.01$, $p=0.98$), HDDS and borrowing food, or relying on help from a friend, relative, neighbors or church ($\chi^2=3.45$, $p=0.06$), HDDS and purchase food on credit ($\chi^2=1.47$, $p=0.23$), HDDS and limiting portion size at mealtimes ($\chi^2=0.96$, $p=0.33$), HDDS and rationing the money available to buy prepared food ($\chi^2=2.38$, $p=0.12$)

and HDDS and reducing the number of meals eaten in a day ($\chi^2=0.62$, $p=0.43$).

Table 8. Coping Strategies Associated with HDDS

Coping strategy	Household Dietary Diversity Score (HDDS)	
	Chi-square (χ^2)	P-value
Relying on less preferred and less expensive foods	0.01	0.98
Borrowing food, or rely on help from others	3.45	0.06
Purchasing food on credit	1.47	0.23
Selling household assets to buy food	5.47	0.02*
Consuming seed stock held for next planting season	5.43	0.02*
Sending household members to eat elsewhere	10.86	<0.01*
Sending household members to beg	17.40	<0.01*
Limiting portion size at mealtimes	0.96	0.33
Restrict consumption by adults for small children to eat	6.66	0.01*
Feed working members of HH as priority	5.69	0.02*
Ration money to buy prepared food	2.38	0.12
Reducing number of meals eaten in a day	0.62	0.43
Skipping entire days without eating	4.99	0.03*

HH-Household; ** Result significant at $P<0.05$.

Multiple linear regression was used to explain the relationship between the independent and the dependent variables when all the variables with the statistically significant relationships were brought together. All the independent variables considered did not contribute significantly to the regression model ($p>0.05$). The regression equation was not significant ($F(1, 80) = 1.31$, $p=0.16$), with an R^2 of .56 (Table 9). The set of variables accounted for 56 percent of the variance in household dietary diversity score (Nagelkerke $R^2 = .56$).

Table 9. Determinants of HDDS

Variable	Exp(β)	SE	t	p-value
HH income source	2.62	5.76	0.45	0.65
Perceived HH economic pressure	0.76	3.39	0.23	0.82
Perceived HH ability to meet food needs	-2.08	4.07	-0.51	0.61
Selling household assets	-1.85	3.16	-0.59	0.56
Consumption of seed stock	-2.3	2.82	-0.82	0.42
Sending HH members to eat elsewhere	7.85	6.92	1.13	0.26
Sending HH members to beg	-2.84	2.38	-1.12	0.24
Restrict consumption by adults for children	-0.32	3.58	-0.09	0.93
Feed working members of HH as priority	-1.77	3.18	0.59	0.58
Skipping entire days without eating	2.13	3.17	0.69	0.51
R^2	0.56			
Adjusted R^2	0.13			
F value	1.31			
F significance	0.16			

HH-Household; ** Result significant at $P<0.05$; B=Beta, measure of how strongly each predictor variable influences dependent variable, SE=Standard error.

4. Discussions

This study assessed socio-demographic characteristics, household dietary practices, and household food security during the first three months of the COVID-19 pandemic lockdown in Kenya. The relationship between coping strategy and HDDS was also investigated. The HDDS is widely recognized as an appropriate proxy of the two dimensions of food security; that is, food access and food availability [13,14]. In this study, majority of the respondent households fell within the high dietary diversity category of (>4 food groups) [12]. Dietary diversity score has been reported to be higher in urban areas [15]. However, close to 8 percent of urban households had low dietary diversity scores, indicating pockets of food insecurity during the COVID-19 lockdown.

Size of the household is a major variable that can affect the food security status of a family. A study that was done to analyze the factors affecting food security at household level in Nigeria showed that the chances of a household's food insecurity status increased as the number of dependent family members' increased overtime with constant income levels. The larger the dependency ratio, the higher was the burden on income-earning household members to meet the cost of the minimum household nutritional requirements and hence, the higher level of food insecurity [16].

The data obtained in our study indicated an average household size of 6; and, contrary to the Nigerian study, there was no significant relationship between household size and household dietary diversity score. Moreover, there was no significant relationship between household dietary diversity score and education level of the household head. This agrees with a similar study done by Simsek et al., [17] which found no relationship between educational status and food security. However, a number of other studies contradict these findings and have shown a positive association between the level of education and dietary diversity [18,19,20]. Especially, these studies reported that the level of education affects food access and availability; whereby more educated people tend to have better jobs or engage in quality enterprises that generate more income and hence tend to access diverse and quality diets. A significant relationship was found between household income source and dietary diversity, thereby reiterating that income is an important aspect of food access, and that the higher the income levels the better the food security in terms of dietary diversity, diet quantity and quality [21,22,23].

Consistent with findings of studies conducted in other developing countries, our data also indicate that cereals are frequently consumed by households, which points to a predominantly cereal-based diet [24,25,26,27]. Various coping strategies were employed by the food insecure households with the most common coping strategy being reliance on less preferred and less expensive foods. Other studies concur that coping strategies pertaining to compromising the quality and quantity of food consumption were the first steps taken to mitigate the adverse effects of food shortage at the household level [28]. The respondent households also reported resorting to other coping strategies, with seven out of the 13 listed

coping strategies being significantly associated with HDDS. Thus, the households relied on a variety of coping strategies to counter their household food insecurity; which is in agreement with the fact that increased reliance on coping strategies is associated with lower food availability [29].

5. Conclusions

Socio-demographic factors such as household income source, household perceived economic pressure during the COVID-19 lockdown, and household perceived ability to meet their food needs were found to be significantly related with household dietary diversity score as a measure of food security. There were indications of pockets of food insecure households as depicted by the proportion of those with low dietary diversity score within the Nairobi Metropolitan region. Households are relying on less preferred and less expensive foods as a common coping strategy against food insecurity. Selling household assets to buy food, consumption of seed stock held for next planting season, sending household members to eat elsewhere, sending household members to beg, restricting consumption by adults in order for small children to eat, feeding working members of the household at the expense of non-working members and skipping entire days without eating were the coping strategies significantly related to household dietary diversity.

Due to the fact that there was minimal information on food security status during the lockdown period, the findings of this study furnished the evidence on the pockets of food insecurity that existed in certain areas with important implications on the health status of affected households. The government and other stakeholders working on food security may consider mapping out such pockets of food insecure households in an effort to avert increased risk of these population segments to the adverse effects of the COVID-19 pandemic. Mapping of food insecure households may facilitate targeting of relief packages and responses by government or community-based programs and tailoring nutrition sensitive social protection programs to ensure access to diverse meals.

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