

Ojo, Idowu Oladeji

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COVID-19 and Idiosyncratic Food Dearth Risk Resilience in Nigeria.

*OJO Idowu Oladeji

Department of Agricultural Economics, Faculty of Agriculture, University of Ibadan.

<https://orcid.org/0000-0001-5757-8872> E-mail:idowufidelity@gmail.com, 08137452535/08128280976

(*Author)

Abstract

This study examined the interplay of COVID-19 and Idiosyncratic Food Dearth Risk Resilience in Nigeria; focusing on Oyo State as case study. A multistage sampling technique was used to elicit primary data from 210 rural crop farmers in the study area using a semi-structured questionnaire. CARE and WFP Household Coping Strategy Index (CSI) and Factor analysis were used to determine level of household resilience for food security in the study area. Likert scale was used to examine the idiosyncratic coping strategies adopted by the respondents against food dearth related risks during the COVID-19 Pandemic in Nigeria.


Findings showed that 8 out of every 10 respondents do not have access to palliative stimulus packages from the Federal or Oyo state Government to impair the effect of the COVID-19 Pandemic. Out of the sampled households, only 35.71%, 32.38% and 31.90% had mild, moderate and severe resilience for food security respectively during the COVID-19 Pandemic in the study area. Results revealed that the households differ in socio-economic characteristics by their resilience level to food insecurity and that the idiosyncratic coping strategies of households against food dearth related shocks include relying on less preferred food, borrowing food, buying food on credit, allowing household members to eat elsewhere, begging for food, limiting portion of food, and restricting adult at meal. The study concluded that policies that underpin expansion of near-real time food security monitoring systems to provide timely, improved and geospatially indicative data to measure the pandemic's unfolding effects and understand better farmers that are suffering from hunger and malnutrition and where they are. It suggested that food and nutrition assistance needs to be at the heart of Government social protection programs and laying the foundation for a more inclusive, green, and resilient recovery by ensuring COVID-19 dedicated resources are used in a "build to transform" approach and are evidence-based with emphasis on women and children.

Key words: *Food Security, Idiosyncratic, COVID-19, Resilience, Nigeria*

1. Introduction

The novel COVID-19 pandemic has become a threat to the health and social stability of Homo sapiens in the global ecosystem; causing a drastic reduction in the nutrition and food security of millions of people around the world. The pandemic could push about 49 million people into extreme poverty in 2020 with each percentage point drop in global GDP expected to result in an additional 0.7 million stunted children (UN, 2020).

In response to this worldwide COVID-19 outbreak, many countries in sub-Saharan Africa including Nigeria followed the same strategy as high income countries and have implemented strict lockdown measures to curtail the spread of the virus with some countries imposing business closures while others have severely restricted public and private transport (IGC, 2020). Today, the number of confirmed cases of COVID-19 in Nigeria has reached 24,567 with forecast of more increasing figures imminent (NCDC, 2020). This figure is alarming considering the relatively low political and socio-economic power of the Nigeria against diseases control when compared with other high income countries with higher GDP.



28-06-2020

#TakeResponsibility #COVID19Nigeria

S/N	STATE	Number of Cases
1	Lagos	10144
2	FCT	1792
3	Oyo	1306
4	Kano	1200
5	Rivers	1056
6	Edo	962
7	Delta	912
8	Ogun	782
9	Kaduna	703
10	Katsina	549
11	Bauchi	500
12	Gombe	492
13	Borno	486
14	Ebonyi	395
15	Plateau	337
16	Jigawa	317
17	Imo	303
18	Abia	302
19	Enugu	261
20	Ondo	244
21	Kwara	217
22	Nasarawa	206
23	Bayelsa	185
24	Sokoto	151
25	Osun	116
26	Akwa Ibom	86
27	Adamawa	84
28	Niger	84
29	Kebbi	76
30	Zamfara	76
31	Anambra	71
32	Yobe	59
33	Benue	47
34	Ekiti	43
35	Taraba	19
36	Kogi	4
TOTAL		24567

@NCDCgov COVID19.NCDC.GOV.NG




Fig.1 Number of confirmed Coronavirus disease cases in Nigeria

Source: NCDC, 2020

Food security is a condition that exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active healthy life (FAO, 2018). More than 820 million people in the world are still hungry today, underscoring the immense challenge of achieving the Zero Hunger target by 2030 FAO

(2019). There exist four major elements in accessing food security, namely: availability, accessibility, utilization, and sustainability. While availability connotes the physical presence of a large quantity of food, accessibility implies that there is the ability to acquire the required quantity; utilization/adequacy means sufficiency in both quantity and quality of food; and sustainability implies access at all times and not losing such access (Omonona, 2019).

Demand for food is generally inelastic and a loss of purchasing power as a result of the disease could, however, alter dietary patterns with demand shifting away from value-added foods such as meat and vegetable oils towards basic tubers and cereals. The SOFI 2019 reports that the uptick in hunger between 2011 and 2017 coincided with an economic downturn in 65 out of 77 countries, 52 of which highly dependent on primary commodity trade (WFP,2020).

Even though, Nigeria has great agricultural potentials and abundant natural resources for all round development, most indicators of the economic well-being are still very low. Food insecurity and poverty are still widespread across different parts of the country (FAO 2018). Food insecurity situation in Nigeria is worsening with the passage of time due to the wide gap between the national supply and demand for food. In Nigeria, agriculture has been the locus of poverty and about 70% of the population are directly or indirectly dependent on agriculture for their livelihood (World Bank 2015; 2016). It is however sapient to investigate how farmers in rural parts of Nigeria cope with food security challenge in the face of novel COVID-19 outbreak.

Yusuf *et al.*, (2012) in the study on poverty and vulnerability in rural South-west Nigeria reported that a total of 324 (55.7 %) households were vulnerable using the relative poverty line of N3313.57 estimated for the study. This result indicates that vulnerable households were higher than the proportion actually poor in South Western Nigeria. This finding is in line with findings from other study by Graaff *et al* (2016) in which the proportion of vulnerable is greater than the proportion of households actually poor.

Using a three-stage sampling procedure and the Coping Strategy Index, Ojo (2019) conducted a study on Technology Of Vulnerability To Food Insecurity By Rural Farming Households In Western Nigeria; A Case Of Ekiti State and found that 35.33% of the households were moderately vulnerable while 33.33% and 31.33% were mildly and severely vulnerable to food insecurity respectively in the study area; borrowing food, eating seed stock, begging for food and reducing meals were the major coping strategies adopted by the households.

Bernard *et al* (2019) conducted a research in Ghana and reported that about 5 % of Ghana's population are food insecure and about 2 million people are vulnerable to become food insecure in the country. The WHO (2020) carried out a survey on Epidemic Risk Index which measures risk based on hazard, exposure, vulnerability and coping capacity and found that this ERI is high in Nigeria with a relatively higher score of the Proteus index of food insecurity (0.5) and suggested that the country would likely see higher mortality rates.

Many studies (including Fiona *et al.*, 2011; Adewuyi and Hayatu, 2011; Ayantoye *et al.*, 2011; Asogwa and Umeh 2012; Adeniyi and Ojo, 2013; Adepoju and Adejere, 2013; Adamu, 2014 etc.) have been carried out on food security in Nigeria during pre-COVID-19 epoch when there was no restriction on movement, no closure of borders and businesses or any form of lockdown, but few studies have been carried out on the aspect of idiosyncratic food dearth risk resilience considering COVID-19 pandemic situation where *inter alios*, farmers are forced to sit at home and obey lockdown and social distancing rules for months. In the light of this, this study broadly examined COVID-19 and idiosyncratic food dearth risk resilience in Nigeria, focusing on Oyo state and answered fundamental questions such as; do households differ in socio-economic characteristics vis-a-vis their resilience level for food security?, do households have access to palliative stimulus package from the Federal or State Government to cushion food shortage effect of the COVID-19 pandemic?, what is the level of resilience for food security among the households?, what are the idiosyncratic coping strategies adopted by the households against food dearth related risks during the COVID-19 pandemic in the study area?. Specifically, the study examined the following objectives; to profile households socio-economic characteristics by their resilience levels, determine the households level of access to palliative stimulus package from the Federal or State Government to cushion food shortage effect of the COVID-19 pandemic, determine the level of resilience for food security among the households, examine the idiosyncratic coping strategies adopted by the households against food dearth related risks during the COVID-19 pandemic in the study area.

2.1 Materials and Methods

This study was carried out in Oyo State, South western Nigeria. The state's land area covers 35,743 km² situated within latitude 3 and 5°N; between longitude 7°E and 9.3°E. Four (4) Agricultural Development Project (ADP) zones exist in the state as categorized by the Oyo state

Agricultural Development Project (OYSADEP) which includes; Ibadan/Ibarapa, Oyo, Ogbomoso and Saki zones, with varying degrees of farming activities.

A multistage sampling technique was used to elicit primary data from 210 rural crop farmers in the study area using a semi-structured questionnaire. The first stage involved random selection of two agricultural zones which are Ibadan/Ibarapa and Oyo Agricultural zones from the four Agricultural Zones in Oyo state. The second stage involved a random selection of three local government areas under the Oyo agricultural zone and one Local government in Ibadan/Ibarapa Zone due to the relatively high farming activities in these areas of the state. The third stage involved a random selection of ten villages under Ido Local government area and three villages per District, Oyo central, and Oyo west local government areas. Data collection was between March-June, 2020. The Statistics and Data (STATA) '14 analytical tool was used in data analysis.

2.2 Analytical Technique

Descriptive statistics, Tables and percentages were used to analyze the profiling of socio-economic characteristics of the respondents by their levels of resilience for food security. The tools were also used to examine the level of access to the Nigerian Federal and Oyo state Government COVID-19 Palliative stimulus package by the respondents in the study area.

Likert scale was used to examine the idiosyncratic coping strategies adopted by the respondents against food dearth related risks during the COVID-19 Pandemic in Nigeria. The Likert scale of perception analysis was based on the coping behaviors which the households felt most severe, severe and least severe in the study area. The process involved the construction of frequencies and percentages based on a four point response scale specified below:

- I. Strongly Agree =4
- II. Agree =3
- III. Strongly disagree =2
- IV. Disagree = 1

Likert scales are survey questions that offer a range of answer options, from one extreme attitude to another and are quite popular because they are one of the most reliable ways to measure opinions, perceptions, and behaviors (Monkey, 2017)

CARE and WFP (2003) Household Coping Strategy Index (CSI) tool and quantile were used to generate the level of household resilience for food security in the study area. The CSI index is considered appropriate for studies on measuring resilience and vulnerability to food insecurity (Migotto *et al.*, 2005). The CSI index was calculated by multiplying the frequency and consensus severity of using a set of eleven coping strategies against food shortage related shocks. Following Douglas and Martins (1994), Quantile was used to group the index into three levels of resilience for food security (Mild, moderate and severely Resilient).

3. Results and Discussion

3.1 Level of Households Resilience for Food Security

Result (table 1) showed that, out of 210 households that were sampled, only 35.71% were mildly resilient, 32.38% were moderately resilient while 31.90% were severely resilient to food security during the COVID-19 Pandemic in the study area. Further explanation suggests that 67 out of every 210 farmers in the study area have 31.9% severe ability to withstand and come out of food dearth risk related shocks during the Corona Virus breakdown in the study area.

Table 1: Distribution of Households by Resilience Level

Resilience category	Frequency	Percentage
Mildly Resilient	75	35.71
Moderately Resilient	68	32.38
Severely Resilient	67	31.90
Total	210	100

Source: Field survey (2020).

3.2 Profiling Socio-Economic Characteristics of the respondents by their levels of resilience for food security.

a. Age of Household Head

Table 2: Distribution of Household Resilience by Age

Mean age =46.77years

Age(years)	Mild	Moderate	Severe	Total
≤ 30	27(16%)	4 (20%)	4 (21%)	35
31-40	12 (78%)	19 (67.92)	16 (61.7%)	47
41-50	25 (6%)	20 (9.43%)	23 (12.77)	68
51-60	14 (25%)	12 (15%)	12 (78)	38
61-70	6(23%)	3(32.9%)	5 (17%)	14
71-80	4(7%)	3(9.2%)	1 (3.3%)	8
Total	88	61	61	210

Source: Field survey (2020).

Table 2 revealed that 25, 20 and 23 out of every 68 farmers who are between 41 and 50 years old were mildly, moderately and severely resilient to food insecurity respectively in the study area. A total number of 47, 38 and 8 out of 210 households had ages between 31 and 40, 51 and 60, and 71-80 years respectively in the study area. The table shows that the highest proportion of the respondents lie between the productive ages of 41-50 years

b. Gender of Household Head

Table 3: Distribution of Household Resilience by Gender

Sex of HH Head	Mild	Moderate	Severe	Total
Female	10 (30%)	11 (18.86%)	9(42.5%)	30
Male	65 (70%)	57 (81%)	58 (57.4%)	180
Total	75	68	67	210

Source: Field survey (2020).

Table 3 shows that male-headed households have more resilience for food security than female headships. The possible reason for that may be due to the cultural fact that women are subordinates to their husbands and are usually denied access to land and decision making process especially when their husbands are still alive in the study area.

c. Marital Status of Respondent

Table 4: Distribution of Household Resilience by Marital Status

Marital Status	Mild	Moderate	Severe	Total
Single/Separated	14 (56%)	21 (52.8%)	16(61.7%)	51
Married	61(32%)	47 (37.7%)	51 (36.2%)	159
Total	75	68	67	210

Source: Field survey (2020).

Table 4 revealed that 14, 21 and 16 out of every 51 farmers who were single or separated were mildly, moderately and severely resilient against food insecurity respectively in the study area. A total number of 159 households were married in the study area.

d. Distribution of Household Resilience by dependents

Table 5: Distribution of Household Resilience by dependents

Dependents	Mild	Moderate	Severe	Total
≤ 3	64(76%)	57(83%)	55(64.7%)	176
4-6	11(28.6%)	11 (28.6%)	12 (33.4%)	34
Total	75	68	67	210

Source: Field survey (2020).

Table 5 revealed that 64, 57 and 55 out of every 176 households who have less than or equal to 3 household dependents were mildly, moderately and severely resilient to food security respectively in the study area while households with higher number of dependents had less resilience for food security in the study area.

e. Off-farm Diversification

Table 6: Distribution of Household Resilience by off-farm Diversification

Diversification	Mild	Moderate	Severe	Total
Diversify	54 (56%)	58 (49.8%)	42(52.7%)	154
Non-diversify	21(35%)	10 (39.7%)	25 (37.2%)	56
Total	75	68	67	210

Source: Field survey (2020).

Table 6 revealed that about 5.2 out of every 10 respondents who employ off-farm diversification have severe resilience for food security in the study area. 56 out of the 210 respondents who does not diversify will likely take more time to come out of food insecurity in the study area during the COVID-19 Pandemic.

f. Access to Credit

Table 7: Distribution of Household Resilience by Access to credit

Access to Crd	Mild	Moderate	Severe	Total
Access	59 (36%)	61 (59.8%)	53(54.7%)	173
No access	16(36%)	7 (38.7%)	14 (47.2%)	37
Total	75	68	67	210

Source: Field survey (2020).

Table 7 revealed that 59, 61 and 53 out of every 173 respondents who had access to credit during the COVID-19 pandemic were mildly, moderate and severely resilient to food security in the study area respectively.

g. Household Farm Income

Table 8: Distribution of Household resilience by Farm Income **Mean Income = ₦11016.19**

Farm Income(naira)	Mild	Moderate	Severe	Total
≤ 5,000	18(2%)	18 (12.2%)	7(13.4%)	53
5,001-10,000	29(78%)	20(69.8%)	8(72.3%)	77
10,001 – 15,000	10(16%)	11 (26%)	8 (19.1%)	29
15,001-20,000	7(4%)	7(5.66%)	2 (2.1%)	16
21,000- 35,000	11(12.6%)	12 (17.8%)	42 (80%)	35
Total	75	68	67	210

Source: Field survey (2020).

Table 8 revealed that 7 out of every 10 respondents who earn below 5,001 naira per month were mildly resilient to food security in the study area. Household income is regarded as the most critical determinant of household food security status (Jacob, 2009). The implication of the result above is that majority (80%) of the farmers who had severe resilience for food security relatively earn the highest income in the study area. It means that there was a positive relationship between the food security status and monthly income in the study area.

h. Household size of Respondents

Table 9: Distribution of Household Resilience by Household Size

HH size	Mild	Moderate	Severe	Total
≤ 5	39 (20%)	40(15.09%)	52 (25.53%)	101
6-10	38(70%)	20(64.70%)	2 (3.83%)	60
≥ 10	8(10%)	8(13.21%)	3 (5.64%)	19
Total	85	68	57	210

Source: Field survey (2020).

Table 9 revealed that 39, 40 and 52 out of every 101 farmers who headed household size which were less than 5 members were mildly, moderately and severely resilience to food insecurity respectively in the study area. The results showed that majority (101) of the farmers had between less than five family members, the possible explanation of this is that more than two-third of the farmers had household sizes below 6 members and this suggests that the less the number of household size, the more the severity of resilience for food security in the study area.

i. Farm Size of Respondents

Table 10: Distribution of Household Vulnerability by Farm Size

Farm Size (ha)	Mild	Moderate	Severe	Total
≤ 1	9(30%)	10(28.3%)	5 (12.77%)	24
2-3	5(32%)	20(37.74%)	5 (57.4%)	30
≥ 4	45 (20%)	40(22.96%)	71(39.79%)	156
Total	59	70	81	210

Source: Field survey, 2020

Table 10 revealed that Majority of the households who are severely resilient to food security were those who cultivate relatively higher sizes (Greater than or equal to 4ha) of farmland in the study area and this may be the possible explanation behind their relative higher resilience status. The implication of this is that increased farmland size is a major determinant of income and food security among the respondents.

j. Level of Education of Respondent

Table 11: Distribution of Household Resilience by Education Level

Education Level	Mild	Moderate	Severe	Total
Primary	30(26%)	40(30%)	2 (48.93%)	72
Secondary	7(16%)	35(5.6%)	62 (6.38%)	104
Tertiary	13 (38%)	11(54.1%)	10(69.68%)	34
Total	50	86	74	210

Source: Field survey (2020).

Table 11 shows that majority (104) of the households had only secondary education. This means that about half of the farmers were fairly educated and able to think and can adopt the use of improved technology that can improve their welfare. This result is in line with previous studies by Ojo (2019) and Swain *et al.*, (2012) and who found that better educated people are able to improve the quality of labor for generating income and livelihood.

3.3 Access to Palliative Measure from the Federal and Oyo state Government.

In the study area, 85.24% of the respondents claimed they do not have access to palliative stimulus packages from the Federal or Oyo state Government to impair the effect of the COVID-19 Pandemic. Others believed the distribution was politicized and biased.

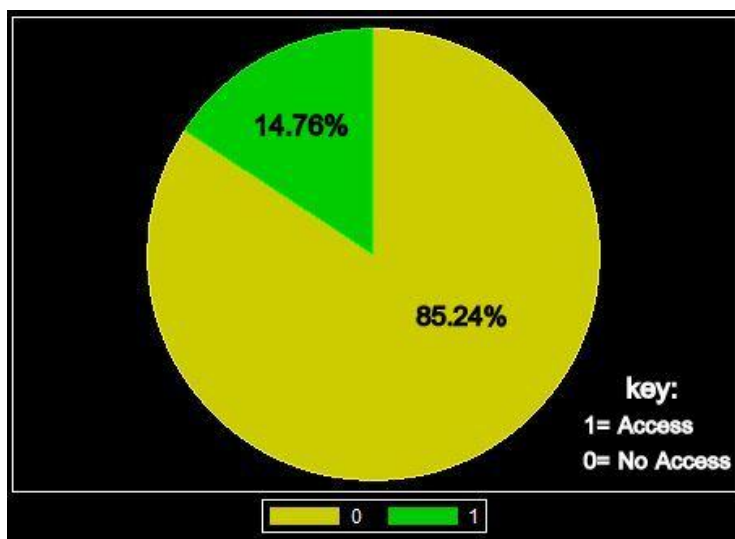


Fig. 2: Distribution of Households by Access to Palliative COVID-19 Stimulus Packages from the Nigerian Government

Source: Field Survey, (2020)

Table 12: Distribution of Household Resilience by Access to COVID-19 Palliative measures

Access to palliative	Mild	Moderate	Severe	Total
No Access	63 (55%)	58 (49.8%)	58(52.7%)	179
Access	12(33%)	10 (38.7%)	9 (37.2%)	31
Total	75	68	69	210

Source: Field survey (2020).

Table 12 shows that majority of the respondents (179) does not have access to COVID-19 palliative stimulus package in the study area. The result shows that those who do not have access to the stimulus package were more resilient for food security in the study area.

3.4. Idiosyncratic Coping Strategies

Coping strategies refers to the behaviors households adopt to adapt to adverse effect of food insecurity (Hoddinott, 1999). About 11 coping strategies were adopted by the households against food-shortage related shocks in the study area. This depict what the households do when they don't have enough food or money to buy food, this include relying on less preferred food, borrowing food, buying food on credit, gathering wild food, eating seed stock, allowing household members to eat elsewhere, begging for food, limiting portion of food, restricting adult at meal, reducing meal and skipping days without eating. Table 13 shows the overall consensus ranking of the coping behaviors by all the sampled household.

Table 13: Consensus Ranking of Idiosyncratic Coping Behavior

COPING STRATEGY	RANKING	INTERPRETATION
Less preferred food	1	Least Severe
Borrow food	2	Moderately Severe
Purchase food on credit	2	Moderately Severe
Gathering wild foods	4	Very severe
Eat seed stocks	3	Severe
HH Members eat elsewhere	2	Moderate Severe
Beg for food	4	Very severe
Limit portion of food	1	Least Severe
Restrict Adults at meal	3	Severe
Reduce number of meals	1	Least Severe
Skip days	4	Very severe

Source: field survey (2020).

The result (Table 14) from the analysis shows that every day, households who rely on less preferred food and those who limit portion of food have relative higher number of frequencies of use of coping strategies.

Table 14: Distribution of Respondents According to Idiosyncratic Coping Strategies Employed

Coping Strategies	Everyday		3-6 Times a week		1-2 times a week		Hardly at all		Never		TOTAL	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Less preferred	117	58	44	19.33	43	18.67	6	4	0	0	210	100
Borrow	12	8	80	33.33	105	50	13	8.67	0	0	210	100
Purchase on credit	17	11.33	92	41.33	86	37.33	13	8.67	2	1.33	210	100
wild foods	0	0	17	4.67	21	7.33	12	1.33	160	86.67	210	100
Eat seed stocks	0	0	8	5.33	1	0.67	99	46	102	48	210	100
HH eat elsewhere	17	4.67	26	10.67	145	76.67	10	6.67	12	1.33	210	100
Beg	22	8	123	62	45	23.33	17	4.67	3	2	210	100
Limit portion	128	65.33	29	12.67	37	18	8	2	8	2	210	100
Restrict Adults	25	10	52	28	104	49.33	24	9.33	5	3.33	210	100
Reduce meals	22	8	113	55.33	50	26.67	24	9.33	1	0.67	210	100
Skip days	0	0	18	5.33	22	8	37	18	133	68.67	210	100

Source : Field Survey (2020)

3.4.1. Food Security Level of the Household.

Figure 3 shows the graphical result of the analysis of food security categories by coping strategies that were obtainable in the study area.

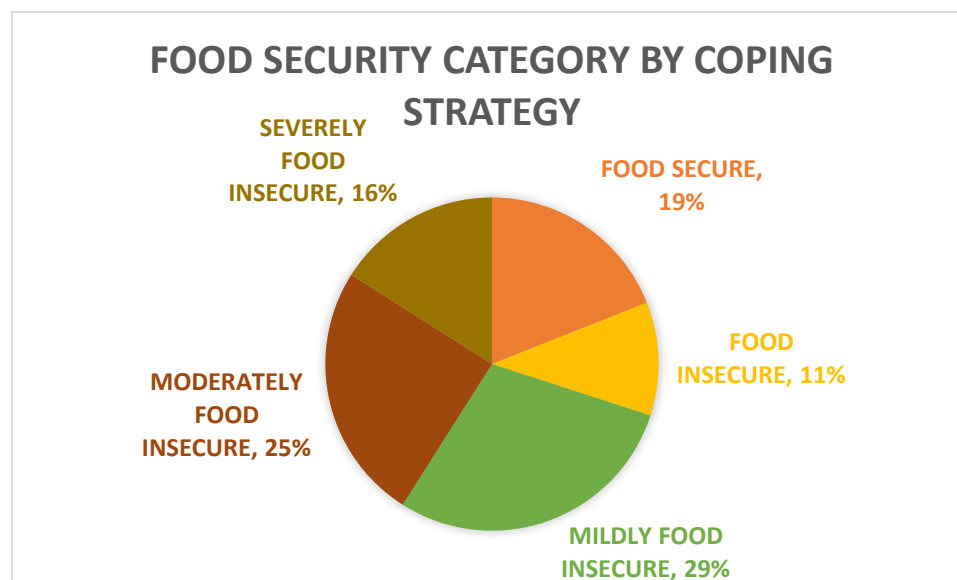


Figure 3: Food Security Category by Coping Strategy

Source: field survey (2020).

The chart (Figure 3) above revealed that households who use the coping strategy everyday are severely food insecure, those who use the coping strategies 3-6 times a week are moderately food insecure, those who use the strategies once or twice a week are categorized as mildly food insecure, households who Never or hardly use the strategies are food secure. The graph shows that 19%, 11%, 29%, 25% and 16% of the households are food secure, food insecure, mildly food insecure, moderately food insecure and severely food insecure respectively.

3.4.1.2 Causes of Food Insecurity of Households

Table 15 revealed that the majority (45.2%) relatively believed that the major cause of their food insecurity in the study area was due to COVID-19 Pandemic while 19.04% and 14.8% of the respondents believed that High cost of food Items and Corruption of the Government respectively were their major cause of food insecurity in the study area

Table 15: Distribution of Respondents by Perception on causes of food Insecurity.

Causes of household Food Security	Frequency	Percentage%
COVID-19 Pandemic	95	45.2
Low level of Income at Household Level	14	6.7
No access to Modern input	7	3.33
High cost of food Items	40	19.04
Ignorance	5	2.4
Use of crude implement for farming	7	3.33
Corruption and embezzlement from the Government	31	14.8
Poverty	11	5.2
Total	210*	100

Source: Field Survey (2020); *Multiple Responses

4. Conclusion

While COVID-19 is a global health emergency, it could become a food security emergency as well if proper measures are not taken. Majority of the respondents believed they were food insecure because of COVID-19 pandemic and government corruption. Findings showed that the level of resilience for food security is fairly distributed among the respondents and that achieving food security is still a problem in most households in the study area. Resilience and food insecurity is a problem measured and also opined by the respondents.

Based on the findings of the study, it is recommended that Oyo state Government should protect the most vulnerable population groups, as well as women who play key roles in the household and essential services delivery and support farmers' children who no longer have access to school meals during this COVID-19 pandemic. Households should engage in family planning to reduce their level of incidence to food insecurity and boost their resilience.

Policies that underpin expansion of near-real time food security monitoring systems to provide timely, improved and geospatially indicative data to measure the pandemic's unfolding effects and understand better farmers that are suffering from hunger and malnutrition and where they are. Food and nutrition assistance needs to be at the heart of Nigerian Government social protection programs and laying the foundation for a more inclusive, green, and resilient recovery by ensuring COVID-19 dedicated resources are used in a "build to transform" approach and are evidence-based with emphasis on women and children

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