ASSESSMENT OF HOUSEHOLD FOOD INSECURITY COPING STRATEGY AMID COVID-19 PANDAMIC PERIOD (2019-2020) IN KANO STATE, NIGERIA

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ABSTRACT

During 2019-2020 there were global novel COVID-19 pandemic and Nigerian Government, states and local levels had reported that social and economic shocks would be severe for citizens amid inflation and rising consumer goods prices. The study examined rural household food security and response to stressful Covid-19 Lockdown shocks in Kano State. Multistage random sampling technique was employed and sampled 125 households in the study area. Descriptive statistics and Food security index tools were employed in the analysis. The result shows that majority (72%) were between 36 and 55 years, 86% were female households, 70.4% had 5 to 15 household members and had education background, engaged in agriculture and agro-allied enterprises, 66.4% had enrolled with cooperatives and predominantly produces and consumes millet, maize, sorghum, cowpeas groundnut and sesame with average yield of 1070 kg/ha, 908 kg/ha, 797 kg/ha, 394 kg/ha, and 698 kg/ha, respectively. The food security index shows that 22.4% were foods secure (3rd), 39.0% as less food insecure and 25.6% moderately insecure. The respondents regular and passive incomes were from less than ₦1, 000 to many thousands (₦50,001≥) by income category and revealed food as the main consumption expenditure. It revealed that 28.8% of them reduced the food quantity intake to survive the period, 19.2% reduced meal intake frequency, and 13.6 % borrowed food among other alternatives to survive the pandemic. Strategies adopted by household in coping with the economic shocks included fear purchases, deferred payments, price inflation, higher interest banks loans, low produce sale prices and lack of access to palliative measures from government and private individuals. It was recommended that Government should exert more political will and sincerity in order to have a significant impact on the population's socioeconomic well-being, of the common man and supply chains must be kept functioning as crucial to food security noting that deaths could be created due to food supply disruptions not a lack of food availability.

Keywords: Households, Food insecurity, coping strategy, amid CoV-2pandemic.

1. INTRODUCTION

1.1 Background of the Study and Conceptual Framework

Agriculture was the mainstay during 1960s and 70s for Nigerian economy. About 90 percent of Nigeria's total food production comes from small farms and at least 60 percent of the country's population with majority of farms less than 2 hectares sizes. The farming system is subsistence and farmers still use traditional production techniques with sector low performance and subsequent food insecurity challenge in Nigeria as a whole. Food insecurity continues to be a major public policy challenge in developing countries. Worldwide, almost 1 billion people are reported undernourished, many more suffering from micronutrient deficiency which aggravates the regimes of poverty and disease due low earnings (FAO, 2008). Food is a basic necessity of life and is regarded as the basic means of sustenance via adequate food intake in terms of quantity and quality is a key for healthy and productive life (FAO, 2005). Food expenditure accounts for a substantial part of a typical Nigerian household budget and serve as an important vehicles for taking nutrients into the body and bringing about a healthy state for a healthy living. FAO (2017) estimated that 27.4% of the total populations in the African continent were facing a serious and chronic food security issue which increases from the estimated previous figure of 22.7% by the end of 2016. Sub Saharan Africa has the highest number of hungry individuals in Africa estimated at about 306.7 million and that West Africa accounted for an estimated 12% of the total figure of hungry people in Africa. Among the causes identified were the unpredictable rise in global food price, government continuous neglect in the agricultural area, conflicts especially in Eastern Africa, climate change, gender inequality and high level of unemployment (FAO,

2012).Moreover, in 2017 the United Nations declared that more than 20 million people were at the risk of famine in four countries including Nigeria. North eastern part of Nigeria, has an estimated of 4.5 million people facing serious food security challenge due to conflict (United Nations Development Programme, 2017a and Von Grebmer et al., 2017). And Global Hunger Report stated that Nigeria at number 84th out of 118 countries in 2017. These reports indicated the level of food insecure people in the country as 25.4% (46 million people) of the estimated population of 180 million (Von Grebmer et al., 2017).

With the current surge of Global virus (CoV-2 pandemic) as of 25 May, 2020, Nigeria reported 7,839 confirmed cases of COVID-19 and 226 related deaths (WHO 25/05/2020).And Most of these cases (around 60%) have been registered in Lagos and Kano states, followed by the Federal Capital Territory (FCT) also 35 of 37 states have reported COVID-19 cases (OCHA 18/05/2020; NCDC 11/05/2020).Testing capacity in Nigeria is now increasing, but the health system is weak, and many areas of the countries were not easily accessible. The COVID-19 containment measures were having a significant impact on the population's well-being, socioeconomic and living conditions which have a bearing on food access and availability.

Food security means access to food rather than the production or physical availability of food. It also depends on socio-economic conditions than on agro climatic. Food and Agriculture organization of the United Nations (FAOs) vision of a world without hunger is one in which "most people are able by themselves, to obtain the food they need for an active and healthy life, and where social safety nets ensure that those who lack resources still get enough to eat." FAO, (2007). In May 2007, at the 33rd Session of the Committee on World Food Security, FAO issued a statement to reaffirm its vision of a food-secure world. Conceptually, Food security (FS) exists when all people at all times have physical or economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO,

1996). The agricultural sector is exposed to a variety of risks which occur with high frequency. These include climate and weather risks, natural catastrophes and associated pests and diseases, which cause highly variable production outcomes (UNDP, 2009). Households living in low-income communities in developing economies like Nigerians rural areas face numerous misfortunes resulting to difficulties in generating income, and vulnerability to economic, political, social and environmental crises amid rising inflation, drought, illness and civil unrest tend to hit hardest those households and individuals least equipped to handle such shocks.

Reportedly, these shocks were that of climate change effects which its rate determine agronomic and economic impacts (Parakeet al., 2001).Though climate change is a threat to agriculture and non-agricultural socio-economic development aspects, "agricultural production activities are generally more vulnerable to climate change than other sectors" (Ayanwuyi et al., 2010).The effect is becoming a high profile issue both from the social, economic and related sectors including water resources, agriculture and food security, terrestrial ecosystems and biodiversity Abbas *et al*., (2018).

1.2 Problems Statement

Nigeria's agricultural sector employs 37 per cent of the labour force, but generates only 21 per cent of the country's GDP (World Bank, 2018). While the country has made some progress in reducing the poverty rate (from 55 percent in 2003 to 47 percent in 2011), the number of poor people was projected to increase from 4.7 million to 6.3 million between 2011 and 2019 (WB, October 2019). The importance of weather and diseases and their impact to food and security considerations is paramount. Basically, one needs to reflect that food shortage begets hunger and thereafter hunger begets disease. In Kano State where environmental and macroeconomic conditions were not all that favourable to a common man at lockdown period. Households have been facing significant food deficits and limited livelihood options in sub-Saharan Africa; where two-thirds of the working population still make their living from agriculture (ILO, 2007). If agricultural production in the low-income developing countries of Asia and Africa is adversely affected by climate change, the livelihoods of large numbers of the rural family will be put at risk and their vulnerability to food insecurity increased. The global Covid-19 economic downturn of 2019-2020 coupled with the food and fuel crises has exacerbated poverty and deprivation through shrinking employment opportunities, reduced wages and remittances, declining levels of demand and cuts in government spending. These and other factors result in households' inability to meet basic food needs while their cash income is decreasing; their

expenditures are increasing due to high food prices and farming input cost as well. Thus, Kano State may face worsening food insecurity, as noted by FAO (2000), and this has led to a high incidence of malnutrition related diseases, which not only undermine health, but hinders agricultural production as against the assertion that it was traditionally considered the bread basket of Nigeria. Though, people differ in the way they perceive or take judgments involving risk and uncertainty and these differences are often labelled as differences in risk attitudes.

1.3 Objectives of the Study

In this current study; we aimed at examining the household food security status amidst Covid-19 pandemic. It is not simple though to assess the impacts on food-insecurity. Specifically, this study it would be achieved through the following objectives:

i.   To describe the socio-economic characteristics of the Households in the study area,

ii. To determine the perceived effects of food insecurity, and
iii. Identify effective coping strategies employed by the respondents in cushioning the effects of food insecurity during CoV-2 pandemics in the study area.

2.METHODOLOGY

2.1.1 Study Area

The study area is an ADP zone II for the state and is the Zonal Headquarter of Health Service Management Board (HSMB) which by may, 2020 had no confirmed case. The area has also experienced marketing shocks in the last five month due to lockdown movement restrictions. Before the 2020s, it was a major arable crops market 2nd to dawanaw market and a positioned growing zone and the collapse of the ADP initiative was largely responsible for a shortfall of income levels over the lockdown period.

The area provides a good case study for household responses to food insecurity and income shocks, foods diverse livelihood strategies exist, both on-farm and off-farm. This is attributable to the proximity to commercial town, Kano, and a major urban centre. Dambatta is no far from Makoda, less than 10 Kilometers to Local Government Headquarters and less than 49km from the capital city, Kano. Kano State is one of the thirty six states of the Nigeria Federation and has forty (44) Local Government Areas with total population of 9, 401, 28 persons as at 2006 (NPC, 2006). The state lies between the latitude 10° 33N and 12° 43E and 9° 25E (Ahmed, 2000). Agricultural activities are coordinated at Programme Management Unit (PMU) of the Agricultural and Rural Development Authority (KNARDA) and Ministry of Agriculture.

2.1.2 Location and Extend

The state is bounded by Jigawa state in the North to north East, Katsina State to west and Bauchi and Kaduna States to the south respectively. Danbatta is in zone II. And has an area of 732 km^2 a population 207,968 (Census, 2006)Latitude 1225`59.880-N, Longitude 831`0.012`-E and an altitude up to 468meters and distance away from Kano is 49 Km. The vegetation is predominantly Sudan or grass land (KNARDA, 1998; Aminu, 2016).

2.1.3 Socioeconomic Activities

The main occupations of the areas are Livestock farming fishery, poultry as well as trading and crafts. The state has a crop-growing season of 100 to 150 days with mean annual rainfall between 500mm to 1000 mm (KNARDA, 2004). It has variations in some locations. More than forty nine thousand hectares (49,000Ha) of land were being cultivated under Fadama project (Abbas, 2014). Crops grown include ground nut, millet, cotton, sorghum, sesame, wheat, rice, sugar cane and maize. Other vegetables are onion, tomatoes, pepper and spices etc. Fruits include mangoes, cashew, and guava to mention a few. The system of farming is rather mix and semi Intensive.

2.2 Sampling Technique

Multi-stage and purposive sampling procedures were used for this study. The Kano state Agriculture Development Project ADP being a state wide project operates in 3 Zones and the current study had considered zone II due effect of Lockdown restrictions and resources available to the researcher.

2.3 Data Collection

To assess household food insecurity coping strategy in the presence of Covid-19 pandemic, a sample containing a proportion of households with related welfare, demographic shocks were required.

2.3.1 Primary Data

The data used in this study came from household survey that collected information Primary data with the aid of structured questionnaires for this study. The survey sought information on the economic activities and incomes, expenditure, other shocks; such as crop failures, animal diseases; any action taken in response to symptoms of illnesses experienced by family members or disease for the purpose of investigating the risks associated with food supplies and those responsible for procurement and consumption. Other data sourced were assets, asset value, and transactions frequency within the survey period, accessibility to formal loans and monthly cash transfers over the pandemic period in the study area.

2.4 Data Analysis

Descriptive statistics, food security index model and likert scale were used to meet the objectives of the study.

2.5 Models Specifications as Used in the Study

i. Descriptive Statistics

Where:

$P = f / N * 100$ …………………………………………………...1

Frequency (*f*)

Percentage %= (out of hundred)

ii. Mean Score

Mean

Mean-

Score=$\sum x_i/n$…………………………………………………………...........…….…...................2

Where:

$\sum$ =mean response per sampled population

N= population mean

x=number of responses.

n= Logical number of observations 1, 2,3...i-j,

iii. Food Security Access Index Model

In determining the food security status of the households, the respondents the study employed the food security Access Model as utilized by FAO.

$$Fs= \frac{\text{Per capita food expenditure for the ith household}}{2/3 \text{ mean per capita food expenditure of all households}}$$ ……………………………………………… …………..3

Where:

Fs= Food security Index

Fi ≥ 1 = Food secure ith household

Fi ≤ 1 = Food Insecure ith household

To ascertain the perceived effects of household food insecurity a four point Likert-type scale was used thus: Very great extent VGE4, (Great extent) GE3, (Some Extent)SE2, (Not at all) Nat1.

3. RESULTS AND DISCUSSIONS
3.1 Household Demographic Characteristics

Socioeconomic analysis, for the Household in the study employed the applications of descriptive statistics, such as mean, frequency distributions. The main characteristics considered were Age, Gender, Farming experience, Household size, Education Background and primary occupation.

3.2 Socio-economic characteristics Frequency Percentage Mean
**3.2.1 Household Age**
The result reveals that household age were vast, as 43% of them fall between 36-45 years and majority (72.0%) were between 36 and 55 years illustrating that most of the households were at their active age. The household head age is expected to play a major role on household food production, which directly affects household food security status, as the younger the household head. As such age can enable household cultivate a larger farmland than the older household head and may impact on the supply of labour and other income generating opportunities.
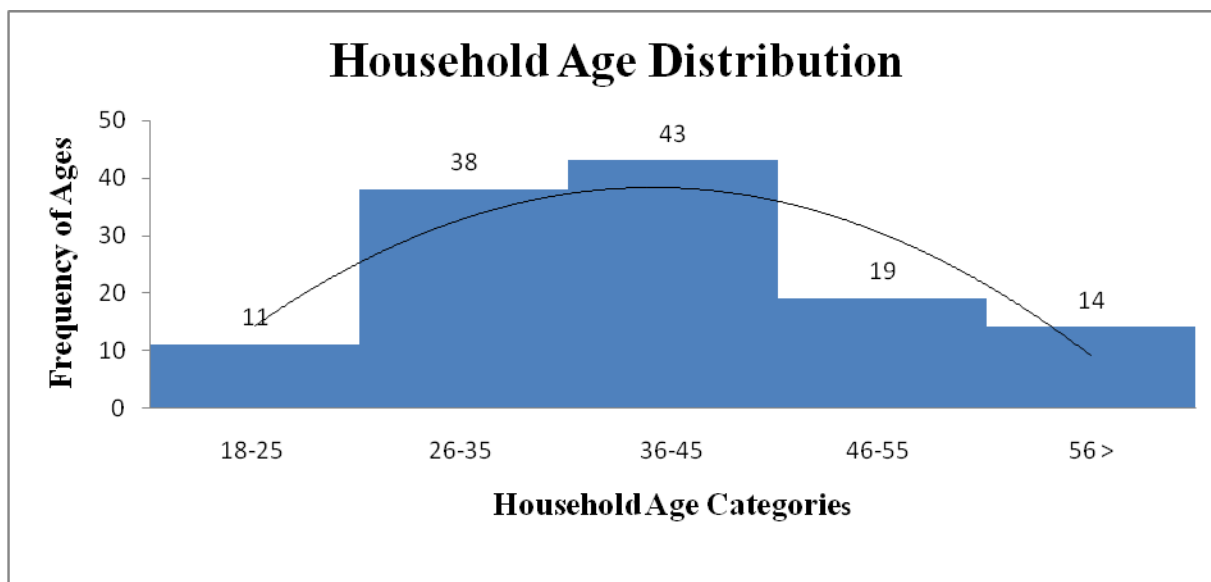
Source: Author, field survey, (2020) Figure 1: Household age categories

3.2.2 Household Gender
The result in figure 2 reveals that male households formed the majority (86%), while female households represent 14% of the respondents. Gender status refers to the sex of household head, measured as expectation here is household headed by male would be food secured then household headed by female. It is generally believed that male household can easily mobilizes labour to the farm than a female counterpart.
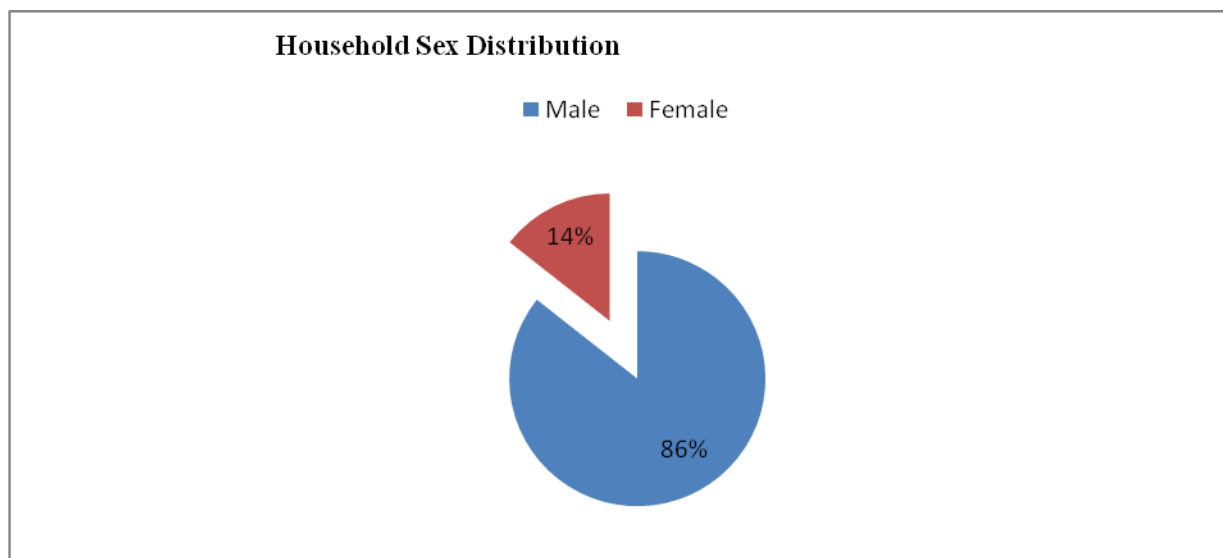
Source: Author Field survey,(2020) Figure 2: household sex or gender

3.2.3 Household size

The household size includes the number of adult equivalent heading a family. The result in table 1 reveals that a household with a highest (45.6%) size had between 6 and 10 members and majority (70.4%) of them had between 5 and 15household members. A household with large size, low income and low farm productivity are expected to be food insecure, a small size household with a high source of income and having high farm productivity is expected to be food secure and it is measured in number as persons catered for. This assumption does not always hold true in African perspectives.

Table 1: Distribution of Household based on household sizes

Household size	Frequency	Percentage (%)
1-5 persons/hh	12	9.6
6-10 persons/hh	57	45.6
11-15 persons/hh	31	24.8
16-20 persons/hh	25	20.0
Total	**125**	**100**

Source: Author field survey,(2020) hh= household

3.2.4 Education Background

The result in table 2 shows that households had education background. Those with Secondary school education background and constituted 36.8% of the respondents, 25.6% had Quar`anic education background, 20.8% had Vocational education and 12.8% Post-secondary school education. Literacy can be a measure of success for the household to perceive food security and to adopt other means or entrepreneurial ventures to sustain themselves in case of any eventual shock and vulnerability.

Table 2: Distribution of household based on Education Background

Education Background	Frequency	Percentage (%)
Primary school education	05	04.0
Secondary school education	46	36.8
Vocational education	26	20.8
Quar`anic education	32	25.6
Post-secondary school education	16	12.8
Total	**125**	**100**

Source: Author field survey,(2020)

3.2.5 Household head involvement in farming cooperative

Household involvement in farming refers to a tendency for increasing household food security status; either as a primary occupation or otherwise. Thus involvement of household in farming is expected to increase his or her household food security either through own food production, cash crops production or marketing. Majority (66.4%) had enrolled with cooperatives in case of any palliatives, for access to credit facility and 33.6% of them had no membership in any cooperative activities, as at time of the study.

Table 3: Distribution of Household head based on involvement in farming cooperative

Involvement in cooperative	Frequency	Percentage (%)
Yes	83	66.4
No	42	33.6
Total	**125**	**100**

Source: Author field survey, (2020)

3.2.6 Household Occupation

Primary occupation of household ranges from private, public and farming occupation, retired civil servants or none at all. Household head with occupation with a good occupation is expected to be food secure, than household head without occupation and their priority crops were found as predominantly millet, maize, sorghum, cowpeas groundnut and sesame among other food crop. This is an indication of the perception of the value of various crops to household livelihood strategies. The average yield of these crops were about 1070 kg/ha, 908 kg/ha, 797 kg/ha, 394 kg/ha, and 698 kg/ha, respectively in the area.

3.2.7 Household head income

Income earning capacity measured was computed in Naira(₦). The result shows that household income cut across all sectors to help them survive. These were agriculture based to non agro-allied tasks and enterprises. And their income was found to be from less than ₦1,000 to many thousands (₦50,001≥) by income category to survive the pandemic period and cushion the economic shock. Income from off-farm activities in rural areas has not proven to be adequate to meet household needs (Akinsanmi and Doppler 2005).

Table 4: Distribution of Household based on per-capita (Head) monthly income (₦`000)

Estimated monthly income	Agricultural activities		Indirect-agricultural activities	
₦1001 – ₦10, 000	6	4.8	05	4.0
₦10,001 – ₦20,000	25	20.0	26	20.8
₦20,001 – ₦30,000	13	10.4	23	18.4
₦30,001 – ₦40,000	24	19.2	44	35.2
₦40,001 – ₦50,000	35	28.0	14	11.2
₦50,001>	22	17.6	13	10.4
Total	**125**	**100**	**125**	**100**

Source: Field survey, (2020).

3.2.8 Household head Expenditure

Household expenditure is the most important part of aggregate demand and major components of Gross Domestic Product (GDP). It refers to the monetary value of basic needs purchased by household on monthly expenditure basis. It could be taken into; food, electricity, clothing, transportation, internet, health, housing, fuel and energy categories and so forth. Evidently, food shows to be the main consumption expenditure as its roles on availability and access played in reducing food insecurity and subsequent poverty cannot be overemphasized.

3.3 Household Heads Experience to Climate effect on food insecurity

The result shows a perceived food insecurity risks by the household heads or appointed representatives who supplied information among the households as or proxy in the study area. It reveals that (1st)they strongly perceived temperatures has an effect, (2nd)solar radiation, change in rainy days(3rd) among other effects contributed to as a mean perceived effect presented in table 2.

Table 2.0: Distribution of Household heads based on Experience to Climate on food security

Climate variables	VGE(4)	GE(3)	SE(2)	Nat(1)	Rank
Temperature change	53.6	34.3	32.3	23.3	1st
Rainfall frequency	76.4	35.3	34.2	24.4	6th
Wind action speed	55.5	23.1	23.2	21.1	7th
Solar-radiation	46.3	36.7	34.2	31.1	2nd
Flood occurrence	49.8	21.1	18.3	10.2	8th
Drought	54.5	36.7	23.4	18.6	4th
Rainy days	43.9	39.6	32.3	31.1	3rd
Disease frequency	59.8	46.6	33.3	23.0	5th

Source: Updated from Field Survey, (2020)

*Multiple responses average: (*Very great extent) VGE4,(Great extent) GE3,(some extent)SE2, (Not at all)Nat1

3.4 Household Food Security Status Index

The idea behind employing coping-strategy index tool is to measure the frequency of the food coping strategy as well as degree of food insecurity (Maxwell *et al*., 2003).Result in table 4 reveals the level of food security with the level of CSI. It shows that 22.4% were categorized food secure (3rd), 39.0% as less food insecure, 25.6% moderately food insecure while Households with zero level of CSI were considered food secure (Maxwell *et al*., 2003).

Table 4: Distribution of Household by Coping Strategies Index Level

Food Security Status	Frequency	Percentage	CSI	Rank
Food secure	28	22.4	0.0-0.09	3rd
Less food insecure	49	39.0	0.1-20.0	1st
Moderately food insecure	32	25.6	20.1-40.0	2nd
Severely food insecure	16	12.8	40.1-60.0	4th
Total	**125**	**100**		

Source: Field survey,(2020)

3.5 Household food insecurity coping strategy

Coping mechanisms are temporary responses to reduce effects of a stressful situations; where food access is abnormally disrupted, for instance by drought, flood, earthquake or military activity (ACF, 2010).Result in fig 3 indicates the coping strategies determined as percentage of households under each strategy
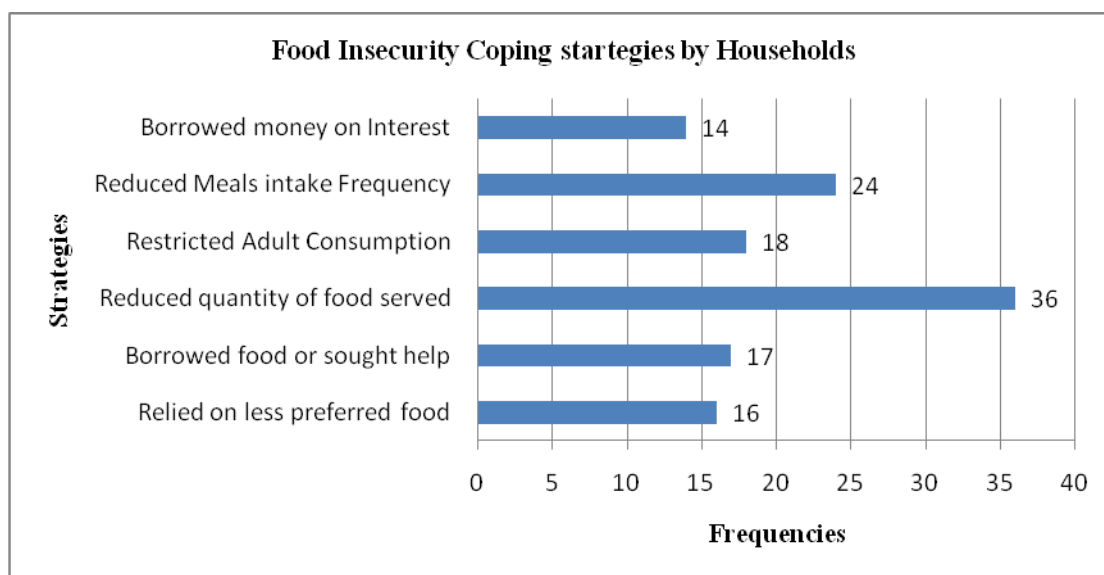
Source: Field survey,(2020) **Figure**:3

, 28.8% of them reduced the quantity intake to survive the period, 19.2% reduced meal intake frequency, and 13.6 % borrowed food among other alternatives to survive the pandemic. The

report indicated that they experienced some degrees of food insecurity and implies that most households adopted severe strategies to cushion the livelihood shock at lockdown. The finding agreed with report of Haile *et. al.,* (2005) as reported by Irohibe, *et al.,* (2014) that employment in off-farm and non-farm activities is essential for diversification of the sources of farm households' livelihood. The strategies pursued by households differ in several aspects, that is, within the household and between households (Maxwell, et al, 2003).

3.6 Household Problems to coping with Food Insecurity

Result in table 5 shows some strategies adopted by households in coping with the economic shocks as they faced myriads of problems which included fear purchases, deferred payments, food commodity price inflation, higher interest banks loans, low produce sale prices and lack of access to palliative measures from government and private individuals among others to help to cushion the livelihood shock. The finding corroborates with that of Irohibe, *et al.,* (2014) who reported that some coping strategies employed by households include reducing the quality and quantity of meals and the purchase of less preferred food.

Table 5: Distribution of Household based on Problems to coping with Food Insecurity

Problems	Frequency	Percentage
Fear purchases,	8	6.4
Deferred payments,	7	5.6
Food commodity Price inflation,	12	9.6
Higher bank loan interest rate,	16	12.8
Low produce sale prices	31	24.8
Lack of access to palliatives	39	31.2
Other strategies	12	9.6
Total	**125**	**100**

Source: Field survey, (2020)

4. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The study revealed the food insecurity status of household at it was; though hard to determine for the fact that their perceptions differ and based on the available information. Households were relatively food secure, the household heads had educational backgrounds; majority of household was headed by males while substantial proportions were headed by females. Household size was found to be vast for the majority and perceived effects of food insecurity on households were reduced household income and savings due to increased expenditure on food, and food price increased. For the respondents' to improve their food security situation; household had to look for other sources other than wages and salary to enable them buy food commodities. Strategies were employed to cope with the effects of food insecurity by households in the study area.

4.2 Recommendations

The following recommendations were raised based on the findings of the study and households' food security status in the state in particular and for sustainable economic development beyond lockdown scenario:

- Government should exert more political will to keep supply chains functioning as crucial to food security.

- Entire population must be protected from the effect of novel Covid-19 by testing and practicing social distancing.

- Government should reconsider short run policies which depress farmers' household' incomes and coherent palliative measures as COVID -19 distort prices.

- Government at Federal state and Local Levels should accord priority to boost testing capacities and strengthen the health system and COVID-19 pandemic containment measures.

- Policies should aim at reduced high interest rates and procedural difficulties in securing credit facilities for increased agricultural production toward ensuring food security.

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