IFPRI Discussion Paper 01979

December 2020

The Effects of COVID-19 Policies on Livelihoods and Food Security of Smallholder Farm Households in Nigeria

Descriptive Results from a Phone Survey

Bedru B. Balana

Motunrayo A. Oyeyemi

Adebayo I. Ogunniyi

Adetunji Fasoranti

Hyacinth Edeh

Joel Aiki

Kwaw S. Andam

Development Strategy and Governance Division

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI), a CGIAR Research Center established in 1975, provides research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition. IFPRI's strategic research aims to foster a climate-resilient and sustainable food supply; promote healthy diets and nutrition for all; build inclusive and efficient markets, trade systems, and food industries; transform agricultural and rural economies; and strengthen institutions and governance. Gender is integrated in all the Institute's work. Partnerships, communications, capacity strengthening, and data and knowledge management are essential components to translate IFPRI's research from action to impact. The Institute's regional and country programs play a critical role in responding to demand for food policy research and in delivering holistic support for country-led development. IFPRI collaborates with partners around the world.

AUTHORS

Bedru Balana (B.balana@cgiar.org) is a Research Fellow in the Development Strategy and Governance Division of the International Food Policy Research Institute (IFPRI), Nigeria office.

Motunrayo Oyeyemi (M.A.Oyeyemi@cgiar.org) is a Research Analyst in IFPRI's Development Strategy and Governance Division, Nigeria office.

Adebayo Ogunniyi (A.Ogunniyi@cgiar.org) is a Research Analyst in IFPRI's Development Strategy and Governance Division, Nigeria office.

Adetunji Fasoranti (A.Fasoranti@cgiar.org) is a Monitoring and Evaluation Officer in IFPRI's Development Strategy and Governance Division, Nigeria office.

Hyacinth Edeh (E.hyacinth@cgiar.org) is a Country Program Manager in IFPRI's Development Strategy and Governance Division, Nigeria office.

Joel Aiki (joelaiki82@gmail.com) is a Permanent Secretary, Ministry of Agriculture and Natural Resources, Kebbi State, Nigeria

Kwaw Andam (K.andam@cgiar.rog) is a Research Fellow and Program Leader in IFPRI's Development Strategy and Governance Division, Nigeria office.

Contents

TABLES

FIGURES

ABSTRACT

The Government's policy measures such as travel restrictions, lockdowns, and restrictions on economic and social activities, aimed at curbing the spread of COVID-19, had affected the livelihoods and food security of smallholders in Nigeria. Using data collected from sample households from four Nigerian states, this study investigated the effects of COVID-19 pandemic policies on the incomes, employment, and food security situation of smallholder farming households. Results show that 88 percent of the households reported that they lost about 50 percent of their income due to the pandemic. As a result, about 66 percent of respondents reported they reduced food consumption. Travel and movement restrictions caused disruptions in agricultural activities and supply chains, as 29 percent of respondents reported planting fewer crops, 24 percent reduced cropping area, and 24 percent reduced fertilizer application. In terms of household's food security, results show that COVID-19 significantly worsened the food security situation of many households in Nigeria, especially poorer households. More than 80 percent of respondents worried about not having enough food and 77 percent ate less food than they thought they should. Survey households also reported a significant reduction of consumption of proteins (eggs, meat, and dairy products) and fruits since the pandemic struck. Increases in food prices are felt by most households (85 percent). We suggest three key policy priorities: support vulnerable households to mitigate the impacts of income loss through cash transfer or improved credit access; interventions to improve agricultural inputs supply chains to ease the pandemic's impact on agricultural production; and support food insecure households through direct food distribution.

Keywords: COVID-19, Food security, Livelihoods, Income loss, Nigeria, Smallholder households

ACKNOWLEDGMENTS

The research output presented here forms part of the Feed the Future Nigeria Agricultural Policy Project (NAPP) which is funded by the United States Agency for International Development (USAID). The research work was also supported by the CGIAR Research Program on Policies, Institutions, and Markets (PIM) which is led by the International Food Policy Research Institute (IFPRI). However, the opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, USAID, PIM, or CGIAR.

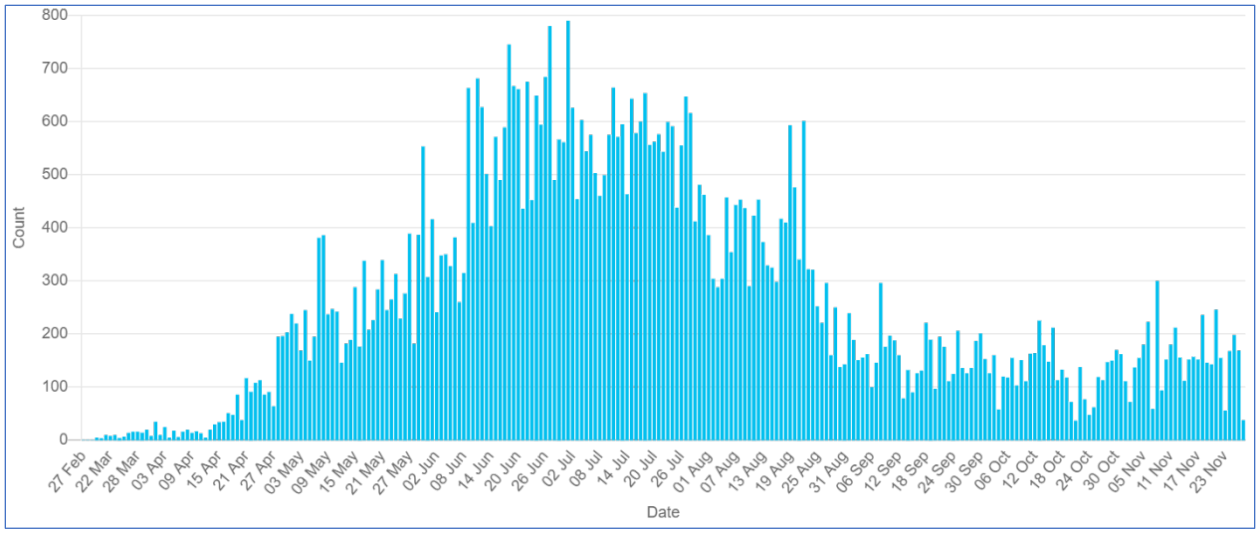
1. BACKGROUND

The presence of coronavirus in Nigeria was first reported on 27 February 2020 and since then the cases have risen to over 67,000 and about 1,200 fatalities by the end of November 2020 (Figure 1). As part of the initial responses to contain the disease, the Federal Government of Nigeria (FGN) imposed a five-week lockdown in Abuja, Lagos, and Ogun States, and other Nigerian states and local governments also restricted movements and several economic activities. The government implemented further strict measures such as travel restrictions, school closures, and home-based work to contain the spread of the virus. The government's policy responses to restrain the spread of the COVID-19 pandemic pose significant negative impacts on employment, incomes, and the food security and nutrition of smallholder households in Nigeria. The impacts are being felt across the population in rural and urban households. Using the pre-pandemic Nigeria General Household Survey data and a follow up National Longitudinal Phone Survey (NLPS) baseline data (April/May 2020) implemented by the World Bank and National Bureau of Statistics (NBS), Amare et al. (2020) assessed the impacts of the pandemic on food security, labor market participation and local food prices in Nigeria. Their study shows that households exposed to higher COVID-19 cases or mobility restrictions experience an increased level of food insecurity. Their findings indicate that the government's lockdown measures increased households' experience of food insecurity by 13 percentage points and reduced participation in nonfarm business activities by 11 percentage points. Similarly, using the NLPS baseline survey, the World Bank and NBS (2020a) show significant effects of the pandemic on employment and income of households in Nigeria. Based on this study, 42 percent of the respondents who were working before the pandemic were not working in April/May due to the pandemic, with the highest share from the poorest households. According to this study, 79 percent of survey households' total income has decreased since the outbreak of the pandemic. The study further shows that increases in prices of major food items were reported by 85 percent of the households surveyed and the price shock has seriously affected households' food consumption, with 51 percent of all surveyed households obliged to choose reducing household food consumption as a coping mechanism. However, both of the studies cited above were based on a dataset limited to the impacts of the government's policy responses at the start of the pandemic (i.e., only one-month period impacts).[1] As the spread of the pandemic continued over the subsequent months and the government

[1]The new dataset used in Amare et al.'s study has come from the Nigeria COVID-19 National Longitudinal Phone Survey (Round 1), collected from the 20th April to the 11th May 2020. Thus, the dataset covers only the first one-month period since the implementation of the government's strict policy measures in response to COVID-19.

implemented further policy measures, the impacts were expected to be more severe and felt by more households. The present paper attempts to track household-level effects of the pandemic over a period of the first three months (April, May, and June) since the implementation of government policies in response to the spread of the pandemic in Nigeria. Furthermore, our study focused on smallholder farm households sampled from the four USAID/Feed the Future (FtF) focus states and based on a detailed dataset that includes additional information on migration, income changes, households' exposure to COVID-19 and coping strategies.

Figure 1. Confirmed cases of COVID-19 pandemic in Nigeria (Late February-November 2020)



Source: Nigeria Centre for Disease Control (NCDC)

Regarding the sectoral and macroeconomic level impacts of COVID-19 in Nigeria, Andam et al. (2020) find that almost all sectors of the Nigerian economy, including agriculture, were negatively affected by the pandemic. A simulation-based economy-wide analysis on the economic costs of COVID-19 in Nigeria using a Social Accounting Matrix (SAM) model estimated that during the lockdown periods Nigeria's GDP suffered a 23 percent loss due to COVID-19, amounting to USD 11 billion (Andam et al, 2020). The assessment focused on the first five-week lockdown implemented by the federal government across the Federal Capital Territory (FCT) of Abuja and Lagos and Ogun states from late March to early May 2020, the federal lockdown for Kano from mid-April, and the state-level lockdowns that were implemented from mid-April for around seven weeks in eight other Nigerian states. Based on this assessment, the agriculture sector, which serves as the primary means of livelihoods for most Nigerians and accounts for a 70 percent share of the labour force, suffered about a 13.1 percent loss in output (about USD 1.2 billion). The agricultural sector, which was already

facing several challenges such as adverse climate and poor access to modern inputs even prior to the COVID-19 outbreak, is significantly affected by the pandemic. Andam et al.'s (2020) assessment further shows that households lost on average 33 percent of their incomes during the period, with the heaviest losses occurring for rural nonfarm and for urban households. However, their analysis was solely based on modeling; thus studies like the present paper based on observed data and empirical analysis can contribute to our understanding of the actual extent of the effects of COVID-19 on smallholder farm households and provide useful evidence for better policy decisions.

As highlighted above, with COVID-19, the factors hindering the attainment of food security in Nigeria have deepened and exacerbated the vulnerabilities of households to poverty. The impacts are being felt in the form of job losses, income losses, food insecurity, and rising food prices. To assess household-level effects of COVID-19 in Nigeria over a period of three months, we collected data on household incomes, employment, food security and nutrition, and coping mechanisms from a sample of respondents using phone surveys in August and September 2020. We gathered household data on the effects of COVID-19 since its outbreak in Nigeria and the adoption of mitigation policies in March 2020 until up to June 2020, with a sample of 1,000 respondents selected from four Nigerian states. The survey captures household-level effects of COVID-19 until the end of June 2020 and the trends of changes in incomes, employment, food security and the nutrition situation over this period. However, we would like to mention that the findings reported in the present paper are based on the descriptive results from the phone survey data collected in August/September 2020. Further analytical works may be needed to strengthen the evidence base for supporting improved policy decisions.

2. AGRICULTURE SECTOR AND FOOD SECURITY IN NIGERIA – BRIEF OVERVIEW

Agriculture is a major source of employment and economic development in Nigeria, contributing about 23 percent to GDP and a 70 percent share of the labour force. However, the sector suffers from two major challenges: (i) the sector's inability to meet domestic food requirements and (ii) the inability of the sector to export at quality levels required for market success (Nigeria, FMARD, 2016). The sector is yet to fully realize its potential in terms of GDP contribution, import substitution, jobs creation and sustaining food security. Productivity remains low due to inadequate use of yield-enhancing agricultural inputs and technologies (e.g., fertilizer and improved seeds), limited access to extension services, credit constraints, and lack of market linkages. Yields of staple cereals and root

crops in Nigeria are lower than half the world's average (e.g., average yield gaps for rice are more than 75 percent; maize more than 84 percent; and cassava more than 25 percent (WDI, 2014; World Bank, 2018).

About 49 percent of the population of Nigeria was living below the international poverty line of $1.9 per day[2] before the COVID-19 pandemic arrived. With a Global Hunger Index[3] (GHI) score of ca. 30, Food Consumption Score[4] (FCS) of 29 for the poor, and an estimated calorie deficiency of 38 kcal/person/day, food insecurity and a shortage of energy and nutrient-rich foods[5] remain the major challenges in Nigeria. Spending on food makes up 58 percent of household expenditures nationally, but the lowest wealth quintile (more than 80 percent of households) spends more than 75 percent of their resources on food. The country experiences significant seasonal and geographical food price fluctuations due to climate risks' effect on agricultural production; limited access to markets/infrastructure; poor processing, storage, and preservation techniques; and the impact of global food price volatility on imported foods.[6] As more than 50 percent of foods consumed in households (including agricultural households) in Nigeria come from purchased sources, food price volatility has led to substantial instability in food consumption and household's food security. Households suffer from both lack of available nutritious foods and low purchasing power even when food is available. Particularly poor rural households do not have enough financial resources to buy foods with sufficient calories and necessary nutrients. Particularly in the northern parts of the country, the food security situation has been further aggravated by armed conflicts and insurgency since 2009, causing households to experience below-average harvests, limited access to markets and limited participation in off-season income generating activities. Access to food – whether through own-production or using income from cash cropping or nonfarm sources – was already poor and may have gotten worse due to the COVID-19 pandemic and policies adopted to slow the spread of the disease.

3. METHODOLOGY

To track household-level impacts of the pandemic in Nigeria, we implemented a phone survey in selected Nigerian states. We conducted household phone surveys with sample respondents selected from four Nigerian states (Kebbi, Delta, Ebonyi and Benue states), selected to represent the various

[2] World Bank. 2018. *Investing in Human Capital in Nigeria's Future*. Country Focus, Nigeria. Washington, DC.
[3] GHI scale: Low ≤ 9.9; Moderate 10.0-19.9; Serious 20.0-34.9; Alarming 35.0-49.9; and Extremely alarming ≥ 50.0
[4] FCS is a composite score based on dietary diversity, food frequency, and the relative nutritional importance of different food groups. FCS scores 0-21 (poor food consumption); 21.5-35 (borderline food consumption) and above 35 (acceptable food consumption).
[5] Recent data show that that among children under five, 37 percent are stunted (NPC and ICF 2019).
[6] Nigeria imported 2.4 million MT of rice in 2019/2020. According to the NBS, Nigeria spent USD 4.1 billion on food imports.

geopolitical regions of Nigeria. The four study states are all focus states for the FtF activities implemented by the United States Agency for International Development (USAID) in Nigeria. We obtained the lists of smallholder farmers registered with the State Ministry of Agriculture from each of the four study states as follows: Kebbi (20,608), Ebonyi (28,598), Delta (23,592) and Benue (7,073). A total of 79,871 registered farmers were obtained from the four states, of which about 96 percent have active phone lines. At a 99% confidence level and a 5% margin of error, the minimum sample size required for this study was 660 farm households. However, to improve inferences a total of 1,000 smallholder farm households were randomly sampled across the four states, with 250 respondents from each state. For each state, a buffer or reserve sample of 50 households were a priori generated as a backup, which ensured a replacement in the event of unavailability, inaccessibility, or unwillingness of a sampled household during phone survey administration.

The data collection instrument covers household characteristics, exposure to COVID-19, income changes/losses, coping strategies, labour movement/migration, food security and nutrition, and household's awareness and perception of government policy measures. The survey instrument has undergone several reviews and was pilot tested before the final phone interview. The questionnaire was administered to the respondents through mobile phones at the household level. The questionnaire includes six sections: pre-interview information, basic household information, the household's income changes/losses during COVID-19, labor movement and migration, food security experience and nutrition, respondents' knowledge of COVID-19 exposure and personal protective measures, and perceptions to government policy responses to the pandemic. The final questionnaire was programmed in the SurveyCTO software in android tablets. To monitor the adequacy of phone calls and data quality control, a call recorder using the android mobile phone was adopted to record the interviews.

Enumerators conversant with the local languages and field experience in household surveys were recruited and trained rigorously on phone interview facilitation skills, remote communication protocols, interpretation of the questionnaire in local languages, and handling of the SurveyCTO software (in data collection, storing, and uploading to the server). Besides the enumerators, four state coordinators (one per state) who are drawn from the respective State Ministries of Agriculture and are familiar with the local conditions were hired to undertake advance calls of the sampled respondents, inform them about the study and obtain their initial consent. Furthermore, the advance calls kept the respondents abreast of the survey, reduced doubt and eliminated incorrect phone

numbers. The states coordinators compiled the list of all consented respondents during the advance calls and submitted the list to IFPRI researchers. They further served as field coordinators throughout the phone survey administration period. The final phone survey was administered by enumerators to consenting respondents in the advance calls. A total of 5 IFPRI-Nigeria Strategy Support Program (NSSP) researchers, 4 state coordinators and 22 enumerators were involved in the process of data collection (questionnaire design, training, piloting, survey coordination, supervision, and quality control). The survey was administered in August 2020. The data collected was exported from SurveyCTO software into STATA statistical software packages for cleaning and analysis. Basic descriptive statistics such as means, variances, and frequency distributions are used in the analysis and the results are presented using histograms, bar chats, pie charts, and tables.

4. FINDINGS

In this section, we present detailed findings on the effects of COVID-19 on employment, household incomes, and food security and nutrition of rural households in Nigeria. The survey was designed to capture the immediate pre-COVID situations and the changes to these household-level outcomes from the outbreak of the pandemic and adoption of lockdown policies in March 2020 until the end of June 2020, when the government started to ease the lockdown policies. We tracked changes and monthly trends (based on recall) from the beginning of the government policy measures introduced until the end of June 2020 (the months of April, May and June), as these months constitute an important season for major rain-fed agricultural activities in Nigeria. The findings from the survey are organized in the following order: summary statistics on the basic household socio-demographics; household's exposure to the pandemic, including respondent's perception of and satisfaction with the government's policy responses to the pandemic; changes in household's incomes; changes in employment and labour movement; and changes in household's food security and nutrition.

4.1 Basic household characteristics

Table 1 presents the summary statistics of selected variables describing the respondents' characteristics and endowments. The results show that the average age of the household head is 40 years, with at least 80 percent having a formal education. Moreover, it is interesting to note that more than half of the study population (55 percent) had attained above secondary education. Studies (Mutisya et al., 2016; Yeganeh et al., 2018; Ogunniyi et al., 2020) have consistently portrayed education as a dimension of human capital, which can help in the process of making adequate and informed decisions that perhaps can limit or reduce the impacts of the coronavirus pandemic on households. Results show

that sample households have an average of seven members sharing a common meal with at least two members under five years of age. This shows that on average the study households are relatively large and intra-household food allocation may be a bit complex in a situation of food insufficiency. Studies (Ngema et al., 2018; Olagunju et al. 2019; Amare et al., 2020) have shown that large households are more prone to be food insecure and have a high propensity to increasing child malnutrition. About 87 percent of the households surveyed own land with an average size of 3.3 hectares. In terms of the economic activity, about 68 percent of the respondents engaged in agriculture either as farmers or as agribusiness owners along the value chains. For those in crop production, we found that an average smallholder grows three crop types (which are mostly staple), predominantly a combination of crops from cassava, rice, yam, maize, sorghum/millet, soybeans, cowpea, and wheat. In terms of livestock ownership, the result shows that the average number of animals owned are cattle (5.9), goat (9.17), and sheep (7.16). This implies that livestock are an important part of the agricultural system among survey households and can help cushion the negative effects of the pandemic. About 79 percent of respondents indicate that they have access to clean water. This is a relatively high access level compared to the average in Africa South of the Sahara, where only 42 percent of the population have access to clean water (Armah et al., 2018).

Table 1. Descriptive results of selected variables

Variable	Mean	Median	Standard deviation
Age *(years)*	40.00	38.00	11.45
Married *(yes=1)*	0.77	1.00	-
No formal schooling *(1=yes)*	0.05	0.00	-
Primary education *(1=yes)*	0.13	0.00	-
Secondary education *(1=yes)*	0.25	0.00	-
Above secondary education *(1=yes)*	0.55	1.00	-
Household size *(#, headcount)*	7.38	7.00	5.09
Male household members *(#)*	4.02	3.00	2.77
Female household members *(#)*	4.21	4.00	2.98
Household members age less than 5 years *(#)*	2.18	2.00	1.61
Household members age greater than 65 years *(#)*	0.44	0.00	0.81
Farm/ farm-related occupation *(1=yes)*	0.68	1.00	0.47
Nonfarm-related occupation *(1=yes)*	0.28	0.00	0.45
Access to clean water *(1=yes)*	0.79	1.00	-
Own agricultural land *(1=yes)*	0.88	1.00	-
Farm size *(ha)*	3.38	2.00	6.83
Number of crops planted *(#)*	2.58	3.00	1.06
Number of cattle owned *(#, headcount)*	5.90	4.00	7.04
Number of goats owned *(#, headcount)*	9.17	7.00	8.91
Number of sheep owned *(#, headcount)*	7.16	6.00	6.68
Number of poultry owned *(#, headcount)*	145.16	25.00	484.54
Number of pigs owned *(#, headcount)*	33.96	12.00	72.10

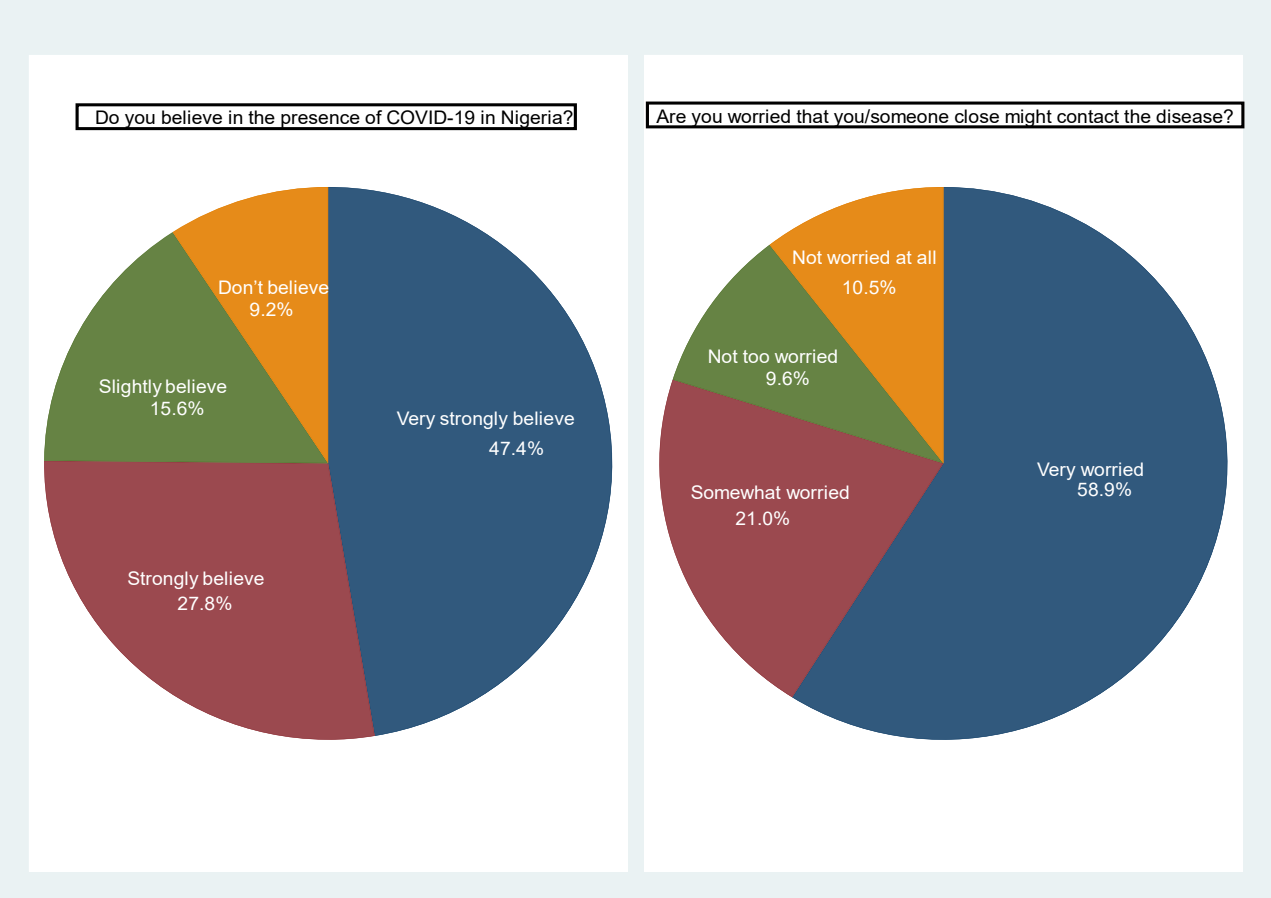
Source: Author's compilation from phone survey data (August/September 2020).

4.2 Households' exposure to COVID-19 and preventive measures

The survey investigated the perceptions of respondents about the severity of the pandemic. Figure 2 presents the distribution of the responses. Respondents were first asked if they believed in the existence of the coronavirus and this was followed by asking how worried they were that they or their family members might fall ill from contracting the disease. The findings reveal that about 75 percent believe in the presence of the virus while only 9 percent of the respondents do not believe the pandemic is real. For the follow-up questions, about 59 percent were somewhat worried about the effect of this pandemic on their own health or that of their close family members. This information can be interpreted in two ways. First, there seems to be a high degree of awareness about the disease among the community, which may imply that the government's sensitization and awareness program has reached the population. Second, respondents seem to adopt preventive measures as about 80

percent of the respondents reported that they are worried for themselves or family members on the possibility of contracting the disease.

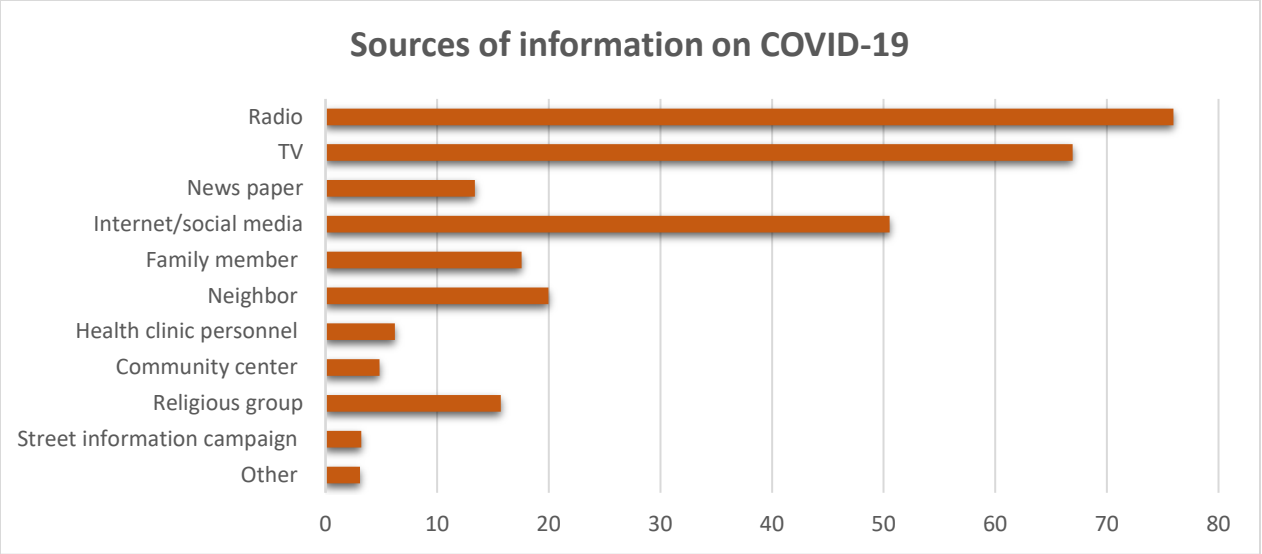
Figure 2. Perceptions of the existence and severity of the COVID-19 pandemic



Source: Authors' compilation from the survey data (August/September 2020).

In terms of the major sources of COVID-19 related information (multiple sources are allowed in the survey), the three key sources of information appear to be radio (75 percent), television (66), and internet/social media (50 percent) (see Figure 3). Having internet/social media access by 50 percent of the respondents seems to imply increasing trends in the accessibility and acceptance of the internet/social media as a credible source of information. Therefore, the government communication approach to its citizens should embrace these three information outlets if a wider coverage is the objective.

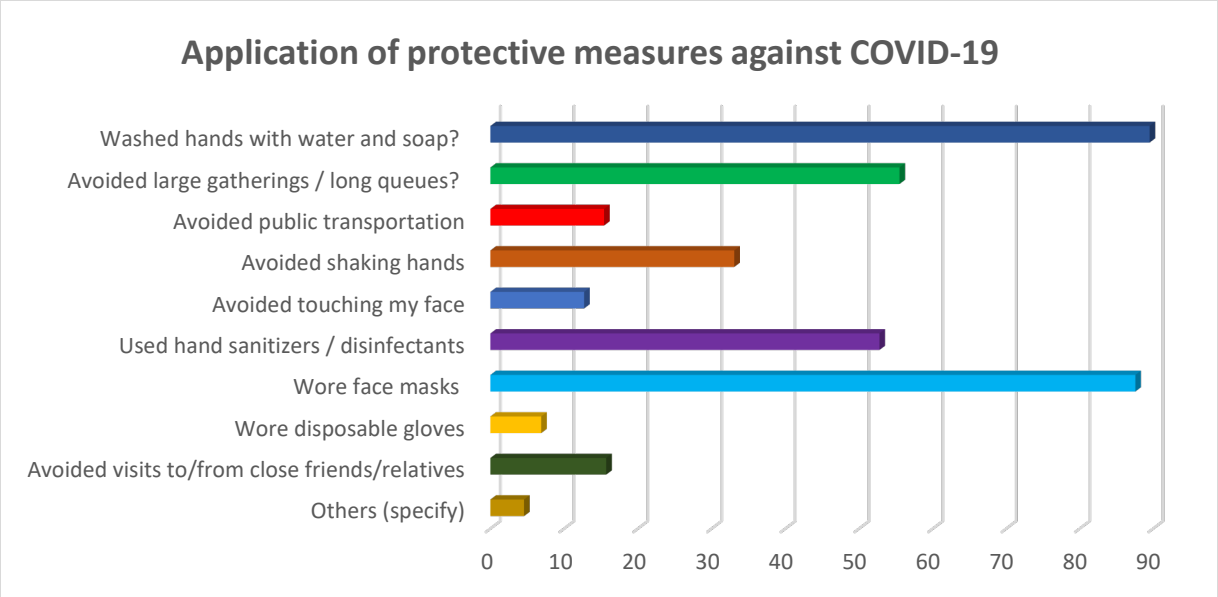
Figure 3. Sources of COVID-19-related information



Source: Authors' compilation from the survey data (August/September 2020).

To understand whether households adopt protective measures, respondents were asked to list different personal protective and social-distancing measures. Figure 4 shows summary of the responses. As shown in Figure 4, hand washing, and the wearing of face masks were the most widely applied measures among the respondents (over 85 percent of respondents reported that they adopted these personal protective measures). This is followed by avoidance of large queues or gatherings, the use of hand sanitizers, and avoiding hand shaking. As some of these protective measures, such as the use of hand sanitizers, involve financial expenditures, for some households who are already struggling to overcome the income shocks caused by the virus such personal protective measures were considered as "luxury" goods. In such an instance, the government's response should consider free distribution or providing such materials at low cost or supporting local production and distribution of such essential protective materials.

Figure 4. Application of personal protective measures against COVID-19

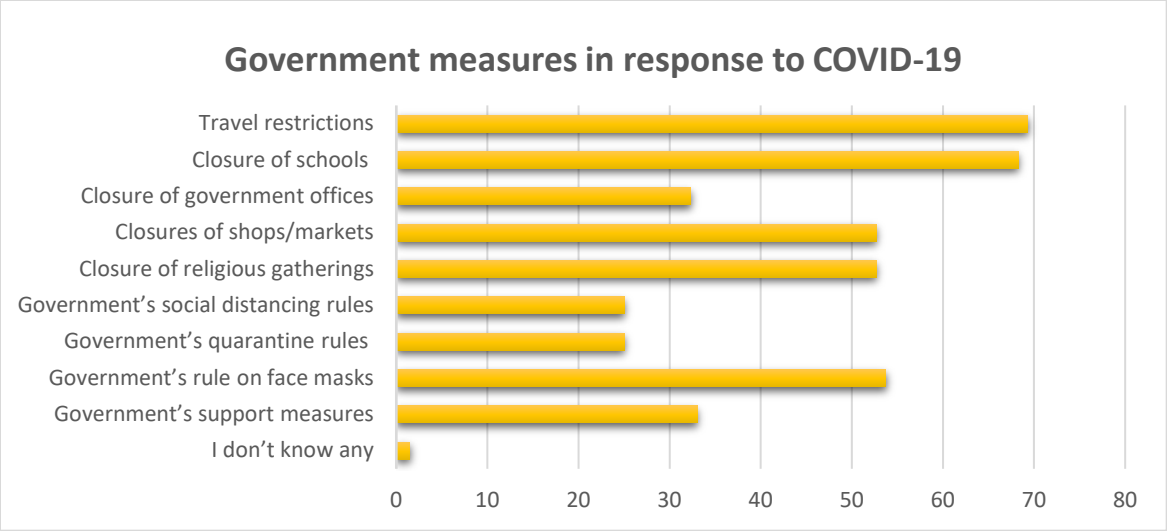


Source: Authors' compilation from the survey data (August/September 2020).

4.3 Households' perception of the government's COVID-19 policy measures

Our survey includes questions to acquire respondents' knowledge and perception of the government's policy measures in response to COVID-19. To this end, respondents were asked to list government COVID-19 related policy measures they know of since the outbreak of the pandemic. Figure 5 presents the distribution of these responses. Travel restrictions, school closures, closures of shops and markets, closure of religious gatherings, and the government's rule on face masks were the major policy measures widely disseminated among the communities (from over 50 percent to just under 70 percent of the respondents were aware of one or more of these measures). Others measures such as social distancing and quarantine rules were not well recognized by the majority of the respondents.

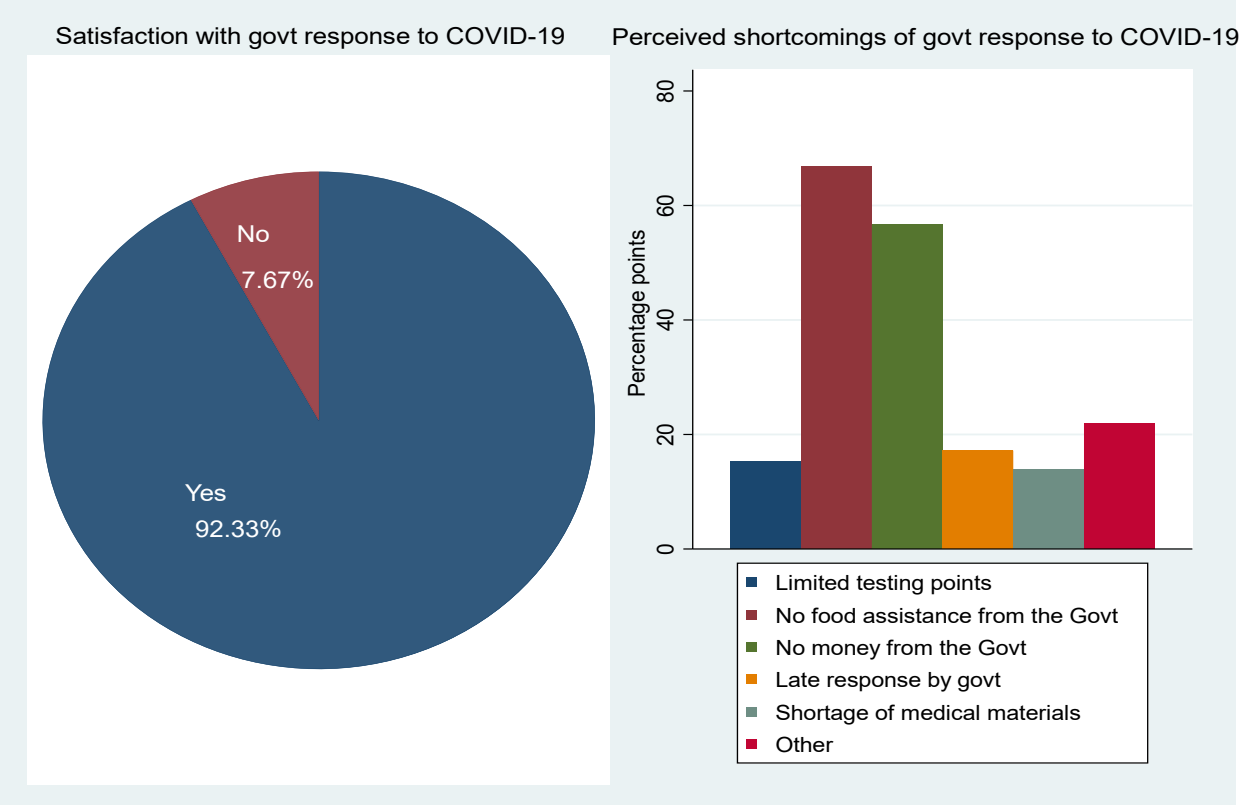
Figure 5. Households' perception of the government's COVID-19 policy measures



Source: Authors' compilation from the survey data (August/September 2020).

Figure 6 demonstrates the satisfaction of the respondents with government responses to COVID-19 and the perceived shortcomings of government's responses to the pandemic.

Figure 6. Perceptions of households to the government's response to COVID-19

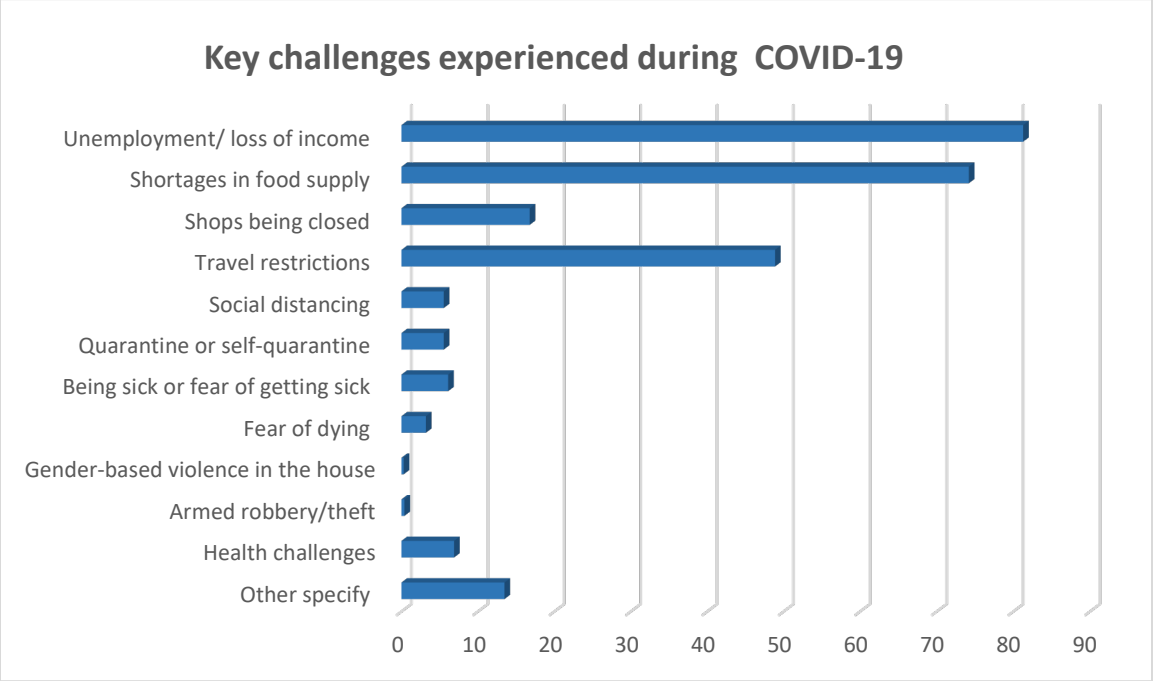


Source: Authors' compilation from the survey data (August/September 2020).

As shown in Figure 6, about 92 percent of the respondents were pleased with government responses to the pandemic. However, respondents pointed out that increasing food and cash assistance should be strengthened and widened to cushion vulnerable households from falling into acute food insecurity.

Finally, respondents were asked to prioritize the key challenges they faced during the pandemic (multiple-response question). As depicted in Figure 7, 80 percent of the respondents indicated that loss of household income was the primary challenge, followed by the shortages in food supply (73 percent) and travel restrictions (48 percent). As a long-term strategy, building the resilience of Nigerian households as well as increasing the preparedness of the government against economic shocks such as the COVID-19 pandemic should be prioritized in the government agenda.

Figure 7. Key challenges experienced by Nigerian rural households during COVID-19



Source: Authors' compilation from the survey data (August/September 2020).

4.4 Income losses, agricultural activities, and coping mechanisms

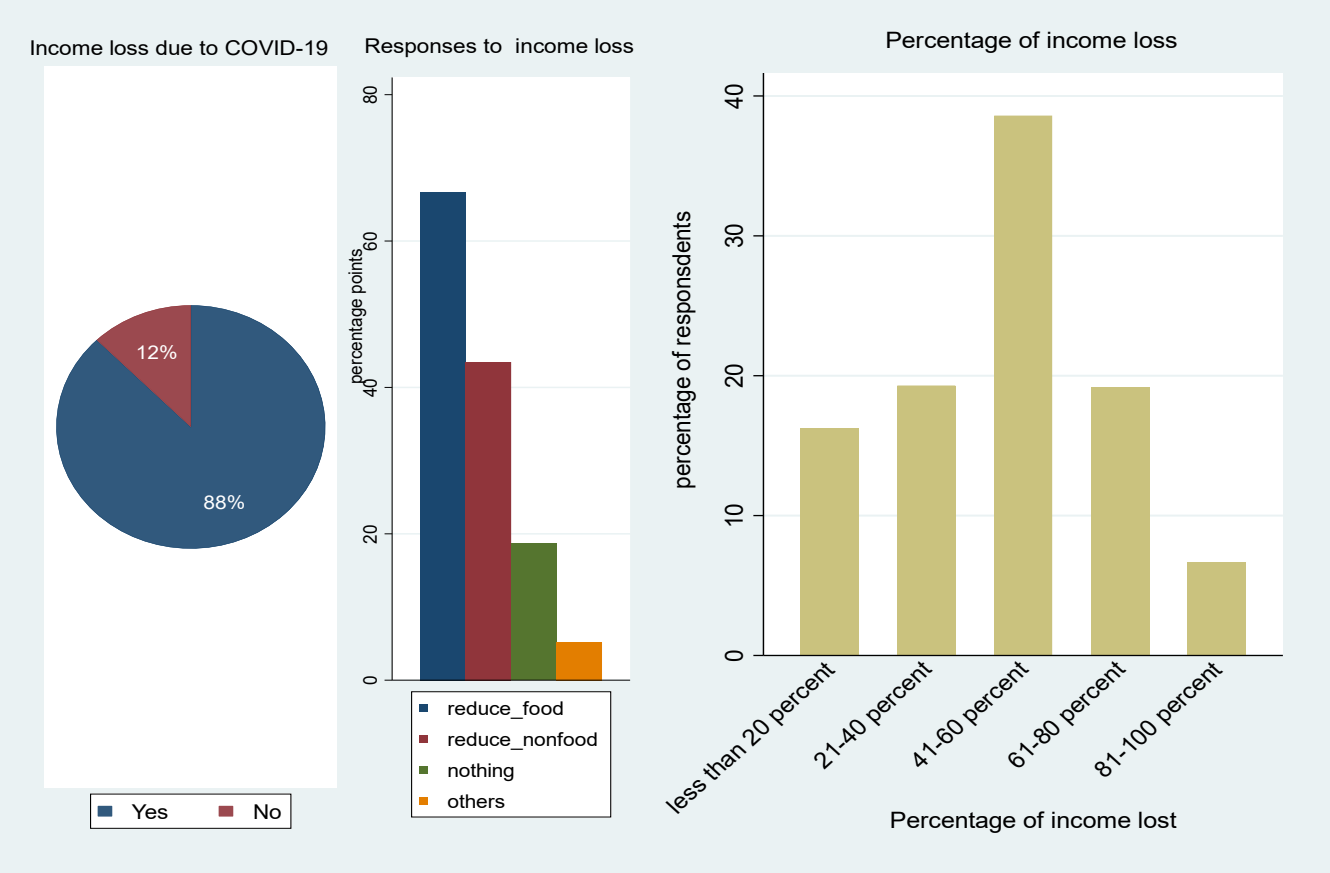
This section focuses on assessing the impact of the pandemic on households' livelihoods (i.e., changes in income, employment, and how households cope with the pandemic). To capture the pandemic's effect on household income, respondents were asked whether they had experienced changes in their household income as a result of the restrictive policy measures imposed due to the pandemic (a "yes" or "no" response question) and then were asked, as a follow-up question, to provide estimated

monthly percentage changes (losses) in their income over the study period. Figure 8 shows the distribution of the responses on the impact of COVID-19 on households' income. We found that about 88 percent of survey households reported that they had experienced income loss during the pandemic, of which about 64% households experienced an income loss of over 40% compared to their income level in the immediate three months period of pre-COVID. This is a consistent result with the recent national-level finding conducted by the NBS, where 79 percent of the respondents reported that their households' total income has decreased since the outbreak of the pandemic (World Bank and NBS, 2020a). Similar studies (GAIN, 2020; OECD, 2020) also found that farming household income losses may be compounded because of the COVID-19 pandemic. These findings as well as our study results show a high impact of the pandemic on the incomes of households. In response to the loss in income, respondents adjusted their household expenditure to suit their limited resources. This adjustment is also driven by the rising cost of both food and non-food items because of the rising logistical and distribution costs incurred in making these goods available to the consumers. Our survey results indicate that about 66 percent of the respondents reduced consumption of food items as an immediate response to the pandemic, while 43 percent reduced non-food consumption. This follows a priori expectations, since expenditure on food items takes up a high proportion of total household expenditures of low-income households. Hence, the reduction of both the quality and quantity of food items may aggravate the situation of food and nutrition insecurity in farming households (Amare et al., 2020; Akseer et al., 2020; Headey et al., 2020).

Besides household income loss, the restrictions on the movement of goods and people across different states resulted in a slowdown of most economic activities. For agriculture, the challenge is not only the availability of food, but the impasse placed on the food marketing channel that creates a temporary glut which in turn affects the prices of these perishable items. This equally affected farmer's access to agricultural inputs. The outbreak and spread of the pandemic unfortunately coincided with the beginning of the main rainy season for agriculture in Nigeria. Although there are some geographical variations, the rainy season in Nigeria usually starts from April and continues to the end of October. It is the season of heightened agricultural activities by farmers. In a country where a rain-fed agricultural system is the most significant production system (the percentage of irrigated areas among all cultivated areas is as low as 1 percent) (Takeshima and Adesugba, 2014), disruptions in inputs supply chains, labour movement, and transport restrictions can have significant negative effects on the agriculture sector. In most parts of Nigeria, the planting of the two main staples crops (rice and maize) starts either in April or May (which may extend up to June in Northern Nigeria), with follow-

up activities of weeding and harvesting. With the COVID-19 pandemic, the disruptions of these activities, especially planting and supply chains due to lockdown measures, affected agricultural activities and is expected to lower agricultural output later in the year. This would inevitably extend to disruptions of agricultural employment and food markets, which ultimately affect household incomes and consumption.

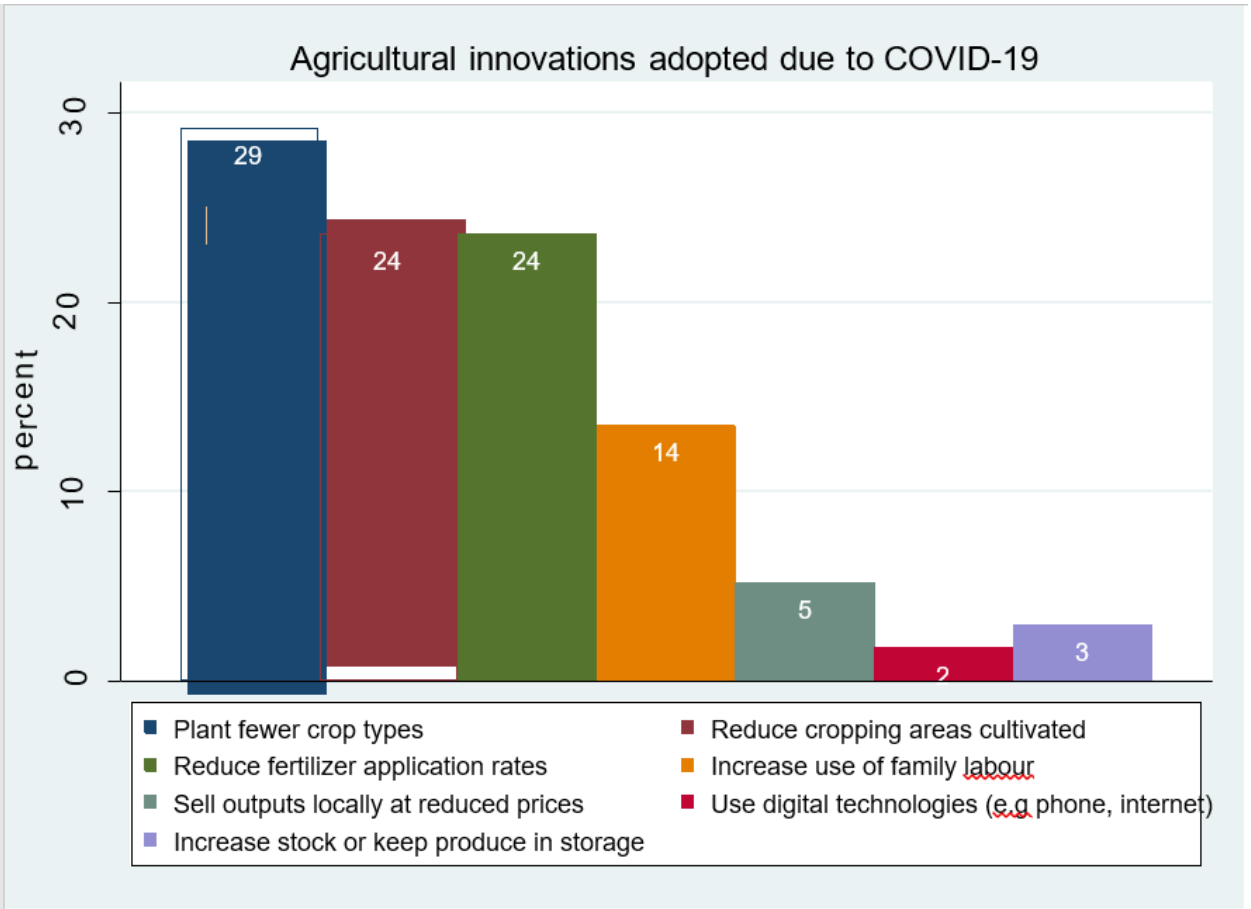
Figure 8. Effect of COVID-19 on household income and responses to income loss



Source: Authors' compilation from phone survey data (August/September 2020).

As a coping strategy to the changing conditions, farming households adopted certain innovative measures in their agricultural activities (Figure 9). For respondents who adjusted their operations, about 29 percent of the respondents indicated that they planted fewer crops, 24 percent reduced the cropping area cultivated and the fertilizer application, and 14 percent increased their use of family labor. Studies (OECD, 2020; Lal, 2020) have associated labor shortages in agriculture due to movement restrictions imposed as a result COVID-19 pandemic in some developing countries, which will affect farms accessing hired farm labor.

Figure 9. Agricultural innovation adopted in response to COVID-19 restrictive measures

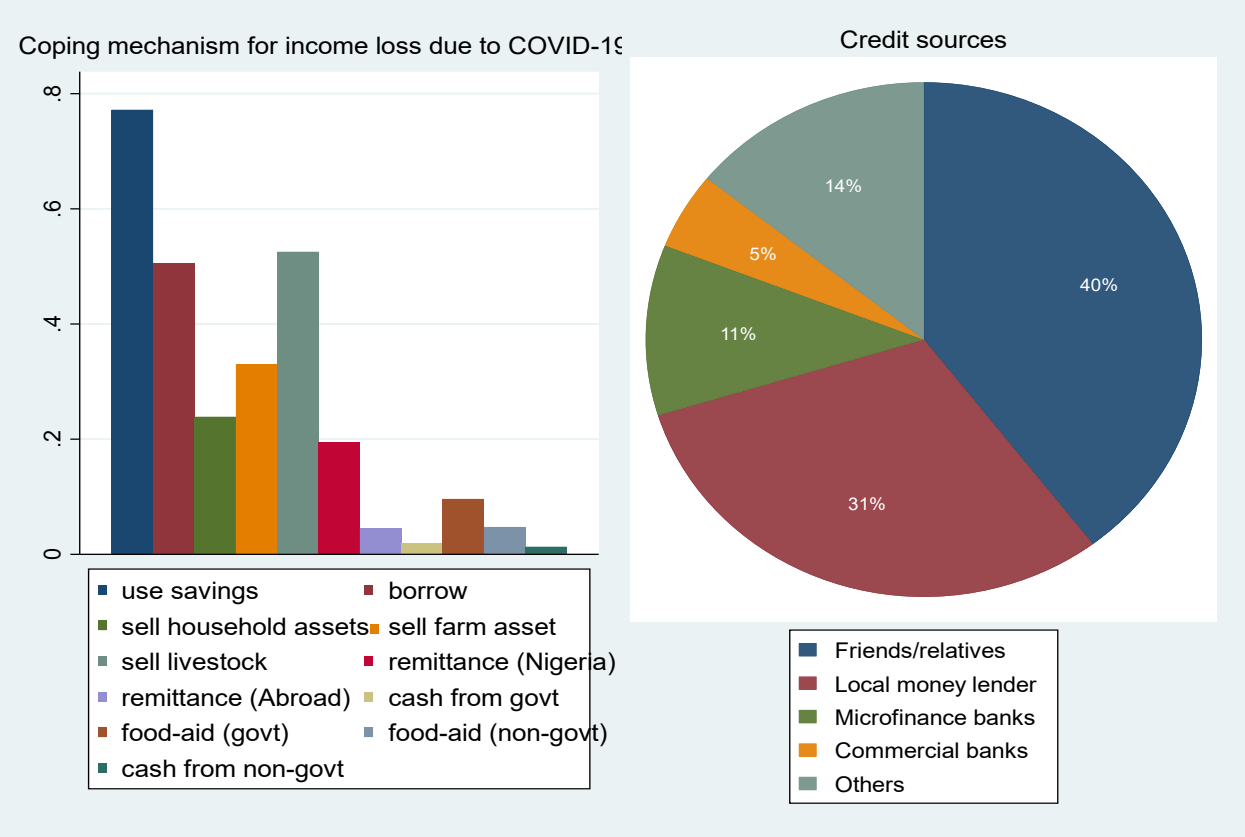


Source: Authors' compilation from the survey data (August/September 2020).

Income loss was one of the major challenges for most of the households. Figure 10 demonstrates the resilience and coping strategies for meeting their financial needs. It is observed that 78 percent of the respondents dipped into their savings, while 50 percent borrowed the additional income from alternative sources. When inquiring about these financial sources, 40 percent of respondents received funds from friends and relatives, 30 percent from local lenders, 10 percent from the non-commercial banks, and only 4 percent from commercial banks. Other sources included religious groups, credit purchase, and association groups summing up the remaining 14 percent of the respondents. Credit access for vulnerable groups has been a long-standing problem in Nigeria, most especially in a rural location where low financial inclusion prevails (Balana and Oyeyemi, 2020). Nigerian households have remained credit-constrained due to a blend of supply-side-related constraints, mainly due to lack of adequate collateral, and demand-side factors related to risk perceptions, high transaction costs, inadequate access to information, and limited access to extension services (Balana and Oyeyemi, 2020).

Figure 10 also shows that 23 and 32 percent of the respondents sold household and farm assets, respectively, while more than half of the survey population sold their livestock. The demand for food during COVID-19 perhaps explains the ease of the sales of the livestock. Finally, Figure 10 demonstrates that 19 and 4 percent of the respondents received remittances from family and friends within Nigeria and the diaspora, respectively. The recent World Bank report predicts a decline in remittances to Africa south of the Sahara by as much as 23 percent because of the COVID-19 pandemic (World Bank 2020b). Despite concerted investments and policy responses announced by the government and non-government organizations to support the vulnerable with food and cash assistance to compensate for the income shocks caused by the pandemic (Andam et al. 2020), the results indicate that less than 10 percent of the respondents received the needed assistance.

Figure 10. Households' coping mechanism for income loss due to COVID-19

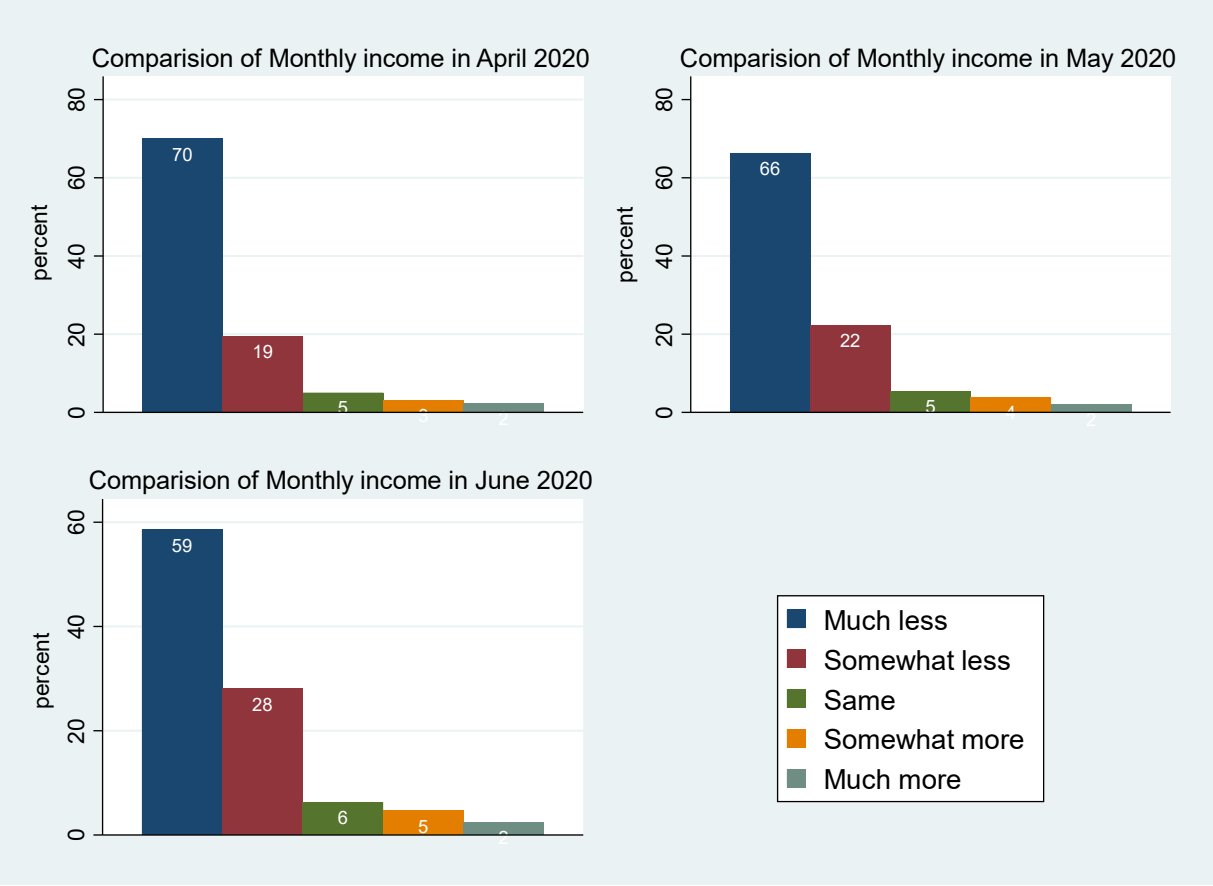


Source: Authors' compilation from the survey data (August/September 2020).

The three panels in Figure 11 provide monthly comparisons and trends of income changes over the three-month period (April, May and June) against the pre-COVID income levels in the same period of the previous year. Monitoring monthly income alongside the evolution of the crisis demonstrates

the resilience of the Nigerians. Figure 11 shows that as we progress along the three months during the pandemic (April, May and June 2020), a lower proportion of respondents considered a "much less" reduction in income as compared to the pre-COVID incomes in the same period of the previous year. This perhaps could be interpreted as an adjustment to a new living standard or the stability of income. Our finding here is consistent with the findings from a national-level COVID-19 impacts survey in Nigeria by the World Bank and the NBS. Their survey in June 2020 shows that compared to the baseline (May survey), where almost all of the respondents who used to work before the start of COVID-19 stopped working, in the June survey the corresponding figure has fallen to 29 percent, indicating that the share of respondents working recovered substantially: the negative income effect has eased off as the lockdown restrictions were eased in June.

Figure 11. Comparison of monthly income between April-June 2020 and the immediate pre-pandemic period (January–March 2020)

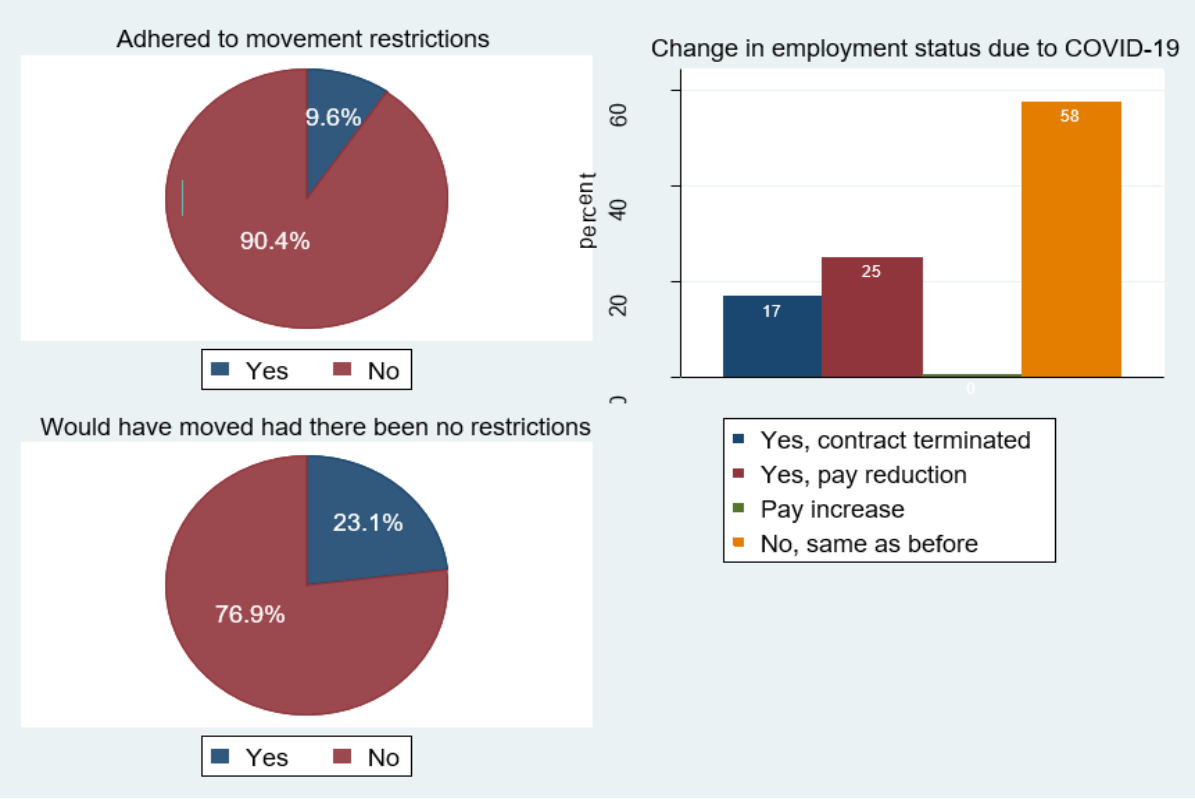


Source: Authors' compilation from the survey data (August/September 2020).

4.5 Labor movement and migration

As the toll of confirmed cases with the virus rises, governments across the globe, including Nigeria, shut their borders and impose restrictions on the movement of goods and people to quell the spread. However, the movement of people can be more difficult to control, especially when motivated for livelihoods purpose. Figure 12 demonstrates the impact of COVID-19 on labor migration and mobility. About 90 percent of the respondents adhered to movement restrictions. Furthermore, the survey investigated government enforcement of the regulations on mobility. For this, respondents were asked if there were restrictions preventing their movement. About 23 percent reported that they would have migrated if the restrictions were not stringent. Following travel bans, border closures and quarantine measures which created significant disruptions on economic activities, the gravity of the impact was dependent on the nature of the employment. It is expected that self-employed or small and medium entrepreneurs (SMEs) who are causally or informally employed would be experiencing the most financial insecurity. The survey also inquired about the impact of COVID-19 on their job security. About 58 percent indicated that there was no change in the conditions, 25 percent received a reduction in income and 17 percent had their contract terminated.

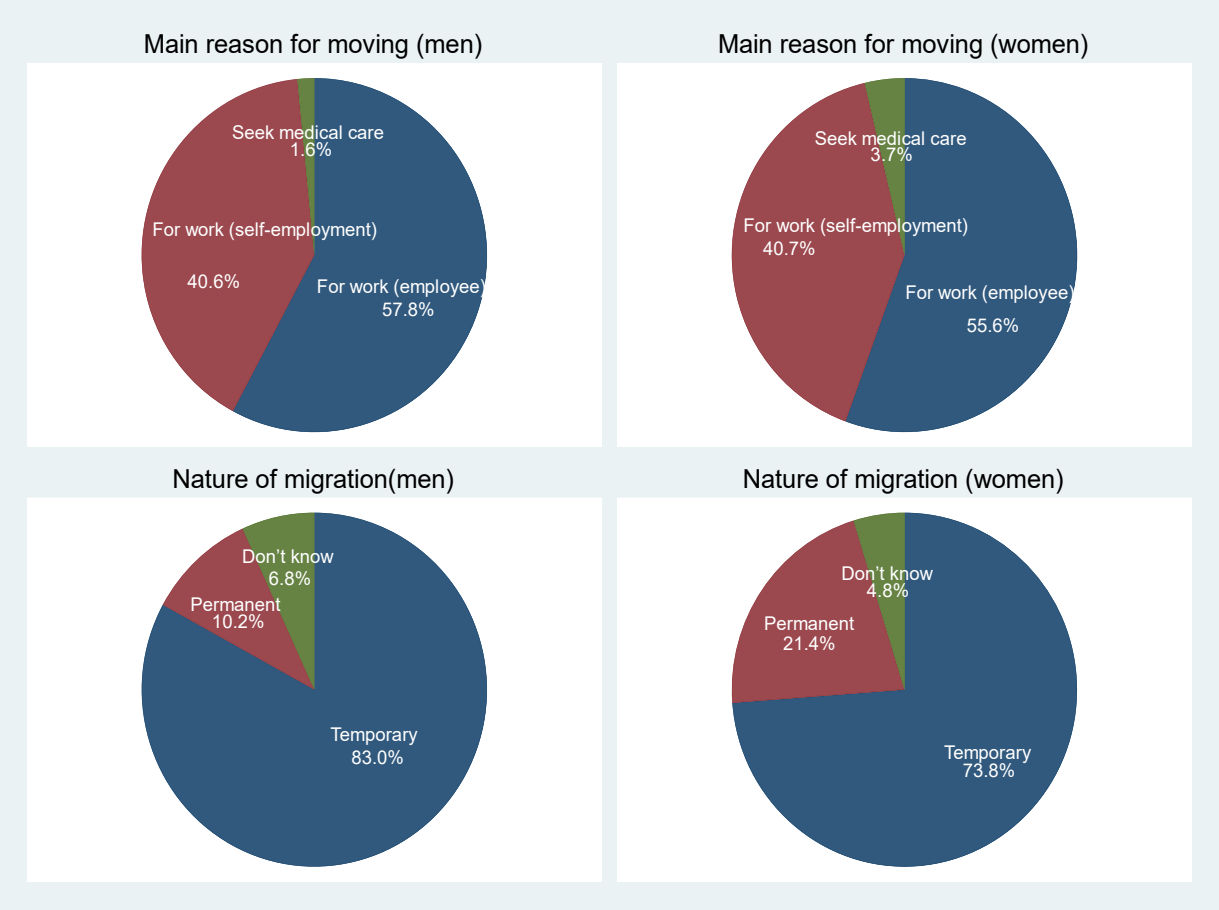
Figure 12. The effects of COVID-19 on labor migration and employment



Source: Authors' compilation from the survey data (August/September 2020).

Figure 13 presents the purposes and the nature of migration undertaken, disaggregated by gender. Our findings show that for both men and women, about 41 percent were self-employed people who migrated for work and less than 58 percent were employees whose employer requested their movement for work purposes. However, we observe a slight difference in the context, in that more women tend to travel to seek out medical care. In terms of the nature of the migration, 83 and 73 percent of men and women, respectively, migrate temporarily, while 10 and 21 percent migrate permanently.

Figure 13. Purpose and the nature of migration disaggregated by gender



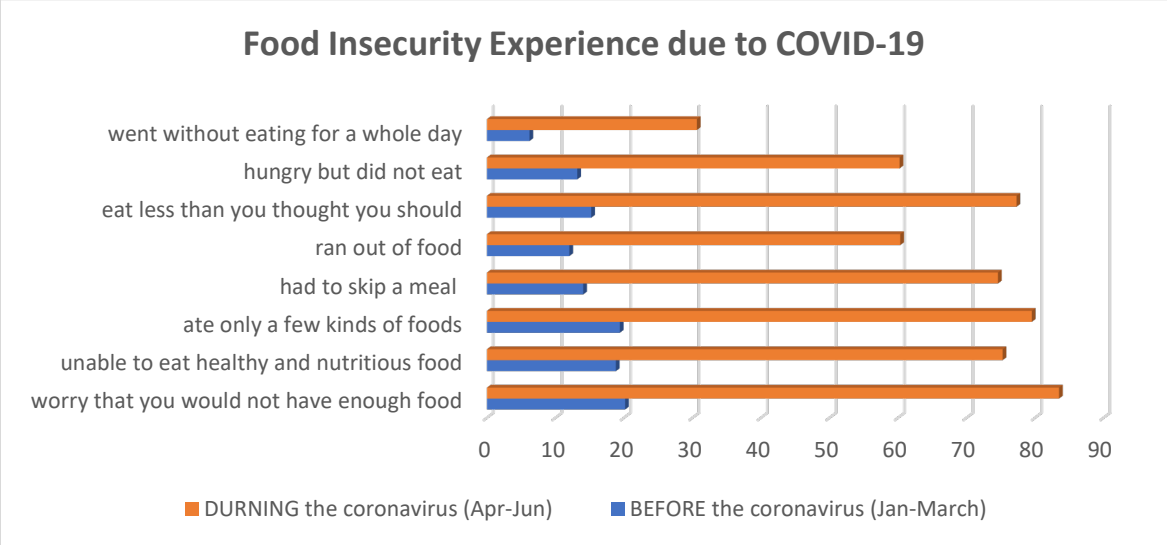
Source: Authors' compilation from the survey data (August/September 2020).

4.6 Household food insecurity experience

The food supply chain is a complex web of interlinked activities involving various actors such as producers, processors, and marketers to enable food accessibility to the consumer. The disruption of the functioning of the food supply chains and the food systems has devastating effects on food security through its recognized four pillars: availability, access, stability, and utilization. Across the globe, rising

incidence of food insecurity has been recorded because of the pandemic, most especially in developing economies where limited resources are available for implementing social protection and safety nets (Devereux et al., 2020; GAIN, 2020). Our survey employed a food-insecurity-experience scale consisting of nine questions to determine how the situation differs from the period before the incidence of the pandemic. Figure 14 illustrates variation along the scale of those who indicated that they experienced an increase in these food insecurity measures. The sharp contrast between the months just before the pandemic (January to March) and during the pandemic (April to June) indicates the vulnerability of households in terms of food insecurity. For instance, over 80 percent of the respondents indicated that they worry that they would not have enough food to eat during COVID-19 (April - June) whereas the situation was less than 20 percentage points before COVID-19 (January - March). In addition, 77.3 percent admitted that they eat less food than they thought they should during COVID-19 (April - June) against just 15.2 percent who reported that they eat less food than they thought they should before COVID-19 (January - March). This further suggests a negative impact of COVID-19 on household food security.

Figure 14. Food insecurity experience due to COVID-19



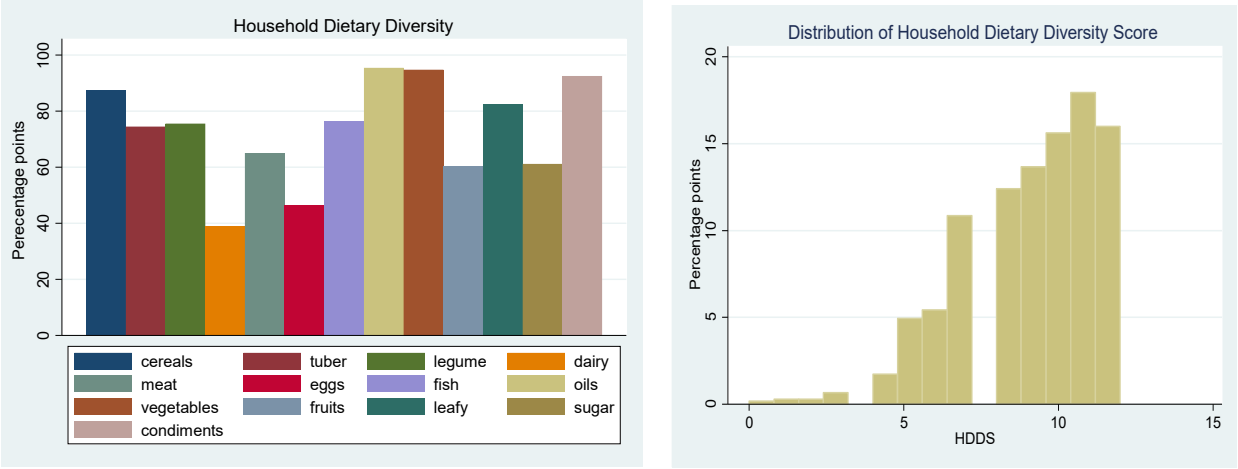
Source: Authors' compilation from the survey data (August/September 2020).

4.7 Assessment of household dietary diversity scores (HDDS)

Dietary diversity is a commonly used indicator for a household's nutrition. In theory, the diversity of food items consumed can be used to make an inference about household access to micronutrient consumption, which is the main cause of nutrition insecurity or hidden hunger (Ruel et al, 2003;

Kennedy et al, 2011). We computed the HDDS using a dummy approach of 7 days memory recall of the 12 food groups. To better reflect a quality diet, the number of different food groups consumed is calculated, rather than the number of different food items consumed. Therefore, a household earns a score of 1 if it consumed a particular food group and a 0 score otherwise. Figure 15 illustrates the HDDS and the diversity of food consumed at the household level. We found that more than 70 percent of households have a diversity score above 6. Specifically, the result shows that 16 percent of the respondents have a 12-out-of-12 diversity score. However, as shown in Figure 15; dairy (39 percent), eggs(43 percent), fruits and oils (57 percent), and meat (62 percent) were the least consumed food items by the survey households (Figure 15). These food items are rich sources of protein, calcium, and multiple vitamins necessary for a healthy diet. It is also interesting to note that these four food items are locally sourced, which therefore underlines either a fundamental problem of food availability or lack of household purchasing power or the shortcomings of these foods in the supply chain.

Figure 15. The distribution of household dietary diversity during the pandemic

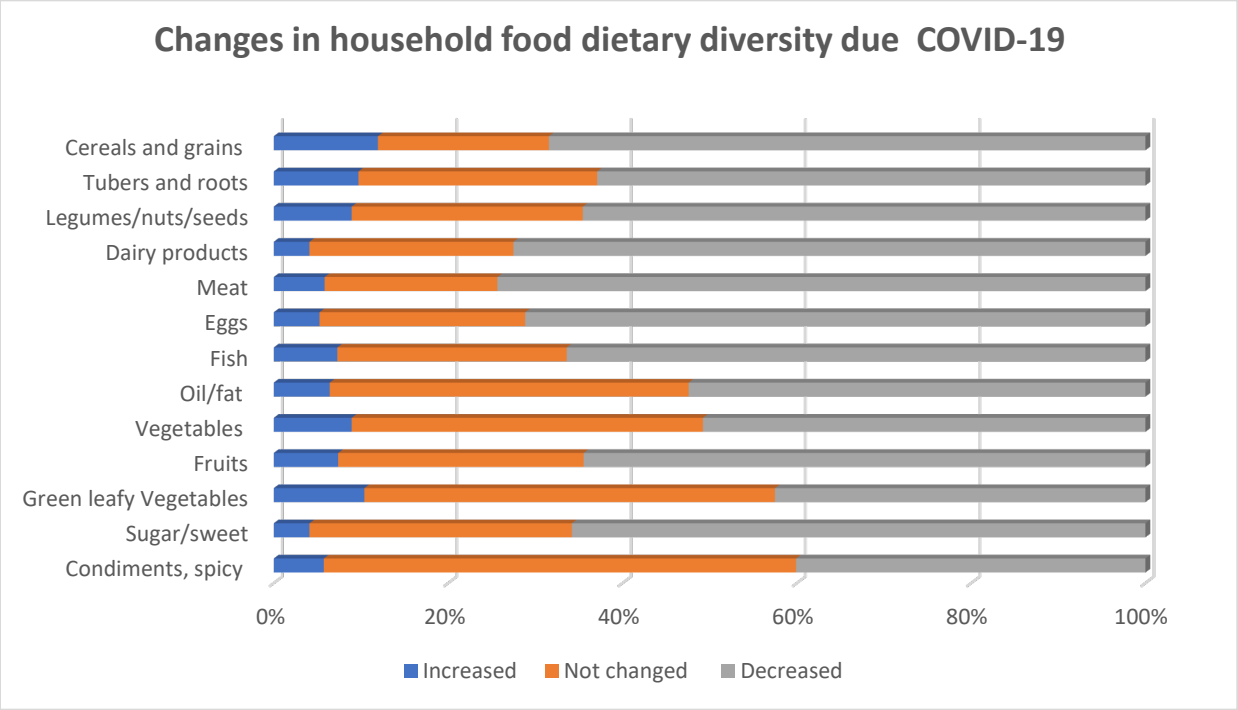


Source: Authors' compilation from the survey data (August/September 2020).

Importantly, Figure 16 shows a change in the consumption of various food items as we compare the immediate pre-COVID period (January-March) to during the COVID period (April-June). As indicated in Figure 16, the quantity consumed of the various food items was reduced. Dairy, meat, eggs, and fruits remain the most reduced or the least consumed items during the COVID period. Our findings corroborate a national-level longitudinal household survey on COVID-19 impacts in Nigeria (World Bank and NBS, 2020b), conducted in the same period as our survey, which reported that about 35-59% of households who need to purchase staple foods like yams, rice and beans reported that they were not able to buy them. The majority of respondents reported that the shocks from food price

increases have seriously affected households' food consumption, with 51 percent of all households obliged to choose reducing household food consumption as a coping mechanism.

Figure 16. Changes in household food dietary diversity due to COVID-19



Source: Authors' compilation from the survey data (August/September 2020).

5. SUMMARY AND CONCLUSION

Nigeria was the first country in Africa south of the Sahara to confirm a positive case of COVID-19. To curb the spread of the pandemic and limit the social and health crisis of the population, the government introduced restrictive policy measures including travel restrictions, lockdowns, and restrictions of several economic and social activities. Using survey data collected from a sample of rural households selected from four Nigerian states, this study investigated the effects of the COVID-19 pandemic on incomes, employment or jobs, and the food security situation of smallholder farming households in Nigeria. Based on the analysis of the survey data, the key findings include the following:

(1) Household income: Results from the survey show that 88 percent of the households reported that they lost about 50 percent of their income since mid-March until up to the end of June. This finding is consistent with the results from nationally representative households sample data, where

79 percent of households reported that their total incomes have decreased since the outbreak of the pandemic (World Bank and NBS, 2020a). Such significant income losses forced households to reduce food consumption. About 66 percent of respondents reported that they reduced food consumption as an immediate response to the pandemic, while 43 percent reduced non-food consumption. However, as we progress along the three months during the pandemic (April, May, and June 2020), a much lower reduction in income was reported, showing a positive result from the easing of policy restrictions.

(2) **Agricultural activities:** As the period from April - June covers a key agricultural season (land preparation, planting, and weeding) for major staple cereal crops in Nigeria, these agricultural activities were negatively affected or modified due to the pandemic. Travel restrictions and limited human movements cause significant disruptions in supply chains (agricultural inputs, nonfarm business inputs, food marketing, etc.). Our results reveal that about 29 percent of the respondents reported they planted fewer crops, 24 percent reduced cropping area cultivated, 24 percent reduced fertilizer application rates, and 14 percent increased their use of family labor. A national-level COVID-19 impact monitoring survey in Nigeria (World Bank and NBS, 2020b) also found that of the households engaged in agricultural activity, 38 percent reported having to modify their farming due to COVID-19, of whom 25 percent reported delaying planting time, 52 percent reported reducing the area they planted, and 30 percent reported planting crops that take less time to mature.

(3) **Employment:** Since our survey mainly focused on smallholder farm households, most respondents did not directly report job losses despite high-level income loss and disruptions in agricultural activities. However, a national-level survey, including farm and nonfarm households (World Bank and NBS, 2020a; 2020b; 2020c), reported significant job loss during the restriction, especially in April and May, when 42 percent of respondents (mainly those in agricultural value chains, trade, and services) who were working before the outbreak reported that they were not currently working due to COVID-19. But the gradual lifting of restrictions results in allowing people to going back to work in June and July, when the employment situation bounces back very close to the pre-pandemic level. The three-series reports based on the national surveys in May, June and July, however, claim that there is still instability in job markets.

(4) **Household food security situation**: COVID-19 significantly worsened the food security situation of many households in Nigeria, especially poorer households which were not able to

purchase staples due to income losses and lack of money. Food prices' increase since the outbreak of the pandemic appears to have further worsened access to food for low-income households. The sharp contrast between the months just before the pandemic (January to March) and during the pandemic (April to June) indicates the vulnerability of households in terms of food insecurity. Over 80 percent of the respondents indicated that they worry that they would not have enough food to eat during the months of April - June, as compared to the situation where less than 20 percent of the households worried in terms of food insufficiency in the immediate period before COVID-19 (January - March). In addition, 77 percent admitted that they eat less food than they thought they should during April – June, whereas the corresponding figure was only 15 percent just before COVID-19 (January - March). Furthermore, households reported that consumption of proteins (mainly eggs, meat, and dairy products and fruits) were highly reduced.

Our findings support the government's ongoing support policies to cushion vulnerable households from falling into a severe food insecurity situation. Moreover, though descriptive, our results indicate the need to put policy measures in place to improve agricultural supply chains, including inputs distribution channels and marketing of agricultural produce to mitigate the impacts of the pandemic on smallholders.

REFERENCES

Akseer, N., Kandru, G., Keats, E. C., and Bhutta, Z. A. 2020. "COVID-19 Pandemic and Mitigation Strategies: Implications for Maternal and Child Health and Nutrition." *The American Journal of Clinical Nutrition* 112 (2): 251-256.

Amare, M., Abay, K. A., Tiberti, L., and Chamberlin, J. 2020. *Impacts of COVID-19 on Food Security: Panel Data Evidence from Nigeria*. IFPRI Discussion Paper. No. 01956. Washington, DC: IFPRI.

Amare, M., Balana, B., and Ogunniyi, A. 2020. *The Role of Agriculture in Reducing Child Undernutrition in Nigeria*. IFPRI Working Paper No. 62. Washington, DC: IFPRI.

Andam, K. S., Edeh, H., Oboh, V., Pauw, K., and Thurlow, J. 2020. "Estimating the Economic Costs of COVID-19 in Nigeria." IFPRI Working Paper No. 61. Washington, DC: IFPRI.

Armah, F. A., Ekumah, B., Yawson, D. O., Odoi, J. O., Afitiri, A-R., and Nyieku, F. E. 2018. "Access to Improved Water and Sanitation in Sub-Saharan Africa in a Quarter Century." *Heliyon* 4 (11): e00931. doi: 10.1016/j.heliyon.2018.e00931

Balana, B., and Oyeyemi, M. 2020. *Credit Constraints and Agricultural Technology Adoption: Evidence from Nigeria*. IFPRI Working Paper No. 64. Washington, DC: IFPRI.

Devereux, S., Béné, C., and Hoddinott, J. 2020. "Conceptualising COVID-19's Impacts on Household Food Security." *Food Security* 12 (4): 769-772.

GAIN (Global Alliance for Improved Nutrition). 2020. *Impact of COVID-19 on Food Systems: A Situation Report I*, Edition 3. May 13.

Headey, D., Heidkamp, R., Osendarp, S., Ruel, M., Scott, N., Black, R., and Walker, N. 2020. "Impacts of COVID-19 on Childhood Malnutrition and Nutrition-Related Mortality." *The Lancet* 396 (10250): 519-521.

IMF (International Monetary Fund). 2020. "Policy Responses to COVID-19." Retrieved on September 20, 2020. https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19

Kennedy, G., Ballard, T. and Dop, M. C. 2011. *Guidelines for Measuring Household and Individual Dietary Diversity*. Rome: Food and Agriculture Organization of the United Nations.

Lal, P., Kumar, A., Kumar, S., Kumari, S., Saikia, P., Dayanandan, A., Adhikari, D., and Khan, M. L. 2020. "The Dark Cloud with a Silver Lining: Assessing the Impact of the SARS COVID-19 Pandemic on the Global Environment." *Science of the Total Environment* (732): 139297.

Mutisya, M., Ngware, M. W., Kabiru, X C. W., and Kandala, N. B. 2016. "The Effect of Education on Household Food Security in Two Informal Urban Settlements in Kenya: A Longitudinal Analysis." *Food Security* 8 (4): 743-756.

NPC (National Population Commission) Nigeria and ICF. 2019. *2018 Nigeria Demographic Health Survey: Key Findings*. Abuja, Nigeria, and Rockville, Maryland, US: NPC and ICF.

Ngema, P. Z., Sibanda, M., and Musemwa, L. 2018. "Household Food Security Status and Its Determinants in Maphumulo Local Municipality, South Africa." *Sustainability* 10 (9): 3307.

Nigeria, Federal Ministry of Agriculture and Rural Development (FMARD). 2016. *The Agriculture Promotion Policy (2016 –2020) Building on the Successes of the Agricultural Transformation Agenda, Closing Key Gaps Policy and Strategy Document.* Abuja, Nigeria

OECD (Organisation for Economic Co-operation and Development). 2020. "COVID-19 and the Food and Agriculture Sector: Issues and Policy Responses." Accessed December 3, 2020. https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/

Ogunniyi, A. I., Mavrotas, G., Olagunju, K. O., Fadare, O., and Adedoyin, R. 2020. "Governance Quality, Remittances and Their Implications for Food and Nutrition Security in Sub-Saharan Africa." *World Development* 127 (1): 104752.

Olagunju, K. O., Ogunniyi, A. I., Awotide, B. A., Adenuga, A. H., and Ashagidigbi, W. M. 2019. "Evaluating the Distributional Impacts of Drought-Tolerant Maize Varieties on Productivity and Welfare Outcomes: An Instrumental Variable Quantile Treatment Effects Approach." *Climate and Development* 1-11.

Ruel, M. T. 2003. "Is Dietary Diversity an Indicator of Food Security or Dietary Quality? A Review of Measurement Issues and Research Needs." *Food and Nutrition Bulletin* 24 (2): 231.

Takeshima, H., and Adesugba, M. 2014. *Irrigation Potential in Nigeria—Some Perspectives Based on Factor Endowments, Tropical Nature, and Patterns in Favorable Areas*. IFPRI Discussion Paper. No. 01399. Washington, DC: IFPRI.

World Bank and Nigeria, National Bureau of Statistics (NBS). 2020a. *COVID-19 Impact Monitoring, Nigeria*. Synthesis Report (April/May—Survey Rounds 1). Abuja, Nigeria.

World Bank and Nigeria, National Bureau of Statistics (NBS). 2020b. *COVID-19 Impact Monitoring, Nigeria*. Synthesis Report (June—Survey Round 2). Abuja, Nigeria.

World Bank and Nigeria, National Bureau of Statistics (NBS). 2020c. *COVID-19 Impact Monitoring, Nigeria*. Synthesis Report (July—Survey Round 3). Abuja, Nigeria.

World Bank. 2018. *Investing in Human Capital in Nigeria's Future*. Country Focus, Nigeria. Washington, DC.

World Bank. 2020b. "Brief: Food Security and Covid-19." Accessed December 3, 2020. https://www.worldbank.org/en/topic/agriculture/brief/food-security-and-covid-19.

World Bank. 2014. *World Development Indicators 2014*. Washington, DC: World Bank. Accessed December 3, 2020. https://openknowledge.worldbank.org/handle/10986/18237.

World Bank. 2020a. "World Bank Predicts Sharpest Decline of Remittances in Recent History." Press Release. Accessed December 3, 2020. https://www.worldbank.org/en/news/press-release/2020/04/22/world-bank-predicts-sharpest-decline-of-remittances-in-recent-history.

Yeganeh, S., Motamed, N., NajafpourBoushehri, S., and Ravanipour, M. 2018. "Assessment of the Knowledge and Attitude of Infants' Mothers from Bushehr (Iran) on Food Security Using Anthropometric Indicators in 2016: A Cross-Sectional Study." *BMC Public Health* 18 (1): 621.

ALL IFPRI DISCUSSION PAPERS

All discussion papers are available **here**

They can be downloaded free of charge

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
www.ifpri.org

IFPRI HEADQUARTERS
1201 Eye Street, NW
Washington, DC 20005 USA
Tel.: +1-202-862-5600
Fax: +1-202-862-5606
Email: ifpri@cgiar.org