Research Paper

Future of Food: Journal on Food, Agriculture and Society
10 (1) February 2022

Social assistance and food security during covid-19 pandemic lock-down: insights from Nigeria

R.A. Ayo-Lawal [1*], O.E. Ilevbare [1], K.O. Omotoso [1,2], E.A. Omimakinde [1], O. Ukwuoma [1]

[1] Science Policy & Innovation Studies Department, National Centre for Technology Management, Federal Ministry of Science, Technology and Innovation, PMB 012, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria
[2] DST/NRF SARChI Chair in Social Policy, College of Graduate Studies, University of South Africa, Pretoria, South Africa.

* Corresponding author: ayoronkelawal@gmail.com

Data of the article

First received : 18 May 2021 | Last revision received : 20 November 2021
Accepted : 15 January 2022| Published online: 15 February 2022
DOI : 10.17170/kobra-202110144902

Keywords

Covid 19 pandemic; social assistance; household food insecurity; food security; Nigeria

Nigeria, a fast-growing country, has been food insecure prior to the Covid-19 pandemic. Local agricultural production cannot satisfy it's ever-growing population's food and nutrition needs. This state was aggravated by the Covid-19 pandemic lockdown which the government adopted to stem the spread of the virus. To cushion the effects of the lockdown, social assistance of diverse forms from varying sources were supplied. This study assesses the effect of the lockdown order on household food security level, and the coping strategies that were adopted. Also, it examines the kinds of social assistance received and how such mitigated food insecurity status among households that benefitted. The study uses used a secondary dataset from the Nigeria COVID-19 National Longitudinal Phone Survey. The National Bureau of Statistics collected the data in March, June, and July, targeting periods before, during, and when the lockdown was gradually eased, respectively. The results revealed that most households experienced different forms of shock during the lockdown, notably increases in food prices and disruption of farm activities. Furthermore, only a few households received social assistance, main from state governments and religious bodies. The assistance received had a positive effect on household food security during the lockdown period.

1. Introduction

Social assistance in times of crises

In most times of crises, such as violence, poverty, war, natural disasters and pandemic, the populace is disproportionally affected, with the poor, disabled and the politically marginalised mostly affected. Thus, underscoring the significance of social safety nets (SSN). Social assistance (SA) or SSN describes intervention programs that are non-contributory and primarily put in place to support poor or vulnerable people and families to survive a period of scarcity, deprivation, hunger, and susceptibility (HLPE 2012; World Bank 2018). SA has been emphasized and provided by governments and non-government organizations at various national, regional, and international levels. Food and Agriculture Organization of the United Nations (2016) extensively discussed the organisation's engagement and support for different countries in times of crisis. Another example of such intervention is the Supplemental Nutrition Assistance Program (SNAP) of the United States government, described as the most important anti-hunger program. According

to the U.S. Agriculture Department, the programme assisted about 40 million low-income Americans in affording a nutritionally adequate diet[1]. Similarly, the cash transfer and grant system programs of the Government of South Africa, especially amid the Covid-19 pandemic was laudably appraised. In a recent report by the World Bank, the government reportedly spent over 3 percent of the GDP and above 15 percent of total government spending to provide sizeable benefits to the poorest households during the Covid-19 pandemic. In the same vein, during natural disasters, aids have been provided to victims to provide immediate succor. For instance, a few hours after the 2003 major earthquake that struck the city of Bam, Kerman Province in south-eastern Iran, the Iranian Red Crescent Society (IRCS) swung into action. The IRCS deployed search and rescue teams, provided temporary shelter, distributed food and non-food items, and supplied emergency water and medical services to victims (Ghafory-Ashtiany and Hosseini, 2008).

1.1 Food insecurity and associated issues

Nowadays, food insecurity is one of the critical concerns for the increasing global population. According to the USAID (1992), food security occurs "when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life." A family is said to be food secured when every member has access to adequate food for an active and healthy daily life and when the household occupants do not experience starvation or food scarcity (Otaha 2013).

Food insecurity, especially at the household level, is a major cause of increased vulnerability to poverty and hunger, affecting many families around the world. This makes untold households go to bed hungry on a daily basis (Jessup-Varnum 2018). This could result from several factors leading to food crises including stresses of unstable prices of food, climatic changes and drought, limited natural resources, and intermittent emergencies such as pandemic/epidemic that result in food shortage, either acute or long term.

The consequential effects of food insecurity are enormous, including poverty, malnutrition, undernutrition, hunger, and food shortage/insecurity. These unwholesome conditions kill millions of people worldwide annually and have been described as the root causes of human insecurity and factors besetting sustainable development (FAOUN 2016). Food insecurity is more pronounced in the sub-Saharan Africa region, with the largest percentage of hunger and undernourishment globally (Jessup-Varnum 2018). It, therefore, constitutes a major challenge for most African governments.

1.2 Food insecurity in Nigeria

In Nigeria, prior to the pandemic, food insecurity was a serious issue due to several factors impeding the growth and productivity of the agricultural sector. The latter was the mainstay of the economy at independence when it contributed about 63.49 percent to the Gross Domestic Product (GDP) in 1960 (CBN 1980; Nwankpa 2017). However, the table was turned when crude oil was discovered leading to the neglect of other sectors including agriculture. From 2013 to 2019, the contribution of agriculture to Nigeria's GDP did not exceed 26% at any time (PwC 2020), notwithstanding the sector's potential. Other challenges besetting the sector include climate change, gender inequality, cattle rustling in the North, continued insurgency in many parts of the country, conflicts (constant farmer-herdsmen, religious, tribal, etc.), among others (Otaha 2013; World Bank 2019).

These issues have negatively impacted food availability, accessibility, affordability and hence food security in the past decades. Consequently, Nigeria has not performed well in various food security indices at national and international arenas. For instance, The Global Food Security Index (GFSI) of the Economist Intelligence Unit (2019)[2], rated Nigeria 86 amidst 107 nations in 2013 and 94 out of 113 countries in 2019. Similarly, the general household survey conducted in 2015 by the NBS reported that the estimated value of moderate and severe food insecurity in the country were 26.4 and 19.6 percent, respectively.

Much recently, in 2019, the government ordered par-

[1] https://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap.
[2] Global Food Security Index 2019 Strengthening food systems and the environment through innovation and investment. Available online: https://foodsecurityindex.eiu.com/index. Accessed 20/12/2020

ISSN-Internet 2197-411x OLCL 862804632

tial (August) and later full (October) closure of all land borders in the country. This heightened the prices of some common food commodities, including rice. This became obvious as the food inflation increased from 13.2% in August 2019 to 14.7% in December 2019 and rose to 15% in April 2020.

1.3 COVID-19 pandemic

COVID-19, an infectious disease caused by coronavirus has become a global pandemic, adversely impacting and causing socio-economic "downturn" in over 200 countries with millions of individuals and families affected and over two million fatalities (World Health Organization 2020). The adverse impacts of COVID-19 have been enormous on the socio-economic outlook of human lives coupled with its attendant challenges on all sectors of the global economy, including agriculture, manufacturing, tourism, health, education, and service.

The impacts and challenges of the pandemic among African countries are enormous and far-reaching. This is apparent in the affected countries' needs for foreign aids from better-positioned economies in terms of fiscal and supply of medical equipment (testing kits, vaccines, protective kits, etc).

Nigeria recorded its first case of COVID-19 on February 27th, 2020, and has since experienced a steady increase in the number of cases across the states of the country. As part of measures to curtail the spread of this highly infectious disease, the Nigerian government, through the Presidential Taskforce (PTF) set up to manage the COVID-19 pandemic, came up with some guidelines for the country (NCDC 2020). Notable among the guidelines was the strict lockdown order which was enforced between the periods of March and August 2020. However, different stages of lockdown easing were experienced across different states of the country between the periods depending on the level of assessed risk of transmission. Normalcy gradually returned to businesses and agricultural activities during the mid of lockdown period. Other measures enforced were compulsory use of face masks, closure of businesses except those offering essential services, schools, and markets.

The associated challenges of the pandemic have been reported to include job losses, declined/stopped business revenue, slashed income, disruption of agricultural and farming activities, hike in food prices, increased poverty, hunger, and malnutrition. These occurrences were sudden and unexpected, resulting in difficulty and lack of capacity of households and individuals to afford basic living needs. This has been suggested to further aggravate the situation of malnutrition and food shortages in Nigeria. During the period of the lockdown order, two things were of utmost priority to all classes of people - good health and food. To cushion the effects of the lockdown period on individuals and households, monetary aids in the form of safety nets and palliatives (majorly food items) were provided to indigent individuals from various sources. The federal and state governments as well as non-governmental organizations (NGOs), religious bodies and well-meaning individuals provided funds for social welfare and palliatives to lessen the burden associated with the pandemic. As laudable as the measures and steps taken, the system and mechanism of distribution and the actual impacts of the initiatives are pivotal to be documented, especially within the months of lockdown period.

1.4 COVID-19 and food insecurity in Nigeria

Among the most grievous challenges associated with the COVID-19 pandemic is its negative effect on food security. The lockdown and movement restrictions order during the pandemic affected nearly all stages of the food value chain (Andam et al. 2020). These resulted into reduced agricultural activities, unavailability, inaccessibility, and unaffordability of many food commodities due to sharp hikes in food prices, and of course, panic buying in many parts of the country. There was also reduced income flow to many households, given that a vast majority (about 80%) of Nigerians work in the informal sector (e.g., road peddlers, transporters, petty traders, and artisans, private firms). This resulted to a decrease in family income, increase indigence, and higher possibility of long-term brunt, including greater levels of hunger (Human Rights Watch, 2020). In all, restrictions in movement due to the pandemic engendered substantial economic costs that, in turn, threatened lives, jeopardized livelihoods, and deepened poverty (Alani and Olanrewaju 2020).

As a result, many households who ordinarily are not considered poor and already vulnerable ones experienced transitory food insecurity, facing the risk of

hunger and poverty.

Consequently, Nigeria was one of the 44 countries that FAO globally recognized to require external food assistance in March 2020[3], and food inflation rose to an average of 15% in April 2020. Most of the northern states of the country, particularly Borno, Yobe, and Adamawa states which have been raged with terrorism and banditry, were most affected. During the pandemic, FAO reported that a majority of Nigeria's population could not afford food from local markets due to a lack of income coupled with a hike in food prices. Another gruesome effect of COVID-19 disease on Nigerian food security includes disruption of 2020 farming season, unbalanced food distribution and supply chain, depletion of food reserves, and decreased farmers' income, amongst others (PwC 2020). Globally, one of the immediate public policy responses of countries to the Covid 19 pandemic is the creation or expansion of social assistance schemes (CGAP 2020; World bank 2020).

1.5 Social assistance during Covid-19

Worldwide, state-led social assistance disbursements during the pandemic were estimated to have benefited nearly 2 billion people, including over a billion new social assistance payment recipients (CGAP 2020; Gentilini et al. 2020). In India, APU (2020) reported that among the 5,000 respondents interviewed, 74% of vulnerable households received at least one round of relief package, while about 50% received cash disbursement. Additionally, about 33% of the respondents obtained loans to meet with their expenses during the same period. According to CGAP (2020), social assistance was better administered to intended recipients in climes with already established humanitarian services and cash transfers.

In response to the pandemic, the Federal government of Nigeria launched the COVID-19 Fiscal Stimulus to support the economy[4] and deployed three major social interventions. First, three months' interest holidays were rolled out to about two million small-scale business owners on Tradermoni, Marketmoni, and Farmermoni [5]. These loans were distributed by the Bank of Industry, Bank of Agriculture, and the Nigeria Export and Import Bank. The second was to increase the number of beneficiaries in the national food and cash transfer scheme from 2.6 to 3.6 million households during the pandemic lockdown (Eranga 2020). The scheme was an already established social assistance payment program that targeted the country's poor and vulnerable households. In addition, the amount paid to recipients was increased from ₦5,000 monthly to ₦20,000. The third measure was the donation of foodstuffs to states' governments and the Federal Capital Territory, Abuja, for distribution to low-income families in their respective states. Food from the national grain reserve was also distributed to citizens. Additionally, the private business organizations collaborated with the Central Bank of Nigeria to establish CACOVID (Coalition Against COVID-19) towards the end of the first quarter of 2020. Cash donations from this group are kept by the CBN as COVID-19 Support Account (CBN 2020). Coalition Against COVID-19 donated above ₦30.1 billion ($72 million) at the end of June 2020 (Ejiogu et al. 2020).

Even though these social assistances have benefited some people, there were allegations of irregularities, lopsidedness, corruption, lack of transparency, and poor accountability in their distributions (Ejiogu et al. 2020; Eranga 2020). The beneficiaries were mainly poor and vulnerable in the country and were determined/selected by the Ministry of Humanitarian Affairs, Disaster Management, Social Development, and states governments. There were no comprehensive, all-inclusive parameters for determining the beneficiaries, especially such that would capture those who became poor and food insecure as a result of the pandemic. Andam et al. (2020) found that additional

[3] http://www.fao.org/giew/country-analysis/external-assistance/en/

[4] Ministry of Finance (2020) https://statehouse.gov.ng/wp-content/ uploads/2020/04/HMFBNP-Final-Press-Statement-on-Responding-to-the-COVID-19-06.04.2020-v.7.docx-1.pdf

[5] Tradermoni, Marketmoni and Farmermoni are three arms of the Government Enterprise and Empowerment Programme (GEEP) initiated by the Federal Government of Nigeria on the platform of its National Social Investment Programme. They were created to provide zero-collateral soft loans to traders/artisans, market women and farmers respectively.

ISSN-Internet 2197-411x OLCL 862804632

measures than what was provided were needed specifically for people residing in urban areas with very low income and rural families with non-agricultural trades, for instance, those who lost their jobs or income.

This study sets out to examine and analyze the impacts of the lockdown order on food (in)security and other variables listed as food prices, location of household, sources, and frequency of assistance and palliatives shocks experienced during the period and the various coping strategies adopted by households using differential trend analysis method. The specific objectives are:

(1) Assess how households were affected and social assistance received during the lock-down period.

(2) Examine the level of food (in)security during the pandemic in terms of food accessibility, food affordability, and feeding pattern of Nigerians.

(3) Assess the effect of social assistance obtained on food security during the lock-down period.

2. Methodology

2.1 Research design

This study uses a secondary dataset from the Nigeria COVID-19 National Longitudinal Phone Survey (COVID-19 NLPS) involving a nationally representative sample of 1,950 households. The data was collected by National Bureau of Statistics with the support of the World Bank. The households sampled in this survey were drawn from the sample of households interviewed in Wave 4 2018/2019 of the General Household Survey Panel.

2.2 Variables of study

The study investigates the effect of the lockdown period on the lives of Nigerians by analyzing the relationship between the outcome variable and the explanatory variables.

In the survey, the shock was measured by asking respondents of each household if they have been affected by shock(s), in terms of job losses, non-farm business closure, theft/looting of cash and other property, disruption of farming, livelihood, fishing activities, increases or fall in prices of agricultural or business inputs, food insecurity, increases in prices of main food items consumed, illness, injury or death of income earning member of household since mid-March. The response was either Yes or No. Furthermore, respondents were asked how they cope with the shock(s). Respondents were able to choose from the following options: sale of agricultural or non-agricultural assets, engaged in additional income-generating activities, receiving assistance from friends & family, borrowed from friends & family, taking a loan from a financial institution, credited purchases, delayed payment obligations, sold harvest in advance, reduced food consumption, reduced non-food consumption, relied on savings, received assistance from NGOs, took advanced payment from the employer, received assistance from the government, was covered by insurance policy, did nothing, and others.

Receipt of social assistance was measured by finding out from the respondents if any member of the household received any assistance from any institution such as the government, international organisations, religious bodies in the form of food, direct cash transfers, other in-kind transfer (excluding food). The response was either Yes or No. Moreover, the main source of the assistance was obtained by asking them if the assistance was from the federal government, State government, local government, community organization/ cooperative, NGOs, international organization, religious bodies, and others. Food security was measured by asking the respondents if they or any other adult in the households had to skip a meal because there was not enough money or other resources to get food, had to run out of food because of a lack of money or other resources, had to go without eating for a whole day because of a lack of money or other resources during the last 30 days. Other pertinent information includes socio-demographic data on households' region of residence, rural/urban setting, type of household, and age.

2.3 Sampling procedure

A total of 4,976 households selected randomly across the country's six geo-political zones formed the target frame from which the sample size of this study was drawn. This consists of the households interviewed in

wave 4 of the General household survey in January/ February 2019. To easily reach study respondents from the 2019 survey, household heads' phone numbers and 3 other close relatives were documented for subsequent studies. These contact numbers were subsequently used to get in touch with the selected respondents for the 2020 monitoring survey. This study sample was thus drawn randomly from the pool of 4,976 households in order to have a representative sample.

In total, over 3000 phone numbers were selected from the target frame using a balancing sampling approach (sex and education status of household head, household size, location) in order to retain the characteristics of the frame.

2.4 Sample size

This study used three rounds (1, 2, and 3) of the GHS panel data. Though a sample size of 1800 was targeted, a larger number (an additional 60%) was contacted to cater for non-response and loss of interest in the study. Subsequently, the study's sample size varied across the rounds due to non-response, unreachable phone lines and the likes.

2.5 Response rate

Round 1

Out of the 3000 household targeted, about 2070 sampled households were successfully contacted in the first round of the survey, out of which 1950 (representing 94%) were completely interviewed.

Round 2

Out of the 1950 sampled households in round 1, only 1852 were successfully contacted, and 1820 (93.3%) were completely interviewed in Round 2.

Round 3

Again, all 1950 interviewed at the baseline round (1) were targeted for round 3, except for 25 households that refused to attempt Round 2. Summarily, only 1790 households were successfully interviewed in Round 3.

Table 1 gives a breakdown of households that form a complete panel across the three rounds. Data was collected through the help of Computer Assisted Telephone Interview (CATI).

2.6 Research instrument

The questionnaire was used to elicit relevant data from the sampled households in April/May, June, and July 2020 from the head of the participating households. The survey was conducted in three rounds with slight changes in the questionnaire used at each stage.

2.7 Data analysis

To facilitate nationally representative estimations and account for potential sample attrition, weights for the final sample were calculated in several stages and are updated for each survey round. These calculated weights were applied in the analyses, making the results nationally representative. The analyses rely on a balanced panel obtained from merging the first, second, and third rounds of the NLPS, conducted in April/May, June, and July, respectively. Our indicators of interest were similarly measured across the three surveys. We excluded the second round in some cas-

Table 1. Period of interview and sample size per collection round

Cycle	Period	Sample size (Households)
1st Round (baseline)	April/May	1950
2nd Round	June	1820
3rd Round	July	1790

ISSN-Internet 2197-411x OLCL 862804632

es because it did not contain information on some variables of interest. We further applied descriptive and inferential statistical tools to analyze variables of interest and establish the relationship between the explanatory and outcome variables. Descriptive statistics such as percentage, frequencies, and weighted average were employed to explain the pattern of our indicators across the rounds, while inferential statistical tools such as regression as used to explain the relationship between the explanatory variables and food (in)security at 5% level of significance.

3. Results

3.1 Shocks and coping strategies during the COVID-19 pandemic lockdown

Table 2 presents the number and percentages of households affected or not affected by shock because of COVID-19 pandemic lockdown in Nigeria during rounds 1 and 3 surveys. During round 1, about 93% of households reported being affected by a shock. By round 3, the percentage of households affected by shock had increased slightly to about 94%. This result suggests that COVID-19 led to many households experiencing increases in the number of shocks in terms of job losses, nonfarm business closure, theft/looting of cash and other property, disruption of farming, livelihood, fishing activities, increases or fall in the prices of agricultural or business inputs, food insecurity, increases in the prices of main food items consumed, illness, injury or death of an income-earning member of a household, amongst others.

Consequently, households had to devise various means and coping tactics to alleviate the negative effect of COVID-19 shocks. Some of the strategies practiced by households to cope with the shocks experienced during the lockdown period of the COVID-19 pandemic are presented in Table 3. During the earlier lockdown period (round 1), many households (21%), about one out of every five, reduced food consumption as a coping strategy. Additionally, due to reduced income during the period, many households (12.1%) relied on savings, while some (6%) claimed to receive assistance from friends & family; some others did nothing. During the round 3 survey, reducing food consumption remained a leading strategy adopted by most respondents to cope with the Covid-19 lockdown. This is followed by reliance on savings. Pertinent to note is that the percentage of households (13.7%) that engaged in food reduction and those that relied on savings reduced to 13.7% and 7.1% respectively by round 3, as they were the main coping strategies adopted by many households. More so, no household attested to collection of loan from a financial institution, neither did any receive assistance from NGOs or government nor took advanced payment from the employer.

Regarding the assistance received by households dur-

Table 2. The number and percentages of households affected by shock since the start of COVID-19 pandemic lockdown.

Shock	Rounds		
	1	3	Total
Yes	1,816	1,691	3,507
	92.9%	94.4%	93.6%
No	138	100	238
	7.06%	5.58%	6.36%
Total	1,954	1,791	3.745
	100%	100%	100%

Pearson chi2(1) = 12.7010 Pr = 0.000

ing the COVID-19 pandemic lockdown, Figure 1 illustrates the percentages of households who received assistance from any institution such as the government, international organizations, and religious bodies in the form of food, direct cash transfers, other in-kind transfers (excluding food). One striking feature of Figure 1 is that a high percentage of households claimed they did not receive any form of social assistance in terms of food, direct cash transfers, and other in-kind transfers (excluding food) during the COVID-19 pandemic lockdown. The figure revealed that, in round 1, about 16% of the sampled households received social assistance in the form of food, direct cash transfers, other in-kind transfers (excluding food). In round 2, the percentage of households who received social assistance was quite similar to that of round 1 at 15.87%, while the percentage of households who received assistance reduced to only 8% in round 3.

Social assistance, in the form of food, direct cash transfers, other in-kind transfers, was received by households from the government and different organizations. The different sources of social assistance received by households during the COVID-19 pandemic lockdown are illustrated in Figure 2. There is an indication that much of the assistance received by households comes from the state government and religious bodies, followed by other sources and federal government (although the federal government may have contributed to the relief package offered by the state). Out of nearly 16% of households who were recipients of social assistance in round 1 (Figure1),

Table 3. Coping strategies adopted by households affected by shock due to COVID-19 pandemic lockdown and associated problems.

	Round 1			Round 3	
	n	%		n	%
Sale of assets	31	1.7		51	3
Engaged in additional income generating activities	55	3		110	6.5
Received assistance from friends & family	109	6		49	2.9
Borrowed from friends & family	63	3.5		25	1.5
Took a loan from a financial institution	1	0.1		0	0
Credited purchases	49	2.7		34	2
Delayed payment obligations	3	0.2		10	0.6
Solid harvest in advance	31	1.7		16	0.9
Reduced food consumption	372	20.5		231	13.7
Reduced non-food consumption	130	7.2		56	3.3
Relied on savings	219	12.1		120	7.1
Received assistance from NGOs	3	0.2		0	0
Took advanced payment from employer	1	0.1		0	0
Received assistance from government	4	0.2		0	0
Was covered by insurance policy	0	0		1	0.1
Did nothing	152	8.4		74	4.4
Others	85	4.7		77	4.6
Total	1816	100		1690	100

ISSN-Internet 2197-411x OLCL 862804632

about 33% of them received assistance from the state government, 26% from religious bodies, and 8% from the federal government. Similarly, in round 2, 27% of households received assistance from religious bodies, 24% from the state government, and 13% from community/cooperative societies. Moreover, out of about 8% of households who received social assistance in Round 3, approximately 27% received assistance from religious bodies, 23% from the state government, and 12% from federal government and community/cooperative societies in round 3.

3.2 The level of food (in)security during the COVID-19 pandemic lockdown

Table 4 reveals the level of food (in)security during the COVID-19 pandemic lockdown. The result clearly shows that food insecurity was quite high during the COVID-19 pandemic lockdown periods. Dur-

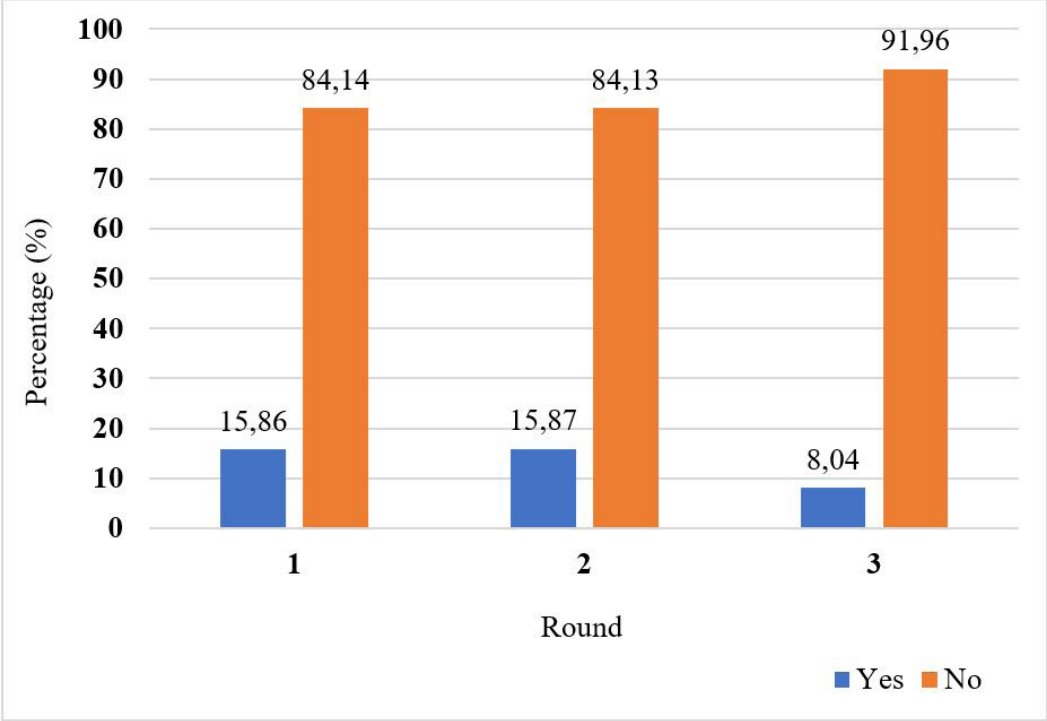

Figure 1. Percentages of households who received assistance from sources such as government, international organizations, religious bodies in form of food, direct cash transfers, other in-kind transfers (excluding food).

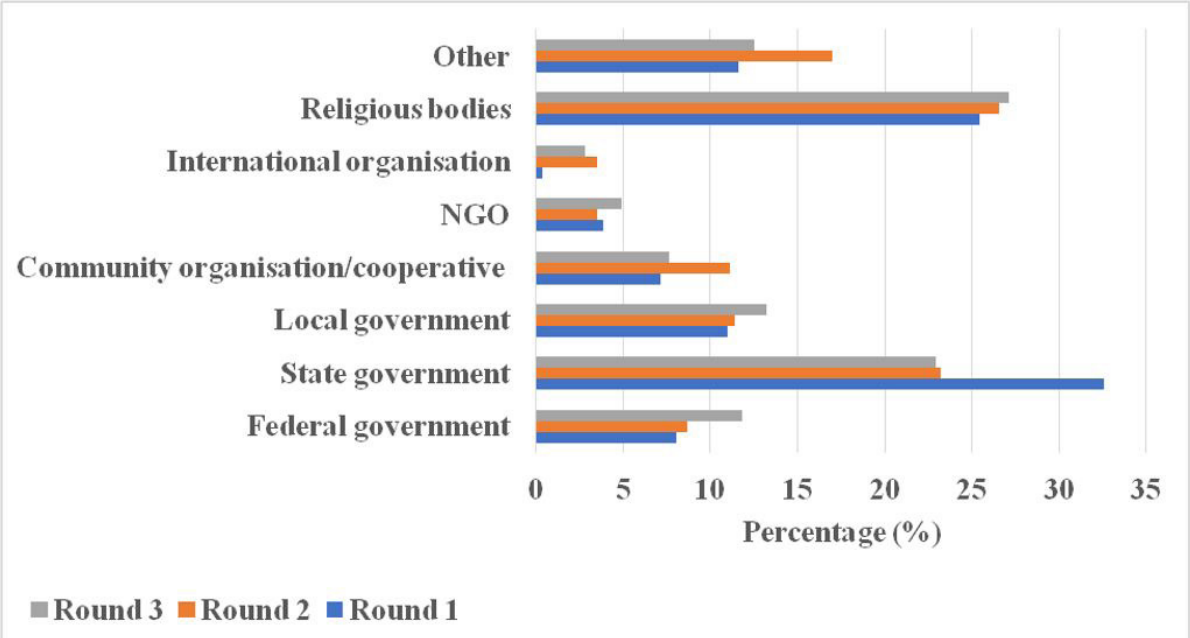

Figure 2. Sources of social assistance during COVID-19 pandemic lockdown

ing Round 1, about 73% of households had to skip a meal due lockdown, while 70% of households skipped meals in round 2. Similarly, about 57% of households ran out of food during round 1, and 59% ran out of food during round 2. Concerning the level of food security, a considerable percentage of households (75%) said they could not afford to eat persistently for a whole day in round 1, while 69% could not afford that in round 2.

3.3 The effect of social assistance obtained on food security during the lock-down period.

Table 5 presents the effect of social assistance on food security during the lock-down period. The effect of social assistance on food security during the lock-down period was obtained by regressing the variable, social assistance, on the outcome variable of interest, food (in)security. Other pertinent household-level control variables, such as zone, metropolitan status, household type (male-headed versus female-headed household), and age of head of household, were also included in the model. Technically, the effect was determined by estimating a binary logistic equation of the form:

$$F_j = \alpha + \beta S_j + \gamma Z_j + \mu_j$$

Where j index household, F_j is a binary/dummy indicator variable for households' food (in)security, S_j is a dummy variable indicating whether a household receives social assistance or not, Z_j is a vector of the aforementioned control variables, β and γ are vectors of parameters and μ_j is the error term. This model indicates that urban food in(security) is a function of receipt of social assistance and a number of household-level variables, including zones in which households are located, type of household, households' metropolitan status, and age of household head. The result shows that, in round 1, households who were beneficiaries of social assistance are less likely to experience food insecurity, though the coefficient is not significant at any conventional level. Likewise, in round 3, beneficiaries were 0.6% less likely to suffer from food insecurity. However, households from the South-East, South-South, and South-West were less likely to experience food insecurity. Households in the South-West had an 11% and 3% probability of suffering from food insecurity in rounds 1 and 2, respectively. Compared with households in urban areas, those in rural areas

Table 4. Level of food (in)security during COVID-19 pandemic lockdown

	Round 1		Round 2	
	n	%	n	%
Household members had to skip a meal?				
Yes	1423	72.8	1273	69.9
No	531	27.2	548	30.1
Total	1954	100	1821	100
Household members ran out of food?				
Yes	1111	56.9	1088	59.7
No	843	43.1	733	40.3
Total	1954	100	1821	100
Household members went eating for a whole day?				
Yes	479	24.5	558	30.6
No	1475	75.5	1263	69.4
Total	1954	100	1821	100

ISSN-Internet 2197-411x OLCL 862804632

were more likely to suffer food insecurity during both periods. Moreover, male-headed households have a lesser probability of suffering from food insecurity than female-headed households. Older household members were also less likely to experience food insecurity during the lockdown than younger ones.

Notably, the $R^{2,}$ a statistic that indicates the percentage of the variance in the dependent or outcome variable that is explained collectively by the independent variables, shows that 2% and 3% of the variation in the outcome variable is jointly explained by the independent variables in rounds 1 and 2, respectively. Meanwhile, the F-statistics indicates that the estimated coefficients are jointly significant and improved the model.

4. Discussion

The emergence of the COVID-19 pandemic has undoubtedly affected and disrupted various facets of global economies. The attendant challenges of the pandemic have been felt in abrupt employment reduction in some sectors, decrease in income and revenue, disruption of individual, business, and government productive activities, inflation, and food insecurity.

Table 5. The effect of social assistance on food security during the lock-down period

	Dependent variable is food (in)security	
	Round 1	Round 2
Social assistance (yes)	-0.000	-0.006
	(0.028)	(0.029)
North East	-0.031	-0.106**
	(0.037)	(0.037)
North West	-0.061	-0.167***
	(0.038)	(0.039)
South East	0.059	0.026
	(0.020)	(0.036)
South South	0.062	-0.004
	(0.021)	(0.038)
South West	0.101***	0.043
	(0.036)	(0.037)
Rural	0.011	0.068*
	(0.023)	(0.024)
Male-headed household	-0.077*	0.327
	(0.046)	(0.198)
Female-headed household	0.252	0.338
	(0.379)	(0.204)
Age	0.001	0.001
	(0.003)	(0.003)
Age-squared	-0.000*	-0.000
	(0.000)	(0.000)
Constant	0.786***	0.381
	(0.107)	(0.208)
R^2	0.02	0.03
Adjusted R^2	0.01	0.02
F-Statistics	2.82	4.55
Observations	1954	1821

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

More pertinently, the scourge of the pandemic has exacerbated food insecurity in different parts of the developing regions, particularly in Africa, where food insecurity has been a major socio-economic challenge before the outbreak of the pandemic. The findings from this study have important implications for addressing the longstanding problem of food insecurity that has continued to plague the continent, Nigeria in particular, and became worsened during the COVID-19 pandemic lockdown, thus further plunging vulnerable households into poverty and hunger. For instance, our findings indicate that there was a slight increase in the proportion of households that were affected by shock, notably food-related shocks (in terms of job losses, nonfarm business closure, theft/looting of cash and other property, disruption of farming, livelihood, fishing activities, increases or fall in prices of agricultural or business inputs, food insecurity, increases in the price of major food items consumed, illness, injury or death of an income-earning member of a household, amongst others) as a result of COVID-19 pandemic lockdown in Nigeria. These results suggest that COVID-19 really led to many households experiencing increases in the number of shocks. In fact, many households resorted to rationing food and reducing food consumption as coping strategies to mitigate the undesirable effect of the lockdown. This finding resonates with a similar study in India that found that as a result of COVID-19 lockdown, about 72% of respondents reported job losses, 60% of households were without enough cash to purchase essential commodities that could last them for a week (APU 2020). Similarly, it was reported that about 80% of households that responded in a phone survey had to reduce food consumption to cope with the COVID-19 lockdown.

Further findings show that the level of food insecurity during the lockdown was quite high. In contrast, the percentage of households who received social assistance from any institution such as the government, international organizations, religious bodies in the form of food, direct cash transfers, other in-kind transfers (excluding food) was quite low, despite the high level of vulnerability, poverty, and hunger in the country. Much of the social assistance, in the form of food, direct cash transfers, other in-kind transfers, received by households were from the government and religious bodies. Other findings indicate that the receipt of social assistance positively affected food security during the lockdown period.

However, households from South-East, South-South, South-West, rural areas, female-headed households, and younger household members had a higher probability of suffering from food insecurity during the lockdown periods than their respective counterparts. These findings clearly show that government, through its various public institutions and agencies, has an important role in ensuring food security and citizens' wellbeing, especially during an economic shock. The roles of religious bodies and leaders in Nigeria are also very crucial in ensuring both the spiritual and physical wellbeing of their members. As such, these institutions should be further strengthened to perform this function effectively. Moreover, the distribution of food should be done equitably and fairly such that all the regions and affected categories of people are well taken care of.

Ultimately, tackling food insecurity in Nigeria will require the concerted efforts of all relevant stakeholders, including the government, private sector, non-state actors, and other relevant international institutions. In collaboration with other pertinent stakeholders, the Nigerian government needs to take drastic actions in setting up viable mechanisms that will ensure increases in agricultural production and the revamp of the agricultural sector for greater agricultural outputs.

The government must develop a diversification strategy that will put agriculture and, by extension, food security in the forefront if the country is to achieve its national food-security goal and several international commitments to ensuring the fundamental right of every citizen to safe, quality, and nutritious food. More importantly, reducing incidences of food insecurity during a negative and unexpected economic shock, such as the unprecedented COVID-19 pandemic, will require increased food production, storage, and distribution channels and capacities.

5. Policy recommendations

From the foregoing, it is thus recommended that:

i. Ensuring food security at all levels of society should remain a policy priority among policymakers and

ISSN-Internet 2197-411x OLCL 862804632
UniKassel & VDW, Germany- February 2022

pertinent stakeholders.

ii. Food security should be enhanced by revamping the agricultural sector and implementing a viable diversification programme that focuses on increasing agricultural production, distribution, and storage.

iii. Government should partner with other private and religious institutions by creating an enabling environment that could improve food security and social protection of their citizens.

iv. Government should further build a resilient and robust social protection system that is posed to protect vulnerable and poor people, especially during a negative economic shock or an unprecedented pandemic.

v. There is a need for a more robust, comprehensive data bank of poor and vulnerable individuals in Nigeria, which should be systematically reviewed and updated at all levels of governance, including national, state, and local governments. This would inform and guide the proper distribution of social safety nets and further ensure that the right targets are not excluded.

Conflict of interest

The authors declare no conflict of interest.

References

Alani, I. I., & Olanrewaju, R. S. (2020). Lockdown as a preventive strategy against COVID-19: Socioeconomic implications on Nigerians. Sudan Journal of Medical Sciences, 15, Special Issue 2020: 123–127.

Andam, K., Edeh, H., Oboh, V., Pauw, K., & Thurlow, J. (2020). Impacts of COVID-19 on food systems and poverty in Nigeria. Advances in Food Security and Sustainability, 5: 145–173.

APU (2020). Centre for Sustainable Employment, Azim Premji University COVID-19 Livelihoods Survey. Compilation-of-findings-APU-COVID-19-Livelihoods-Survey_Final.pdf

Central Bank of Nigeria (1980). Central Bank of Nigeria Statistical Bulletin. Lagos

Central Bank of Nigeria (2020). Contributions/Donations to CBN-Led COVID-19 relief fund account domiciled with the central bank of Nigeria https://www.cbn.gov.ng/Out/2020/CCD/covid%20contributions.pdf

CGAP (2020). Social Assistance Payments in Response to COVID-19: The Role of Donors. Available online: https://www.cgap.org/sites/default/files/publications/2020_09_COVID_Briefing_Donors_Social_Assistance.pdf. Accessed 16/12/2020.

Ejiogu, A., Okechukwu, O., & Ejiogu, C. (2020). Nigerian budgetary response to the COVID-19 pandemic and its shrinking fiscal space: financial sustainability, employment, social inequality and business implications. Journal of Public Budgeting, Accounting & Financial Management. Ahead-of-print. https://doi.org/10.1108/JPBAFM-07-2020-0101

Eranga, I., & Omo-Ehiabhi (2020). COVID-19 Pandemic in Nigeria: palliative measures and the politics of vulnerability. International Journal of Maternal and Child Health and AIDS (2020), 9 (2): 220-222.

Food and Agriculture Organisation of the United Nations (FAOUN) (2016). Human security and food security. Available online at: http://www.fao.org/3/a-i5522e.pdf. Accessed 20th October, 2020.

Food and Agriculture Organization of the United Nations (2016). The role of social protection in protracted crises: Enhancing the resilience of the most vulnerable. website (www.fao.org/publications)

Gentilini, U., Mohamed A., Pamela D., Ana V. L., & Usama, Z. (2020). Social protection and jobs responses to COVID-19: A real-time review of country measures. Living Paper, Version 12. Washington, D.C.: World Bank, 10 July. http://documents1.worldbank.org/curated/ en/454671594649637530/pdf/Social-Protection-and-Jobs- Responses-to-COVID-19-A-Real-Time-Review-of-Country- Measures.pdf

Ghafory-Ashtiany, M & Hosseini, M. (2008). Post-Bam earthquake: recovery and reconstruction. Nat Hazards (2008) 44. Pp 229–241. DOI 10.1007/s11069-007-9108-3

HLPE. (2012). Social protection for food security. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome 2012.

Human Rights Watch, (2020). Nigeria: Protect Most Vulnerable in Covid-19 Response. Extended Lockdown Threatens Livelihoods of Millions. Available online at https://www.hrw.org/news/2020/04/14/nigeria-protect-most-vulnerable-covid-19-response. Accessed on 9th November, 2020.
Jessup-Varnum, M. (2018). Food security and the sustainable livelihood approach to development in Uganda. University Honors Theses. Paper 556. https://doi.org/10.15760/honors.562

Jones, A.D., Ngure, F.M., Pelto, G., & Young, S.L. (2013). What are we assessing when we measure food security? A compendium and review of current metrics. Adv Nutr, 4: 481–505.

NCDC 2020. First Case of Coronal Virus Disease confirmed in Nigeria. https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-nigeria. Accessed September 22, 2020.

Notari, A. (2021). Temperature dependence of COVID-19 transmission. Science of The Total Environment, 763, 144390.

Nwankpa, N.N. (2017). Sustainable agricultural development in Nigeria: a way out of hunger and poverty. European Journal of Sustainable Development, 6(4): 175-184.

Ogaugwu, C., Mogaji, H., Ogaugwu E., Nebo, U., Okoh, J., A., & Agbon, A. (2020). Effect of weather on COVID-19 transmission and mortality in Lagos, Nigeria. Scientifica; 2562641.

Otaha, I. J. (2013). Food Insecurity in Nigeria: Way Forward. An International Multidisciplinary Journal, 7 (4); 26-35.

PricewaterhouseCoopers Limited (PwC) (2020). Responding to the impact of COVID-19 on food security and agriculture in Nigeria. Available online at: https://www.pwc.com/ng/en/assets/pdf/impact-covid19-food-security-nigeria.pdf. Accessed 20/01/2021

Stanam, A., Chaudhari, M., & Rayudu, D. (2020). Effects of temperature on COVID-19 transmission. Medrxiv.

USAID. (1992). USAID Policy Determination: Definition of Food Security [policy determination]. Washington: USAID. Available online: http://www.usaid.gov/policy/ads/200/pd19.pdf. Retrieved August 23, 2020.

World Health Organisation Bulletin (2011). Bulletin of the World Health Organization 89,(7):540-541. Available online: https://www.who.int/bulletin/volumes/89/7/11088815/en/#:~:text=A%20pandemic%20is%20defined%20as,are%20not%2. Retrieved 16th August, 2020.

World Bank (2018). The state of social safety nets 2018. Washington, DC. doi:10.1596/978-1-4648-1254-5.

World Bank (2020). Scaling up social assistance payments as part of the covid-19 pandemic response. Available online at: http://pubdocs.worldbank.org/en/655201595885830480/WB-G2Px-Scaling-up-Social-Assistance-Payments-as-Part-of-the-Covid-19-Pandemic-Response.pdf

World Health Organisation (2020). Novel Coronavirus (2019-nCov) Situation Reports. Available online at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situationreports. Accessed November 9, 2020.

Yao, Y., Pan, J., Liu, Z., Meng, X., Wang, W., Kan, H., et al. (2020). No association of COVID-19 transmission with temperature or UV radiation in Chinese cities. Eur Respir J, 55.

© 2022 by the authors. Licensee the future of food journal (FOFJ), Witzenhausen, Germany. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

ISSN-Internet 2197-411x OLCL 862804632