



EFFECTS OF COVID19 ON FOOD SECURITY IN WESTERN AGRICULTURAL ZONE OF BAUCHI STATE, NIGERIA

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ABSTRACT

The study examined the effects of Covid-19 on food security in Western Zone of Bauchi State, Nigeria. Multi-stage sampling technic was employed in selecting 200 respondents for the study. Data were obtained using structured questionnaires and analyzed using both descriptive and inferential statistics. The result reveals that majority (79.5%, 77.5% and 73%) of the respondents were primarily farmers, non-members of cooperatives and agree that covid19 affects household food security, respectively. The findings also shows that majority (75%, 69%) and 60.5%) of the respondents were male, married and had no access to extension contact. The mean age and household size of the respondents were 42 years and 8 person respectively. The result also show that the mean farm size, income and years' experience of the respondents were 2.1ha, ₩319,725 and 7 years, respectively. The findings also reveals that socioeconomic factors such as marital status, educational level and occupation were significant (P < 0.01 and P < 0.05) in influencing food insecurity among farming households. The results further reveals that fear of disease contraction, high cost of transportation and bias in palliative distribution were the major constraints to food security and were ranked 1st, 2nd and 3rd, respectively. The study concludes that marital status, educational level and occupation were the factors influencing food insecurity. Based on the findings the study recommends that farming household should obey medical instructions to avoid disease contraction, farmers should form cooperative in order to ease cost of transportations and government should involve farmers' cooperatives in palliatives distribution.

Keywords: Covid-19, Food Security, Effects

INTRODUCTION

Coronavirus disease 2019 (Covid19) is an infectious disease of human caused by a corona virus newly emerged in 2019-SARS-CoV-2. The Covid19 pandemic has resulted in an unprecedented health crisis, with an estimated 176,037,471 cases around the world and 3,805,611 deaths as of June 2021 (Dong et al., 2020). Early in the pandemic high income countries were disproportionately impacted, while Low and Middle Income Countries (LMICs) reported relatively lower morbidity rates (Dong et al., 2020). However, the true number of cases may be many more as testing and tracing have been challenge and many Low and Middle Income Countries (LMICs) do not sufficiently collect mortality data (Dahir, 2021a). Recently, however, reported Covid19cases have been surging in Low and Middle Income Countries (LMICs) (Roser, et al., 2020). For example, as of early June 2021, cases and deaths are increasing by 20% and 15% respectively per week in Africa with Uganda reporting their highest number of new weekly cases since the pandemic began (WHO, 2021a). The Covid19 pandemic is ravishing local, national, and global economics. In addition to the direct health impacts, the pandemic is having widespread effects on employment, poverty, food security, nutrition, education and health and the overall functioning of food system (Barrett, 2029; Devereux, et al., 2020; Swinnen, 2020; GAIN, 2020). Covid19 is destabilizing supply chains





at all level, and creating instability in food supply and food prices (Zurayk, 2020; Torero, 2020; Reardon, *et al.*, 2020b; Ihle, *et al.*, 2020; Akter, 2020; FAO, 2020). The World Bank's recent forecasts show that, globally, the pandemic is likely to push 49 million people into extreme poverty in 2020 (World Bank, 2020a). Nigeria is an interesting case study, as about 83 million people were already living below the national poverty line (World Bank, 2020a). According to the recent World Bank projections, Nigeria is predicted to be one of the three countries with the highest increase in the number of poor people. About 5 million Nigerians are projected to be pushed into poverty because of the COVID19 pandemic and associated mobility restrictions and lockdown measures (World Bank, 2020a; IMF, 2020).

The unanticipated restrictions in physical, social and economic activities interrupted the ability to earn a living and affected economic sectors at various levels, ranging from the primary sector to manufacturing and services; thereby threatening the attainment of the second Sustainable Development Goal (SDG) targeted at achieving food security, ending hunger and improved nutrition (Nicola *et al.*, 2020; Niles *et al.*, 2020). In a country like Nigeria where food insecurity had been a challenge before the compound impact of Covid19, there is inadequate empirical documentation of this dynamics. It is imperative to investigate the level of household food security among them during the Covid19 pandemic.

These findings may inform immediate and medium-term policy responses. For instance, our findings can inform social protection policies aiming at weathering the impacts of the pandemic, which rely heavily on effective targeting strategies. This is particularly imperative for governments like Nigeria, which has limited fiscal space and competing needs for post-COVID19 recovery investment. The outcome will also be a useful tool for the policy makers on agriculture and specifically on food security. This study was carried out to assess the effects of Covid19 on food security in Western Agricultural Zone of Bauchi State, Nigeria and specifically to;

- i. describe the socioeconomic characteristics of the respondents
- ii. analyze the determinants of household food insecurity during covid19
- iii. describe the constraints faced by the respondents on food during covid19

METHODOLOGY

The Study Area

Bauchi State was created in 1976 and was divided into three (3) Agricultural zone. The state is located between Latitudes 9°30' and 12°30' North of the Equator, and between Longitudes 8°45' and 11°0' East of the Green Which Meridian. It is bounded in a clockwise direction by Yobe, Gombe, Taraba, Plateau, Kaduna, Kano and Jigawa states. There are 20 Local Government Areas (LGAs) in the State. Bauchi State has a land mass of 49,259 Km² with a population of 4,653,066 according to National Population Commission (NPC, 2006) which is estimated to be 7,057,045 people in 2018 at 3.2% annual increase rate and estimated to be 9,000,0000 people in 2022 at 3.86% annual increase rate. The State is heterogeneous, with predominant tribes like Hausa, Fulani, Jarawa, Sayawa among others (Bauchi State Economic Empowerment and Development strategies [BSEEDS], 2016). The State is one of the States in the north east of Nigeria that span two distinctive vegetation zones, namely, the Sudan savannah and the Sahel savannah. The Sudan savannah type of vegetation covers the Western part of the State. The vegetation types as described above are conditioned by the climatic factors, which in turn determine the amount of rainfall received in the area. For instance, the rainfall in Bauchi state ranges between 1,300 millimetres per annum in the south and only 700 millimetres per annum in the extreme north. The major economic activities of the





Bauchi State were agriculture, which include both crop and livestock production. The major crop production activities include production of rice, maize, sorghum and soybean in western zone, while for central and northern is millet, sorghum, cowpea and sesame. The livestock production includes rearing of cattle, sheep, goat and poultry (BSEEDS, 2016).

Sampling Technique

Multi-stage random sampling technique was employed in the selection of respondents for the study. The first stage, two Local Governments were randomly selected out of the seven Local Government Areas in the Western Zone of Bauchi State Agricultural Development Programme. In the second stage, five (5) rural communities were randomly selected from each Local Government selected, making a total of ten rural communities. The last stage was a random selection of twenty households from each of the selected rural community making a total of 200 farming households for the study.

Table I. Sumpling I	coninque Sumpring	5120	
LGAs	Communities	Number of Households	Sample size (10%)
Toro	Lame	256	26
	Nabordo	200	20
	Gumau	165	17
	Zaranda	228	22
	Geji	105	11
Tafawa Balewa	Bununu	294	29
	Bula	125	13
	Burga	223	22
	Dajin	143	14
	Lere	258	26
Total		1997	200

Table 1: Sampling Technique Sampling Size

Field Survey, 2023

Methods Data Collection

Data were collected through the administration of structured questionnaires to the respondent randomly drawn selected from the study area.

Methods of Data Analysis

Data were analyzed using both descriptive and inferential statistics. The descriptive statistics include frequency, percentage and mean, while the inferential statistics was logit regression to analyze the determinant of food security among the rural household logistic regression was used. This model will be used for estimating the probability that an event occurs having a dichotomous dependent variables: 1 for a food secure and 0 for food insecure households. The logistic regression model will be used as expressed as:

 $Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + U \quad \dots (1)$

Where;

Y=Food security (1=food secured, 0=food insecure)

 X_1 = Age of extension agents (years)

 $X_2 = Sex (male=1, female=2)$

 $X_3 =$ Marital Status (married =1, Otherwise=0)

X₄= Household size (Number)

X₅= Educational level of the farmers (Qur'anic=1, Primary=2, Secondary=3, Tertiary=4)

X₆= Occupation (farmer=1, civil servant=2, artisan=3, traders=4)

 $X_7 = farm size$ (ha)





 X_8 =Years of farming experience (Number of Years) X_9 = Cooperative Membership (Yes=1, No=0) X_{10} = Years of membership (years) X_{11} = Annual income (in naira) X_{12} =Covid19 affect food security (Yes=1, No=0) X_{13} =Extension contact (Yes=1, No=0) X_{14} = Frequency of extension contacts (Number) a=Constant term of intercept $b_1(i=1...9)$ are regression coefficients. u=Error term.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Respondents

Qualitative socioeconomic characteristics of the respondents

The result from Table 2 shows the qualitative characteristics of the respondents, the findings showed that majority (75%) of the respondents were male, while 25% of the respondents were female. This implies that majority of the respondents were male in the study which is attributed to the facts that household are headed by male rather than female in the study area. This is in line with Delvaux and Paloma (2018), and Abdullah et al. (2019) showed that male-headed households are less prone to food insecurity. The result further showed that majority of the respondents (69.5%) of the respondents were married, while 26% of the respondents were single. Only 4% and 0.5% of the respondents were widows and divorced, respectively. This implies that most of the respondents were married which indicates that most of the respondents had responsibilities to cater for the needs of their family members. The result also shows that 47.5% of the respondents had attended secondary level of education, while 30% and 14.5% of the respondents had attended Qur'anic and primary levels of education. Only 8% of the respondents had attended tertiary levels of education in the study area. This implies that most of the respondents had attended one form education or another, it is also an indication that respondents were literate and will be willing to obey medical advice to cope and prevent the spread of covid19 and food security challenges before and during covid19 in the study area.





Table	2:	Distribution	of	Respondents	According	to	their	Qualitative	Socioeconomic
		Characteristi	cs (n=200)					

Variables	Frequency	Percentage
Sex		
Male	150	75.0
Female	50	25.0
Marital status		
Single	52	26.0
Married	139	69.5
Widow	8	4.0
Divorced	1	.5
Educational level		
Qur'anic education	60	30.0
Primary education	29	14.5
Secondary education	95	47.5
Tertiary education	16	8.0
Occupation		
Farmer	159	79.5
Civil servant	19	9.5
Artisan	18	9.0
Traders	4	2.0
Cooperative membership		
Yes	45	22.5
No	155	77.5
Covid19 affect household food		
security		
Yes	146	73.0
No	54	27.0
Extension contact		
Yes	79	39.5
No	121	60.5

Source: Field Survey, 2023

The result from the findings also showed that majority (79.5%) of the respondents were primarily farmers, while 9.5% and 9% of the respondents were civil servants and artisan, respectively. Only 2% of the respondents were into trading. This implies that most of the respondents were full time farmers and depended on farming to feed their family and provide basic social needs in the study area. The findings further revealed that majority (77.5%) of the respondents were not members of cooperatives, while 22.5% of the respondents were members of cooperatives. This implies that majority of the respondents were not members of any cooperatives which could be attributed to inadequate number of cooperatives, bottleneck hieratical leadership and high cost due on members of cooperatives.

The result also shows that majority (73%) of the respondents indicated that covid19 affected their household food security, while 27% of the respondents indicated that covid19 had not. This implies that only few of the respondents had enough food to feed their families during covid19 which could be either due to their low income and production level and inadequate benefits from covid19 palliatives in the study area. This is in line with World Food Programme (WFP) estimated that Covid19 will double the number of people facing food crises





from 130 million to 265 million in 2020 (WFP, 2020). The result further revealed that majority (60.5%) of the respondents had no access to extension contacts, while 39.5% of the respondents had access to extension contacts. This implies that most of the respondents had no access to extension contact which could be attributed to the inadequate extension agents and inadequate cooperatives in the study area.

Quantitative Socioeconomic Characteristics of the Respondents

The result from Table 3 shows the quantitative socioeconomic characteristics of the respondents. The result showed that 47.5% and 33.5% of the respondents were within the ages of 30-40 years and 41-51 years, while 11.5%, 5.5% and 2.0% of the respondents were within the ages of 52-62, 19-29 and 63-73 years, respectively, with a mean age of 42 years. This implies that most of the respondents were within their active ages of production in agriculture, it shows that respondents were within youthful ages of production. This is in contrast with Abdullah *et al.* (2019) who posits that households with older heads tend to experience food security, hence there is no clear consensus. The result further showed that 37.5%, 28% and 22% of the respondents had a household size of 4-6, 10-12 and 7-9 persons respectively, while 10.5% and 2% of the respondents had a household size of 13-15 and 1-3 persons with a mean household size of 8 persons. This implies that most of the respondents had relatively large household size which indicates that respondents requires large quantity of food to feed their family, it also shows that respondents had cheap source of family labour on their farm in the study area.





Table	3:	Distribution	of	Respondents	According	to	their	Quantitative	Socioeconomic
		Characterist	ics ((n=200)					

Variables	Frequency	Percentage	Mean
Age			
19-29	11	5.5	
30-40	95	47.5	
41-51	67	33.5	42
52-62	23	11.5	
63-73	4	2.0	
Household size			
1-3	4	2.0	
4-6	75	37.5	
7-9	44	22.0	8.1
10-12	56	28.0	
13-15	21	10.5	
Farm size (ha)			
0.5-1.0	55	27.5	
1.1-1.5	1	.5	
1.6-2.0	66	33.0	
2.1-2.5	2	1.0	2.1
2.6-3.1	76	38.0	
Farming experience (years)			
2-6	124	62.0	
7-11	71	35.5	6.5
12-16	4	2.0	
17-21	1	.5	
Annual income (N)			
50,000-220,000	88	44.0	
221,000-391,000	33	16.5	319,725.0
392,000-562,000	59	29.5	
563,000-733,000	10	5.0	
734,000-900,000	10	5.0	

Source: Field Survey, 2023

The result further shows that 38%, 33% and 27.5% of the respondents had a farm size of 2.6-3.1, 1.6-2.0 and 0.5-1.0ha respectively, with a mean farm size of 2.1ha. This implies that respondents had relatively large farm size which indicates that farmers are medium scale producers whose production can keep their family out of hunger throughout the season with the aid of proper technology adoption in the study area. The findings further showed that majority (62%) of the respondents had a farming experience of 2-6 years, while 35.5% of the respondents had farming experience of 7-11 years. Only 2% and 0.5% of the respondents had a farming experience of 7 years. This implies that most of the respondents were long time farmers with good farming experience which helps farmers to avert risk of production and adopt technologies for better productivity and higher yield in the study area. The findings of the study further showed that 44%, 29.5% and 16.5% of the respondents had an annual income of N50,000-N220,000, N392,000-562,000 and N221,000-391,000 respectively, while the respondents had a mean annual income of N563,000-733,000 and





734,000-900,000 respectively. This implies that most of the respondents had relatively high income level to carter for their family needs in the study area.

Determinants of Food Insecurity among Respondents in the Study Area

The result from Table 4 reveals the determinants of food insecurity among farming household in the study area. The result showed that marital status is positive and significant (P<0.01) in influencing the food security among farming households, which implies that married respondents had high tendency of been food insecure, that as the more respondents get married it lead in increasing their household size the higher the tendency of food insecurity in the study area. This is in tandem with Delvaux and Paloma, (2018) Wolfson and Leung, (2020) who found that, the size of the household, as well as the dependency ratio, have been recognized as factors that influence food security. The result further showed that educational level was negative and significant (P<0.05) which implies that the lower the educational level of the respondents the higher the tendency of been food insecured on the same vein increase in educational level can lead to food security among the respondents. Education, according to Ibok Bassey et al. (2014), is a social capital which influences people nutritional and production decisions; so it is explanatory when households headed by persons with higher level of education were found to be more food secure in the study area. This is not unconnected to the facts that educated individuals plan for future and are mostly self-employed or are employed by the government or other non-governmental organization in the study area. The result is in tandem with Tefera and Tefera (2014), Wiranthi et al. (2014), Mutinda (2015), Ajaero (2017) and Dawit and Zeray (2017), but contrary to Yusuf et al. (2015) and Djangmah (2016), who found food security to decrease with increasing number of years spent in education in Nigeria and Northern region of Ghana respectively. The result further shows that occupation was negative and significant at 1%, which implies that decrease or reduction in occupation determines or influences food insecurity among farming households in the study area.

Variables	В	Std. Error	Beta	t	Sig.
(Constant)	.842	.474		1.775	.077
Age	.001	.003	.031	.446	.656
Sex	.049	.063	.051	.772	.441
Marital status	.216	.052	.273	4.164	.000***
Household size	.014	.008	.122	1.807	.072
Educational level	080	.033	193	-2.422	.016**
Occupation	234	.040	409	-5.921	.000***
Farm size	003	.036	006	088	.930
Farming experience	.002	.011	.010	.158	.875
Cooperative membership	104	.201	105	518	.605
Years of membership	.021	.024	.159	.885	.377
Annual income	8.555E-8	.000	.040	.583	.561
Covid19 affect household food security	.035	.063	.038	.559	.577
Extension contact	080	.080	094	996	.321
Frequency of extension contact	.035	.028	.160	1.220	.224

Table 4: Determinants of Household Food Insecurity among Respondents in the Study Area

Source: Field Survey, 2023 ***, ** Significant at 1% and 5%





Constraints Faced by Respondents to Food Security

The result from Table 5 reveals the constraints faced by the respondents to food security in the study area. The findings showed that fair of disease contraction, high cost of transportation and bias in palliative distribution were the major constraints faced by the respondents to food security and were ranked 1st, 2nd and 3rd respectively.

Variables	Frequency	Percentage	Rank
Fair of disease contraction	186	93.0	1 st
High cost of transportation	182	91.0	2^{nd}
Bias in palliatives distribution	179	89.5	3 rd
Poor access to clean water	165	82.5	4 th
Increase in foodstuff prices	164	82.0	5 th
Restriction on movement	146	73.0	6 th
Inadequate access to funds	145	72.5	7 th
Inadequate foodstuffs	140	70.0	8 th

Table 5. Distribution of Respondents According to their constraints to rood Security

Source: Field Survey, 2023

The result further shows that poor access to clean water, increase in food prices and restriction of movement were ranked 4th, 5th and 6th respectively by the respondents as the constraints to food security in the study area. Other constraints were inadequate access to funds and foodstuffs which were ranked 7th and 8th. This implies that respondents were faced with several challenges to food security among farming households, though this challenges were enormous but can be curtail with little commitment from the individual respondents and the government in the study area.

CONCLUSION AND RECOMMENDATIONS

Emanating from the findings it can be concluded that marital status, education level and occupation were the factors that influence food security of the households during covid19. Even though respondents in the study area were constrained by fear of disease contraction and bias of palliative distribution, there is need for government and Non-governmental organization to do more in order to return back the glory of farming households that were ravaged by the pandemic

Based on the findings of the study the following recommendations were made by the researchers;

- i. Farming household should obey medical instructions to avoid disease contraction
- ii. Farmers should form cooperative and purchase vehicle to ease cost of transportations in the study area
- iii. Government should involve farmers cooperatives in sharing palliatives
- iv. Government and Non-governmental organizations should constructs boreholes in the study area so as to increase access to portable water
- v. Government should subsidized cost of food items and farm inputs in the study area

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