

**GENDER DIFFERENTIALS IN PERCEIVED EFFECTS OF CORONAVIRUS PANDEMIC ON FARMING HOUSEHOLDS' FOOD SECURITY IN AKWA IBOM STATE, NIGERIA**

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**Abstract**

*The study analyzed gender differentials in the perceived effects of Coronavirus pandemic on farming household food security in Akwa Ibom State, Nigeria. Specifically, the study described the socio-economic characteristics of the respondents, determined the gender perceived effects of coronavirus pandemic on food security among the respondents, examined the influence of selected socio-economic characteristics on the perception of the respondents, and examined if there is a significant variation in the perceived effect of the pandemic on food security based on gender. Multi-stage sampling procedure was used to select 72 male and 108 female headed farming households. Primary data used for the study were obtained through a well-designed questionnaire. The data collected were analyzed using percentages, mean, Independent T-test, Chi-square test, and Ordinary Least Square (OLS) regression model. The results showed that Coronavirus pandemic disrupted farm input supply chain (male-98.6%, female-98.1%), reduced farmers income (male-72.2%, female-80.6%), reduced workers' availability (male-59.7%, female-82.4%) and led to food unavailability in households (male-55.6%, female-76.9%). Gender, age, and years of farming experience were found to significantly influence farmers' perception of the effect of Coronavirus pandemic on food security and, there was significant variation in the perceived effect of the coronavirus pandemic on food security based on gender. Gender mainstreaming should be considered in addressing the effects of future pandemics on farmers in the State by the intervening body.*

**Keywords:** Gender, Coronavirus, food security, farming households

**Introduction**

Agriculture is one of the most essential sectors in human development and it is related to food security (Kogo, Kumar and Koech 2020; Lopez-Ridaura, Barba-Escoto, Reyna, Hellin, Gerard and M. van Wijk. 2019). Studies have shown that an outbreak of any disease (Spanish Flu, HIV/AIDS, and Ebola) has always been accompanied by an increase in hunger and malnutrition (Burgui, 2020) with a great impact on the economy, the environment, and farming activities (Siche, 2020). As such disease progresses, its impact worsens. Prior to the COVID-19 outbreak, the proportion of hungry and malnourished people across the globe was already on the rise, with more than 821 million people chronically undernourished between 2016 and 2018, (FAO, IFAD, UNICEF, WFP, and WHO 2020), and over 100 million people in need of life-saving food assistance. Also, before the outbreak of COVID-19 in 2019, rising food

prices, inadequate investment in farming activities, economic instability, climate change, and a lack of capacity especially for women farmers to acquire land for farming among other social factors posed a serious threat to food security in Nigeria, (FAO, 2019).

Since the outbreak of the global pandemic otherwise called the COVID-19 Virus in Wuhan, China in December 2019, and in Nigeria in 2020, many empirical studies have reported its devastating effects (World Bank, 2020; IMF 2020; FAO 2020; Rodriguez, 2021, Akpan *et al.*, 2022). These effects differ across all sectors of the economy depending on the presentation and type of household and are more severe among those with pre-existing vulnerability such as the agricultural sector. The impact of the pandemic manifests itself in the form of job losses, income losses, food insecurity, and rising food prices (Balana *et al.*, 2020). In addition to its impact on

employment and income of households in Nigeria, World Bank, and NBS (2020), reported that the pandemic resulted in a reduction in household food consumption as a coping strategy. As reported by IMF (2020) and Andam *et al.*, (2020) Nigerian economy contracted by between 3.5 to 5% in 2020, because of government-imposed lockdown and mobility measures. This implied that the sector's potential was not fully maximized in terms of its contribution to GDP and the sustenance of food security. Productivity was low due to inadequate use of yield-enhancing agricultural input and technology, limited access to extension services, and lack of market linkages (Andam, 2020).

The Federal Government of Nigeria further imposed a five-week lockdown in most states of the federation through which movement was restricted and schools and airports closed. However, the imposition of lockdown and the subsequent closure of schools and airports impacted negatively on virtually all facets of the economy with the agricultural sector being worst hit (Andam *et al.*, 2020; Ogubuike and Azeez 2021). The pandemic affected the agricultural sector either directly through its effect on food supply and demand or indirectly through a decrease in purchasing power, the capacity to produce and distribute food, which strongly affected the poor and vulnerable (Nwonwu, *et al.*, 2020). Andam *et al.*, (2020), and Amare *et al.*, (2020) stated that the effect of government lockdown was seen in boosting food insecurity in Nigeria. World Bank (2020a) opined that, the effect of the lockdown and movement restriction further disrupts the food supply chain by impeding food transportation within the country leading to food shortages, rising food prices, and consumption of low-quality foods.

Ogubuike and Azeez (2021) also reported that the disruption in food supply affects the long-run value chain between producers and consumers leading to a hike in food prices. This increase in food prices is proposed to be most felt by the vulnerable population, especially women farmers who depend more on the market for their food (WHO, 2020 and FAO, 2020). Consequently, the World Bank (2020) and IMF (2020) projected that about 5 million Nigerians were pushed into poverty because of COVID -19 and its associated mobility restriction and lockdown measure. This

further compounded the already existing food insecurity situation as attested to by the Global Hunger Index (GHI, 2019).

However, in the center of these devastating effects of the Pandemic on agricultural sector lies the men and women farmers who are worst hit by the pandemic due to their perceived vulnerability, increased participation in Agriculture and the informal sector such as household services, public markets etc all of which have experienced changes due to Covid-19 (ILO, 2017; FAO, 2020; WHO, 2020; and Rodriguez 2021). COVID-19 impacts have led to severe and widespread increases in food insecurity, supply disruptions and inflation affecting key agricultural inputs such as fertilizers and seeds. (Amare *et al.*, 2020). The World Bank group (WBG) (2021) reported that higher retail prices, combined with reduced incomes, imply that farming households have to cut down on the quantity and quality of their food consumption. Some farmers also face losses on perishable and nutritious food as consumption patterns shift towards cheaper staples.

According to the WHO (2020), the impact of covid-19 outbreaks the world over, is in an unprecedented scale. However, everyone does not perceive its effect in the same way, and perception is very important because of the behavioural implications. Hence, reversing this trend calls for an empirical examination of how farmers perceived the effect of COVID 19. Accordingly, the research sought to contribute to this gap by providing empirical information on Akwa Ibom State farmers' perception of the effect of COVID-19 on food security. It gives empirical information on how men and women farmers perceived the effect of coronavirus on food security in the study area. Again, the study assessed how male and female farmers varied in their perception of the effect of the coronavirus pandemic on household food security. Against this background, this study analyzed the Gender differentials on the perceived effect of the Coronavirus Pandemic on farming household food security in Akwa Ibom State, Nigeria.

## **Methodology**

### **Study Area**

The study was carried out in Akwa Ibom State. The State is situated between latitudes 4° 32<sup>1</sup> and 5° 53<sup>1</sup> North and longitudes 7° 30<sup>1</sup> and 8° 25<sup>1</sup> East,

and lies in between Cross River, Rivers, and Abia States in south-eastern Nigeria (AKS, 1989). It has a total landmass of 8,412km<sup>2</sup> (AKS, 1989) and is Nigeria's 21st State situated in the Niger Delta region with 31 Local Government Areas (LGAs). According to FRN (2004), Akwa Ibom State has a population of about 3.92 million people with agriculture as their primary occupation.

### **Sampling Technique, Size and Data Collection Method**

Primary data was used for the study. The data were collected using a well-structured questionnaire along with in-depth-interview. The study made use of the multi-stage sampling procedure in selecting respondents. In the first stage, 3 Agricultural zones were randomly selected out of 6 that make up the state. In the second stage, 3 extension blocks were selected from each of the selected zones making a total of 9 extension blocks. The third stage involved random selection of 3 cells from each of the selected blocks making a total of 18 cells or farming communities. In the last stage, 10 farmers were randomly selected from each of the cells giving a total of 180 farmers used for the study. A 5-point Likert-type scale of strongly agree (scored 5), agree (scored 4), undecided (scored 3), disagree (scored 2), strongly disagree (scored 1) was employed to assess the perception of respondents on the effect of coronavirus pandemic on food security of farming households.

### **Analytical Techniques**

Data collected for the study were analysed using OLS regression model, independent t test and chi-square in addition to descriptive statistics.

### **Results and Discussion**

#### **Socio-economic Characteristics of the Respondents by Gender**

Results from Table 1 show that, majority of male (79.2%) and female (84.3%) respondents were married. This might imply huge domestic responsibilities in their household due to higher dependency ratio. It might also imply the availability of abundant family labour for farm

work. This is the case since marriage is most times associated with childbearing. Results also show that majority of male (54.2%) and female (60.2%) respondents were within the age range of 41 – 60 years with the average age of male and female respondents as 47 and 43.5 years, respectively. This implies that farmers were still in their active ages. Again, female farmers were much younger than male farmers in the study area. Ayoola *et al.*, (2011) also confirmed in their report that female farmers were much younger than male farmers.

The result on educational level reveals that most of the male respondents (38.9% & 31.9%) had attained secondary and primary education respectively while most of the female respondents (56.5% & 22.2%) had attained secondary and tertiary education respectively. The result implies that both male and female respondents had obtained some level of formal education. However, this finding contradicts Anyanwu (2016) who concluded in his study that the female gender was disadvantaged educationally compared to the male. The findings from this study confirm that female education has been acknowledged in society. The result on household size reveals that most of the male (61.1%) and female (48.1%) respondents had household sizes of 5–8 persons with a mean size of 6 and 7 persons for male and female farmers, respectively. According to Ibok *et al.*, (2015), large household size contributes to the labour supply for the respondents.

The result on estimated monthly income reveals that most of the male respondents (40.3%) fell within the income range of ₦72,000 and above while a smaller proportion of the female respondents (28.4%) fell within the income range of ₦51,000 to ₦71,000. The mean income for both male and female farmers in the study area was ₦61,236.1 and ₦51,425.9 respectively. The income of the female farmer is smaller because the female farmer cultivates smaller fragmented parcels of land compared to male farmers. The result is in conformity with the findings of Erie *et al.* (2011) who reported that female farmers have smaller incomes due to limitations such as non-ownership of land.

**Table 1: Socioeconomic Characteristics of Respondents**

Variable	Male		Female		Pooled	
	Frequency	%	Frequency	%	Frequency	%
<b>Age of farmers</b>						
Less than 41	21	29.2	40	37	61	33.9
41-60	39	54.2	65	60.2	104	57.8
Above 60	12	16.6	3	2.8	15	8.3
<b>Total</b>	72	100	108	100	180	100
Mean	47		43.5			
<b>Marital status</b>						
Single	12	16.7	10	9.3	22	12.2
Married	57	79.2	91	84.3	148	82.2
Widowed	0	0	6	5.6	6	3.3
Widower	3	4.2	1	0.9	4	2.3
<b>Total</b>	72	100	108	100	180	100
<b>Educational level</b>						
No formal education	3	4.2	8	7.4	11	6.1
Primary School	23	31.9	15	13.9	38	21.2
Secondary School	28	38.9	61	56.5	89	49.4
Tertiary Institution	18	25	24	22.2	42	23.5
<b>Total</b>	72	100	108	100	180	100
<b>Household size</b>						
Less than 5	20	27.8	36	33.3	56	31.1
5-8	44	61.1	52	48.1	96	53.3
9-12	8	11.1	18	16.7	26	14.5
Above 12 persons	0	0	2	1.9	2	1.1
<b>Total</b>	72	100	108	100	180	100
Mean	6		7			
<b>Monthly income</b>						
Less than 35,000	9	12.5	28	25.5	37	20.6
35,000-50,000	14	19.4	26	24.1	40	22.2
50,001- 70,000	20	27.8	31	28.7	51	28.3
Above 70,000	29	40.3	23	21.3	52	28.9
<b>Total</b>	72	100	108	100	180	100
Mean	61,236.1		51,425.9			
<b>Farming experience</b>						
Less than 20	54	75	91	84.3	145	80.6
20- 40	15	20.8	17	15.7	32	17.8
Above 40	3	4.2	0	0	3	1.7
<b>Total</b>	72	100	108	100	180	100
Mean	16.3		13.6			
<b>Farm size</b>						
Less than a plot 17		23.6	40	37	57	31.7
1-5	37	51.4	54	50	91	50.6
5.01-10	15	20.8	14	13	29	16.1
Above 10 plots	3	4.2	0	0	3	1.7
<b>Total</b>	72	100	108	100	180	100
Mean	3.7		2.6			0

**Source: Field Survey**

### Gender Perception of the effects of Coronavirus pandemic on food security

The perception of respondents on the effect of coronavirus pandemic on food security in the study area is presented in Table 2. From the results, both male and female respondents were quite aware of the effect of the pandemic. Majority of the respondents (Male 72.2%, Female 80.6%) reported that Covid-19 reduced farmers' income. Majority (Male 98.6 %, Female 98.1%) agreed that the pandemic disrupted farm input supply chain, and that restriction of movement due to the pandemic was responsible for disruption of transportation of farm inputs (Male 51.4%, Female 75.9%). From the findings also,

the pandemic reduced workers' availability (Males 59.7%, Female 82.4%) and also resulted in food unavailability in the households (Males 55.6%, Female 76.9%). This finding corroborates Abdul (2020); Mhlanga and Ndhlovu (2020), and Ekanem and Akpan (2023) who had previously reported that COVID-19 is associated with significant disruption in the food supply chain, notably between rural and urban areas. Movement or import/export limitations accompanying COVID-19 have made it difficult to carry essential food supplies and gain access to markets and processing facilities, which invariably impact both farmers and consumers.

**Table 2: Gender perception on the effect of the Coronavirus Pandemic**

s/n	Statements	Gender	SA	A	U	D	SD	Chi-Square	p. value
1	Covid-19 reduced farmers' income	Male	72.2	26.4	0	0	1.4	2.826	0.243
		Female	80.6	19.4	0	0	0		
2	COVID-19 disrupts the farm input supply chain	Male	31.9	66.7	0	0	1.4	23.278	0.000*
		Female	65.7	32.4	1.9	0	0		
3	The pandemic negatively affected farmers' health	Male	26.4	52.8	20.8	0	0	5.038	0.283
		Female	34.3	50.9	12.0	1.9	0.9		
4	Restriction of movement due to the pandemic was responsible for the disruption of transportation of farm inputs	Male	51.4	44.4	4.2	0	0	13.010	0.005*
		Female	75.9	21.3	1.9	0	0.9		
5	The pandemic reduced workers' availability	Male	59.7	36.1	1.4	1.4	1.4	11.678	0.020*
		Female	82.4	14.8	0.9	0.9	0.9		
6	The pandemic resulted in food unavailability in the households	Male	55.6	40.3	2.8	0	1.4	9.839	0.020*
		Female	76.9	19.4	1.9	0	1.9		
7	Food affordability was severe during the pandemic	Male	54.2	41.7	1.4	0	2.8	7.287	0.063
		Female	70.4	25.0	3.7	0	0.9		
8	The pandemic brought about a decline in food accessibility within the household	Male	43.1	51.4	2.8	0	2.8	11.648	0.020*
		Female	65.7	29.6	1.9	1.9	1.9		
9	The pandemic reduced the marketability of farm produce	Male	27.8	47.2	22.2	0	2.8	20.764	0.000*
		Female	58.3	28.7	9.3	2.8	0.9		

**Source: field survey data \*Significant at P<0.05. Key:** SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD= Strongly Disagree

Ali *et al.*, (2020) and Mahmud and Riley (2021) also reported that the COVID-19 pandemic decreased food production and reduced access to food by consumers, as a result of constraints to the distribution of farm inputs, travel restrictions, and reduced purchasing power. Furthermore,

Barrett, (2020) and Biu (2020) reported that the disruptions in food supply chains at the back of lockdown measures have affected the availability, pricing, quality, and demand for food.

Further analysis shows that male and female respondents were significantly related in their perception of some of the effects. In particular, female respondents significantly perceived that coronavirus disrupted the farm input supply chain ( $\chi^2=23.278$ ,  $P<0.05$ ), restriction of movement due to the pandemic was responsible for the disruption of transportation of farm inputs ( $\chi^2=13.010$ ,  $P<0.05$ ), and that the pandemic reduced workers' availability ( $\chi^2=11.678$ ,  $P<0.05$ ), while the pandemic resulted in food

### **Influence of some Socio-economic characteristics on the perceived effect of Coronavirus on food security**

Results in Table 3 show the multiple regression analysis that was conducted to examine the influence of some selected socio-economic characteristics (gender, age, farming experience, and farm size) of respondents on their perceived effect of coronavirus on food security. The R of 0.419,  $R^2$  of 0.175, and F value of 9.304 ( $P<0.001$ ) imply that the socioeconomic variables used in the model were collectively able to influence the variance in the respondents' perceived effect of COVID-19 on food security. Results of the estimated linear form reveal a  $R^2$  value of 0.175, implying that about 17.5% of the variability in respondents' perceived effect of COVID-19 is accounted for by the four socioeconomic variables included in the model. The F statistics was significant at 1% level probability showing a high significance of the selected model. Of the four variables included in the model, three were significant. A positive value of the estimated coefficient implies that increasing such variables will increase farmers' perceived effect of COVID-19 on food security and vice versa. Findings revealed that gender (0.244) and age of farmers (0.223) were positive and significantly increased respondents' perceived effect at 1% and 5% while years of farming experience (-0.368) was negative and significantly reduced farmers' perceived effect at a 1% level of probability. From the findings, a

unavailability in the households ( $\chi^2=9.839$ ,  $P<0.05$ ). Also, the pandemic brought about a decline in food accessibility within the household ( $\chi^2=11.648$ ,  $P<0.05$ ), and food affordability was more severe during the pandemic ( $\chi^2=7.287$ ,  $P<0.05$ ). Male farmers particularly and significantly observed that the pandemic reduced the marketability of farm produce ( $\chi^2=20.764$ ,  $P<0.05$ ). For other effects, male and female respondents were not significantly different in their perception.

unit increase in the gender and age of farmers will increase farmers' perceived effect by 0.244 and 0.223 units respectively, while that of years of farming experience will reduce farmers' perceived effect of Coronavirus by 0.368 units, respectively. The result is supported by the findings of Bukari *et al.*, (2022) who reported that COVID-19 affected both sexes but its impacts on females are more intense. As noted by Alon *et al.*, (2020) and Wenham *et al.*, (2020), given the severe deprivation of females in the labour markets and female family responsibilities, the COVID-19 pandemic is exacerbating the existing gender inequality gap.

Findings for age is in line with theoretical literature because aged people are expected to be more prudent in organizing and managing resources during periods of disease outbreaks such as COVID-19 than younger farmers. Findings corroborate Robaina and Martin, (2013) who reported a positive relationship between farmers' age and food security. The result of farming experience is justified in that farming experience provides farmers with good knowledge of farming operations. Farmers tend to manage the resources available in order to produce optimal output due to the various production problems they encountered during the pandemic. A good number of years of farming experience would go a long way in improving food production in their household, thereby reducing the perceived negative effect of COVID-19 on food security in their household.

**Table 3: Influence of selected socio-economic characteristics of farmers on their perceived effect of Coronavirus pandemic**

Variables	Coefficients (Linear)
Gender of farmers	0.244 (3.408)*** ((0.571))
Age of Farmers	0.223 (2.447)** ((0.036))
Years of farming experience	-0.368 (-4.168)*** ((0.040))
Farm size	0.040 (0.534) ((0.099))
Constant	35.549
R	0.419
R <sup>2</sup>	0.175
Standard error of Estimate	3.605
F-value	9.304
Significant	0.000

**Source:** Computed from Field Survey data. **Note:** Values in parenthesis represent t-values while values in the double parenthesis represent standard error. \*\*\* and \*\* Significant at 1% and 5% levels respectively

#### Variation in the perceived effect of Coronavirus by gender

Results from Table 4 show that there is a significant difference in the perceived effect of coronavirus pandemic on food security among the male ( $X=41.39$ ;  $SD = 4.04$ ) and female ( $X=39.22.36$ ;  $SD = 3.37$ ) farmers. The mean difference of 2.17593 observed, was statistically significant at  $t_{(178)} = 3.775$ ,  $P < 0.05$ . Therefore, we reject the null hypothesis since the t-

calculated of 3.775 is greater than the t-critical of 1.980. This result corroborates Ekanem et al, (2020) whose study on gender differences found that female arable crop farmers demonstrated greater advocacy for climate change adaptation strategies implying that making gender-responsive programmes more effective towards female farmers and community members in sustainable use of resources could enhance adaptation among households.

**Table 4: Gender variation in the perceived effect of Covid-19 among respondents**

Gender	N	Mean	SD	df	t-value	t-critical	p.value	Remark
Male	72	39.22	3.37	178	3.775	1.980	0.000	Significant
Female	108	41.39	4.04					

**Source:** Computed from field survey data

#### Conclusion and recommendations

The study successfully examined gender differentials on perceived effects of Coronavirus pandemic on farming household food security in Akwa Ibom State, Nigeria. Based on the findings of the study, it is evident that there was a significant difference in perception of both male and female farmers on the effect of Coronavirus on food security in the study area. It was

identified that Coronavirus reduced farmers' income, disrupted farm input supply chain, reduced workers' availability, led to household food unavailability. The study showed that gender, age and years of farming experience significantly influenced farmers' perceived effect of Coronavirus on food security. Accordingly, the study concludes that there is a great variation among gender in the perception of the

coronavirus pandemic effects on food security in the study area. The study therefore recommends that farmers should be encouraged to engage in other economic activities so as to improve their income level as well as boost their food security

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