

EFFECT OF AWARENESS OF EBOLA VIRUS DISEASE ON FOOD SECURITY STATUS AMONG BUSH MEAT MARKETERS IN IBADAN, OYO STATE, NIGERIA

Sikiru Adekunle OLAYIWOLA¹, Ayobami Idris OLAKUNLE², Amurtiya MICHAEL³

¹Federal University Wukari, Faculty of Agriculture and Life Sciences, Department of Agricultural Economics and Extension, P.M.B 1020 Katsina-Ala Road Wukari, Taraba State, Nigeria, Phone: +2348068579558, Email: ollyskool@gmail.com

²University of Ibadan, Oyo State, Department of Agricultural Extension and Rural Development, Nigeria, Phone: +2347036702051, Emails: ayobamiidris2015@gmail.com

³Modibbo Adama University of Technology, School of Agriculture and Agricultural Technology, Department of Agricultural Economics and Extension, P.M.B 2076, Yola, Nigeria, Phone: +2347063472148, Emails: michaelamurtiya@yahoo.com

Corresponding author: ollyskool@gmail.com

Abstract

The study investigated the effect of level of awareness of Ebola virus disease on food security status among bush meat marketers in Ibadan, Oyo state, Nigeria. The specific objectives of the study were to; describe the socio-economic characteristics of respondents, examine the extent to which the respondents are aware of Ebola virus disease prevalence, determine their food security status, identify the determinants of household food security of the respondents and lastly, the major constraints encountered by the respondents during Ebola Virus Disease outbreak in the study area. A multistage sampling technique was used to collect primary data from 100 bush meat marketers using structured questionnaire. Data collected were analyzed using descriptive and inferential statistics. The result of the study revealed that 89.0% of the respondents were female and 76.0% were married. Majority (90%) were educated and their age fall between 41 and 60 years (51.0%). Majority (54.0%) of the respondents earned ₦20,001 and ₦40,000 per month before Ebola Virus Disease outbreak and 52.0% earned between ₦20,001 and ₦30,000 after Ebola Virus Disease outbreak per month. Similarly, ranking score showed that radio (53.0%), family and friends (21.0%), television (44.2%) were major sources of information to the respondents during the outbreak of Ebola Virus Disease in the study area. majority (85.5%) of the respondents were aware of Ebola Virus Disease occurrence while only (14.5%) were not aware of Ebola Virus Disease. The mean per capita food expenditure per month was estimated to be ₦3,720.45 and the value was used to establish the food security line which shows that 52.3% of the households were food secure. The binary logit regression analysis showed that marital status, educational level and monthly income were positive and had a significant influence on food security status while age was significant but negatively influences the respondents' food security status. Major constraints faced by the respondents include low income generation as a result of phobia for the virus, which hinders the respondents from meeting their social obligations as well as discrimination of the infected person.

Key words: Ebola virus disease, food security status, bush meat marketers, Oyo state

INTRODUCTION

Ebola Virus outbreaks have occurred at least eight times in various African countries since 1994; five outbreaks involving eight different viral strains occurred in Gabon and Republic of Congo since 2001, with each human outbreak linked to the handling of a dead animal (gorilla, chimpanzee or duiker) [6]. Following the outbreak of the Ebola virus disease in some West African Countries, Nigeria became an affected country. In a

country where planning for disease outbreaks are woefully inadequate, the country showed determination in adopting approaches that ensured that the scenario did not escalate to an epidemic level [13]. In Nigeria, there has been an unprecedented fear of Ebola virus disease (EVD or Ebola) since July 20, 2014. It's important to state that the first incidence of the outbreak was happened in Lagos, which is not far away from Ibadan [5]. As [5] further notes: "In a matter of weeks some 19 people across two states were diagnosed with the

disease (with one additional person presumed to have contracted it before dying). But rather than descending into epidemic, there has not been a new case of the virus since September 5. And since September 24 the country's Ebola isolation and treatment wards have sat empty. If by Monday, October 20 there are still no new cases, Nigeria, unlike the U.S., will be declared Ebola free by the World Health Organization (WHO)". World Health Organization [15] declared Nigeria Ebola free on 20 October 2014.

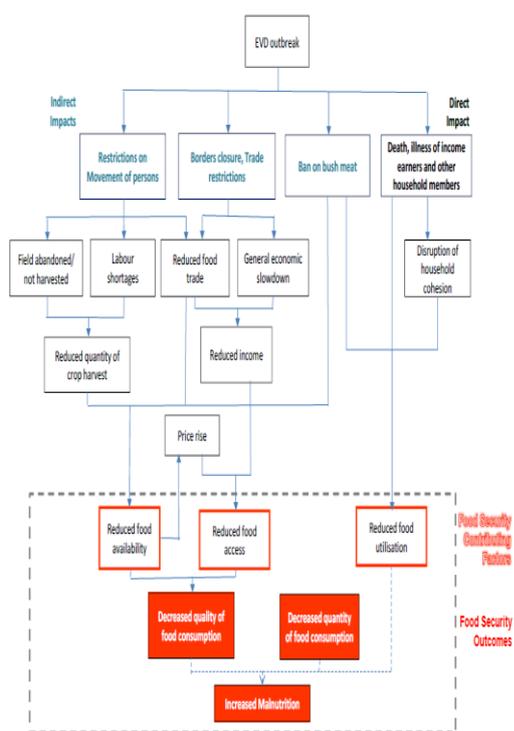


Fig. 1. Causal Chain of the impacts of the EVD outbreak on Food Security. This chart does not aim to give an exhaustive picture but rather to schematically represent the most important impact channels of the EVD outbreak on food security

The Ebola outbreak has obviously direct impacts on food security for households whose livelihood depends on bush meat marketing. If the virus has affected income earner(s), household incomes are reduced and food access is limited, thereby threatening household food security.

However, the EVD outbreak has a much wider impact on food security, linked to the effects of measures taken to limit the transmission of the virus. These measures are likely to affect food availability and access

through several pathways depicted on Figure 1 [12].

As a result, many households whose livelihood depends on bush meat marketing have difficulties meeting food needs with the majority of people depending on cheaper and less nutritious food - such as cassava instead of protein (bush meat) and vegetables - but also reducing the number of meals, limiting the portion size of meals and sometimes borrowing food or money for food. Without a rebound in employment or some social protection intervention from the government they are becoming even more food insecure [12].

Research has focused on emerging zoonotic diseases as global threats, and their potential impact on global economies and high income countries, it is likely that poor populations in their countries of origin will be particularly affected due to a lower capacity to manage zoonotic diseases generally [11].

The effect of zoonotic disease emergence on cross-border trade can have dramatic impacts on local and national economies, which may in turn affect livelihoods of the poor in those countries [14]. Based on the foregoing, this research work aims at analyzing the effect of awareness of Ebola virus disease on food security status among bush meat marketers in the study area while the specific objectives were to:

- (i) describe the personal characteristics of the bush meat marketers;
- (ii) examine the extent to which the respondents are aware of Ebola virus disease prevalence;
- (iii) determine the level of food security status of the respondents;
- (iv) identify the determinants of household food security status of the respondents;
- (v) examine the constraints encountered by the respondents during Ebola Virus Disease outbreak.

Statement of Hypothesis

H₀1: There is no significant difference between monthly income before Ebola Virus Disease outbreak and monthly income after Ebola Virus Disease outbreak in the study area.

MATERIALS AND METHODS

The study was conducted in Ibadan, a city in south western Nigeria, capital of Oyo State, located about 110 km (about 70 miles) northeast of Lagos. Ibadan is a major transit point between the coast and areas to the north. The population of Ibadan metropolis area increased at a growth rate of 3.9 % per annum from 1952 to 1963 when the population rose to 1,258,625, then to 1,829,300 in 1999 at a growth rate of 1.65 % from 1963 [7]. The population growth is said to have shifted gradually to the lesser city with a growth rate of 4.7 % per annum between 1991 and 2006. Ibadan is the centre of trade for a farming area producing cacao, palm oil, yams, cassava, corn, and fruit. Ibadan metropolis is made up of eleven (11) LGAs consisting of five urban local governments in the city, six semi-urban local government areas in the fewer cities. The five urban local governments are Ibadan North, Ibadan North East, Ibadan North West, Ibadan South East and Ibadan South West while the six semi-urban local governments are Akinyele, Egbeda, Ido, Lagelu, Ona-Ara and Oluyole.

Primary data was used for the study. It was obtained directly from the respondents using structured questionnaire administered to the bush meat marketers. The respondents were selected from the population using multi-stage sampling technique. The first stage involves purposive sampling of four local governments. These include (Akinyele, Iddo, Ona ara and Oluyole) where bush meat marketers are concentrated. At the second stage, a random sampling selection of one (1) bush meat market from each of the four (4) Local Government Area (making four markets selected). Then, 40% of 250 bush meat marketers in the selected Local Government Area were interviewed using a snowball sampling technique to select twenty five (25) bush meat marketers from each of the selected bush meat market, having a sample size of 100 respondents for the study. Descriptive statistics, such as frequency distribution, means and percentages were used to analyze the socio economic characteristics, examine the extent to which the respondents are aware

of Ebola virus disease prevalence and the major constraints encountered by the respondents during Ebola Virus Disease outbreak in the study area. Per capita household food expenditure was used to establish the food security line and the respondents were classified as food secure or food insecure based on that. Binary Logit regression model was used to examine the determinants of household food security of the respondents in the study area.

$$FS_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 - \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + U \dots \dots \dots (1)$$

Where;

FS_i = Food security index (ratio): 1 = food secure and 0 = food insecure

β₀ = Constant

X₁ = Age of the household head (years)

X₂ = Gender of the household head (Male=1: Female=0).

X₃ = Marital status of the household head (Married=1: Otherwise=0).

X₄ = Household size (Number).

X₅ = Educational status of the household head (Number in years).

X₆ = Marketing experience (years)

X₇ = Monthly income (₦)

U = Error term

RESULTS AND DISCUSSIONS

Socio-Economic Characteristics of the Respondents

The table 1 shows the analysis of the socio-economic characteristics of the respondents which revealed that 51.0% of the respondents fall within the age range of 41-60 years, indicating that a typical bush meat seller interviewed was in their economically active age. 89.0% of the respondents were females and most (76.0%) of them were married respondents. The average household size was 8. Meanwhile, distribution of respondents by education revealed that majority of them had one form of education or the other (90.0%). Majority (54.0%) of the respondents earned ₦20,001 and ₦40,000 per month before Ebola Virus Disease outbreak and 52.0% earned between ₦20,001 and ₦30,000 after Ebola Virus Disease outbreak per month. An

appreciable proportion (92.5%) had bush meat marketing as their primary occupation while (46.7%) of the respondents indicated that trading was their secondary occupation.

Table 1. Descriptive statistics of bush meat marketers in the study area (n=100)

Socio economic characteristics	Frequency	Percentage (%)
Age of respondents (Years)		
21-40	42	42.0
41-60	51	51.0
>61	7	7.0
Gender of respondents		
Male	11	11.0
Female	89	89.0
Marital Status of respondents		
Single	24	24.0
Married	76	76.0
Household Size		
1-5	32	32.0
6-10	62	62.0
>11	6	6.0
Educational Status		
No Formal Education	10	10.0
Primary Education	35	35.0
Secondary Education	49	49.0
Tertiary Education	6	6.0
Monthly Income before Ebola		
20,001 – 40,000	54	54.0
40,001 – 60,000	40	40.0
>60,001	6	6.0
Monthly Income after Ebola		
10,001 – 20,000	34	34.0
20,001 – 30,000	52	52.0
>30,001	14	14.0
Marketing Experience		
1 – 5	3	3.0
6 – 10	26	26.0
11 – 15	42	42.0
>15	29	29.0
Membership of cooperative		
Members	64	64.0
Non members	36	36.0
Sources of the Information on EVD Outbreak		
Newspaper	9	9.0
Radio	53	53.0
Television	12	12.0
Family and friends	21	21.0
Agricultural extension agents	5	5.0
Total	100	100.0

Source: Field Survey, 2015

Access to consumption credit and membership of cooperatives were factors that

could increase household's income ceteris paribus [4], however, the result shows that only 64.0% of the respondents had access to consumption credit and members of cooperatives. This situation has positive impacts on household's income and food demand in the short and long run [4]. Ranking score showed that radio (53.0%), family and friends (21.0%), television (44.2%), newspaper (9.0%) and Agricultural extension agents (5.0%) were major sources of information to the respondents during the outbreak of Ebola Virus Disease in the study area.

Level of awareness of Ebola Virus Disease prevalence

The result in table 2 shows that majority (85.5%) of the respondents were aware of Ebola Virus Disease occurrence in Nigeria, only (14.5%) were not aware of Ebola Virus Disease. Most (88.8%) of the respondents indicated that they were aware of EVD occurrence in Nigeria, whereas (11.2%) of the respondents admitted that they were not aware. This study also reveals that majority (68.7%) of the respondents indicated that they were aware that health personnel were more affected of EVD than other occupation while (31.3%) of the respondents indicated that they were not aware. Besides, most (73.5%) of the respondents were aware that EVD is responsible for low business patronage in recent times and (73.5%) of the respondents were not aware. This study also reveals that, most (70.3) were aware a lots of government activities to control EVD in Nigeria. Most (74.6%) of the respondents were aware that there has been lots of government activities to control EVD in Nigeria, Only (25.4%) of the respondents indicated they were not aware. Moreso, 58.2% of the respondents indicated that they were aware that dead bodies movement were restricted from affected area to non affected region whereas (41.8%) of the respondents were not aware. Most (92.0%) of the respondents were aware of schools closure to curtail the spread of EVD in Nigeria while (8.0%) of the respondents were not aware. Most (55.7%) of the respondents were aware of many agencies and organisations that were involved in EVD control activities in Nigeria

while (44.3%) of the respondents were not aware.

Table 2. Distribution of the respondents according to level of awareness of Ebola Virus Disease

Level of Awareness	Aware (%)	Not Aware (%)
Are you aware of how EVD entered Nigeria?	85.5	14.5
EVD has been observed in Nigeria	88.8	11.2
Ebola virus disease occurred year 2014	93.6	6.4
Health personnel were more affected of EVD than other occupations	68.7	31.3
EVD is responsible for low business patronage in recent times	26.5	73.5
Were there restrictions on the supply of bush meat by the government in Nigeria?	70.3	29.7
There has been lots of government activities to control EVD in Nigeria	74.6	25.4
Dead bodies movement were restricted from affected to non affected region	58.2	41.8
Nigerian schools were closed to curtail the spread of EVD outbreak	92.0	8.0
Many agencies and organizations were involved in EVD control activities in Nigeria	55.7	44.3

Source: Field Survey, 2015

Bush meat Marketers' Household Food Security Status

A mean per capita monthly food expenditure of ₦5,580.67 with a food security line of ₦3,720.45 was used to classify the bush meat marketers' households either as the food secure or food insecure. Majority (52.3%) of the respondents were found to be food secure while 47.7% were food insecure.

Table 3. Food security status of the respondents in the study area

Food security status	Frequency	Percentage (%)
Food secure	52	52.3
Food insecure	48	47.7
Total	100	100.0
Mean per capita household food expenditure (MPCHHFE) is ₦5,580.67		
Food security line (2/3 of MPCHHFE) is ₦3,720.45		

Source: Field Survey, 2015

Binary Logit Regression for the Determinants of Household Food Security in the Study Area

Table 4 shows the result of Logit regression used in identifying the determinants of household food security of the respondents. The table indicated that four out of the nine independent variables included in the model were significant in explaining the variation in the food security status of households in the study area. These variables were age, sex, marital status, Household size, Educational status, marketing experience and Monthly income.

Table 4. Result of Binary Logit Regression for the Determinants of Household Food Security in the Study Area;

Variables	Coefficients	Standard Error	Significant
Age(X_1)	-.441	.163	.007***
Sex(X_2)	22.354	6.275E3	.997
Marital status(X_3)	2.378	1.443	.099*
Household size(X_4)	.100	.161	.536
Educational status(X_5)	.232	.125	.062*
Marketing experience(X_6)	.007	.060	.901
Monthly income (X_7)	4.015	2.065	.052*
Constant	10.316	5.307	.052*

Source: Field Survey, 2015

* and *** Significant at 10% and 1%

The result shows that age (X_1) has a negative effect on food security and is significant at 1%. The negative sign of the coefficients implies that a unit increase in age of the marketers will lead to 0.441 decreases in the food security status of the respondents; this thus suggests that as respondents grow older, they tend to be less productive and thus less food secured. This is in agreement with the findings of [4], [1], [10], [3] and [9]. With respect to marital status (X_3), the variable was significant at 10% and had a positive relationship with household food security status which indicates that the probability of a household being food secure increases with married household heads. This finding is in line with the finding of [2]. The coefficient of the educational status of household head was found to be positive and significant at 10%. This implies that households with an educated heads are more likely to be food secure than one with uneducated head. This also agrees

with [8] Monthly income had a positive coefficient, which though significant at 10%, this agrees with a priori expectation.

Correlation analysis between respondents' monthly income before Ebola Virus Disease outbreak and monthly income after Ebola Virus Disease outbreak in the study area.

The result of paired sampled t-test (p=0.000) in Table 5, showed that there was significant difference between monthly income before Ebola Virus Disease outbreak and monthly income after Ebola Virus Disease outbreak.

Table 5. Correlation for Test of Relationship between Respondents' Monthly Income before and after Ebola Virus Disease Outbreak in the Study Area.

Statement	N	Correlation	Sig.
Monthly income before Ebola virus outbreak and monthly income after Ebola virus outbreak	100	.719	.000

Source: Field Survey, 2015

Constraints encountered by the respondents during Ebola Virus Disease outbreak.

Table 6. Distribution of the respondents based on constraints encountered by the Respondents during Ebola Virus Disease outbreak.

Constraints	Minor (%)	Major (%)	Not a Constraint (%)
High cost of preventive measures	38.4	49.0	12.6
Inability to pay daily contribution	55.5	42.5	2.0
Inability in meeting family food consumption	44.1	26.1	29.8
Inability to meet cooperative promises	91.8	7.0	1.2
Discrimination of the infected person	70.0	20.3	9.7
Distant location of personal preventive equipment distribution centre	40.7	49.0	10.3

Source: Field Survey, 2015

Table 6 indicates that Inability to meet cooperative promises (91.8%), Discrimination of the infected person (70.0%), Inability to pay daily contribution (55.5%) and were the minor constraints faced by the respondents during the outbreak, while high cost of preventive measures (49.0%), Distant location

of personal preventive equipment distribution centre (49.0%), were the major constraints faced by the respondents.

CONCLUSIONS

The study concludes that, the level of knowledge on Ebola Virus Disease by the respondents was high and has affected bush meat through the reduction in the number of work days in the market; reduction in reduction in sales and marketing profit; and change in livelihood. Based on this, the study recommends that:

- (i) Proper management practices and bio-security measures that serve as good disease control measures should be implemented by the government.
- (ii) Extension service personnel that will help in the dissemination of appropriate health information education to farmers should be adequately employed.
- (iii) Social protection, livelihood regeneration, income support and safety net programmes must be institutionalised in seriously affected communities.

REFERENCES

[1] Adepoju A. A., Olawuyi S. O., 2012, Effect of livelihood activities on food security among farmers in Oyo East Local Government Area of Oyo State, Nigeria. AAB Bioflux 4(3), 112-121.
 [2] Adepoju, A. O., Adejere, A. K. 2013, Food insecurity status of rural households during the post-planting season in Nigeria. Journal of Agriculture and Sustainability, 4(1), 16-35.
 [3] Ahmed, F. F., Abah, P.O. 2014, Determinants of Food Security among Low-Income Households in Maiduguri Metropolis of Borno State, Nigeria. Asian Journal of social sciences and humanities, 3(1), 74-86.
 [4] Babatunde, R.O, Omotesho, O.A., Sholotan, O.S. 2007, Socio-Economic characteristics and food security status of farming households in Kwara State, North-Central Nigeria. Pakistan Journal of Nutrition, 6(1), 49-58.
 [5] Courage, K. H., 2014, How Did Nigeria Quash Its Ebola Outbreak So Quickly? Scientific American. [Online] Available: <http://www.scientificamerican.com/article/how-did-nigeria-quash-itsebola-outbreak-so-quickly/> (October 18, 2014)
 [6] Leroy, E. M., Rouquet, P., Formenty, P., Souquière, S., Rollin, P.E. 2004, Multiple ebola virus transmission events and rapid decline of Central African wildlife.

science 303: 3 87-390.

[7]National Population Commission. 2006, Population Distribution by sex, state and senatorial districts: 2006 Priority Tables. 3: 3

[8]Omonona, B.T., Agoi, G.A. 2007, An analysis of food security situation among Nigerian households: Evidence from Lagos State, Nigeria. *Journal of Central European Agriculture*, 8(3), 397-406.

[9]Otunaiya, A. O., Ibidunni, O. S., 2014, Determinants of food security among farming households in Ogun State, Nigeria. *Journal of Sustainable Development in Africa*, 16 (6), 33-44.

[10]Oyebanjo, O., Ambali O. I., Akerele E. O. 2013, Determinants of food security status and incidence of food insecurity among rural farming households in Ijebu division of Ogun State, Nigeria. *Journal of Agricultural Science and Environment*, 13: 92-103.

[11]The Economic Impact of the 2014 Ebola Epidemic: Short and Medium Term Estimates for West Africa, The World Bank Group, October 7, 2014

[12]Thomas, A., Nkuzimana, T., Hoyos, A., Kayitakire, F. 2014, Impact of the west African Ebola virus disease outbreak on food security. *Joint Research Centre-Institute for environment and sustainability*. Pg 6-46

[13]Uchendu, E. C., Anthony, M. N. 2014, Ebola in West Africa: Implications on “Community Interaction” in Urban, Nigeria. *International Journal of Education and Research*. Vol. 2 No. 10 October 2014.pg 329-346

[14]WHO, 2006, Food Security
<http://www.who.int/trade/glossary/story028/en/>

[15]World Health Organization (2014). Nigeria is now free of Ebola virus transmission. [Online] Available: <http://www.who.int/mediacentre/news/ebola/20-october-2014/en/> (October 20, 2014)

