

Full Length Research Paper

Effects of the Ebola Crisis On Agricultural Productivity in Kakua and Bumpe Ngao Chiefdoms, Bo District, Southern Sierra Leone.

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Farming activities were disrupted in the Southern region of Sierra Leone as a result of the 2014 Ebola outbreak in the country. This study is conceived to investigate the effects of the Ebola outbreak on agricultural activities in Kakua and Bumpe Ngao Chiefdoms in Bo district Southern Sierra Leone. The objectives of the study were to examine the effects of Ebola Virus Disease ((EVD) on farming activities in the two chiefdoms and to determine the impact of EVD on the socio-economic lives of people in the two Chiefdoms. The population was estimated as 200 subjects. The sample size was 176; 44 respondents from every section in two Chiefdoms. The significant findings included the following: the Ebola outbreak affected farming activities in the two chiefdoms. Food insecurity was high as farm lands were abandoned due to lockdowns and quarantine. Ebola victims were stigmatized and abandoned by family members and the community. Conclusively food insecurity was high in the two chiefdoms and the EVD outbreak had devastating effects on the economy of farmers. Some recommendations included the following i) in case of future outbreak, the government should institute alternative measures to fight the disease instead of lock downs and prevention of markets. ii) traditional practices which include shaking hands, hugging, and washing dead bodies should be minimized or stopped. iii) regular washing of hands should prevail in every community in the two Chiefdoms.

Keywords: Ebola, Agricultural Productivity, Kakua and Bumpe Ngao Chiefdoms, Bo District, Southern Sierra Leone

INTRODUCTION

The survival and existence of human race depends on agricultural productivity as the main source of food and other basic needs. These basic needs could be obtained from the products of farming. Therefore effecting modern farming practices will ensure maximum production which will balance the socio-economic status and livelihood of farmers and the nation at large. About 70% of the rural population in sub-Sahara Africa is involved in Agriculture which is their main source of

income and livelihood. In West Africa, 70% of farmers live in rural areas and majority of them are peasant farmers.

Sierra Leone government after the dreadful footprint of the eleven years (1991-2002) rebel war in recent past has prioritized agriculture as the engine of the national economic growth that can wheel toward all efforts for the attainment of socio-economic growth and sustainable development in the nation. This is not

surprising because agriculture contributes nearly 50% to the country's Gross Domestic Product (GDP), and employs over 75% of its nation work force (State house, SLG, 2004 and 2010).

Farming activities in Guinea, Liberia and Sierra Leone were disrupted by the outbreak of Ebola Virus Disease (EVD) in these countries in 2014 when it was officially reported by World Health Organization (WHO). According to World Food Programme (WFP) Emergency Response Coordinator, Denis Brown (2014), the virus have had terrible impact on the three worst-hit countries and will continue to affect many people's access to food in the future. Cardiacriag (2014) stated that the threat of EVD has intensified throughout West Africa and food security was at the forefront of international concern. The Mano River Union (MRU) countries (Sierra Leone, Liberia and Guinea) were the nation most greatly affected by the spread of the virus.

Studies have revealed that Ebola Virus Disease known as Ebola Hemorrhagic Fever (EHF) is a human illness caused by infection with an Ebola virus (Feidmann, 2014). There are five known species of Ebola viruses, four (4) of which cause human illness (World Health Organization, 2007). The four (4) are Bundibugyo Virus (BDBV), Sudan Virus SUDV), Taii Forest Virus (TAFV) and one simply called Ebola Virus (EBOV), formerly Zaire Ebola Virus). EBDV species, Zaire Ebola Virus is the most dangerous of the known EVD, that is responsible for the largest number of outbreaks. The fifth Virus Reston Virus (RESTV) is not thought to cause disease in human, but has caused disease in other primates. All five (5) viruses are closely related to Marburg Virus (World Health Organization, 2007).

Sierra Leone recorded the first case of Ebola in May 2014. It is the largest Ebola outbreak ever documented and the first recorded in the region. The present outbreak in Sierra Leone over-ran the entire country, which consists of 14 districts. All the 14 districts recorded Ebola cases including the capital city, Freetown. According to the Ministry of Health and Sanitation Freetown, the total confirmed clinical cases as at March 2015 was 10,905, 5,131 suspected cases, 3,712 deaths and 4,051 discharged cases (MHS, March, 2015 report). According to World Bank Report (2015), Ebola outbreak had an economic impact on Sierra Leone. In urban areas and particularly in Freetown, decline in employment was evident both among wage workers and non-farm self-employed, with Ebola cited as one of the main reasons for not working. Food insecurity was high and prices of agricultural commodities escalated.

According to Kanu et. Al (2014) the current outbreak poses huge social, economic and political challenges on the country's development pathway especially farmers in the rural areas where the epidemic has severely affected. The Ebola outbreak first hit the

most agricultural productive district – Kailahun District in May 2014 and spread to the adjacent district Kenema. According to the authors the EVD outbreak disrupted rural rice farming activities in Sierra Leone. The effect became more serious where one farmer who is a bread winner happened to be infected by the disease; the rest of the family members became stigmatized and hence disrupted farming activities completely. The two eastern districts Kailahun and Kenema which were initially hit by the Ebola epidemic are famous for higher productivity of most of the major cash crops (cacao, coffee and oil palm) produced in the country. Majority of the farmers in the affected Ebola regions in the country were reluctant to regularly visit their plantation farms either for the purpose of cleaning the plantation or harvesting to obtain produces for sales. They were reluctant because of fear of not being infected by EVD. Farms remain unharvested in some of the worst hit areas. There was a noticeable decrease in the yield of cash crop and this affected the threshold of the GDP of the country (Kanu et.al 2014).

According to Jenckheere (2004), disruptions of food posed a growing risk to local communities. Anecdotal evidence suggests that agricultural activity has been significantly impacted as farm workers in the affected areas abandoned their farm lands.

Strategies to contain the deadly virus though necessary affected access to food, prices of commodities and harvests. The following measures were taken to combat the Ebola virus in the country:

- i) Creation of quarantine zones;
- ii) Restriction on the movement of people
- iii) Closure of border crossing points and trading zones.

These restrictions created panic among the population causing food shortages and price spikes. In Sierra Leone where households spend up to eighty percent of their income on food, the price increase had significant effects on food security. Some of the most productive areas in the country had the highest incidence rates of Ebola Virus Disease.

Purpose and Objectives

The aim of this study was to investigate the effect of Ebola on agricultural productivity in Kakua and Bumpe Ngao chiefdoms in Bo district.

The objectives were to:

- Identify farmers infected by Ebola Virus Disease (EVD) in Kakua and Bumpe Ngao chiefdoms in Bo District.
- Examine the effects of the Ebola Virus Disease on farming in the two chiefdoms;
- Assess the level of stigmatization of victims of Ebola Virus Disease in the chiefdoms;
- Determine the impact of EVD on the socio-economic lives of people in the two chiefdoms;

- Assess the types of farming activities carried out by farmers in the two chiefdoms.

METHODOLOGY

The study was conducted in Kakua and Bumpe Ngao chiefdoms in Bo district, Southern Sierra Leone between February 2015 and June 2015. Kakua chiefdom has its chiefdom headquarter town in Bo, while Bo also serves as the district headquarter town for the two chiefdoms. Bo district is subdivided into fifteen (15) chiefdoms. The district borders Kenema district to the east, Tonkolili district to the north, Moyamba district to the West, Bonthe district to the Southwest and Pujehun district to the South. It occupies a total area of 5,473.6 Km². Bo is one hundred and fifty two miles (235 kilometers) from the capital city Freetown. As Kakua and Bumpe Ngao chiefdoms form part of Bo district, the district is ethnically and culturally diverse, particularly the city of Bo. The Mende people form the largest ethnic group of Bo district.

Kakua chiefdom lies about 18,000 kilometers at the center of the district. The chiefdom comprises eleven (11) sections, namely: Samami, Ngoabu, Kpandabu, Nyallay, Korjeh, Niawa, and Sindeh, Sewah, Westward, Eastward and Northward sections. The population of the chiefdom was reported to be 209,754 (2004 census).

Bumpe Ngao chiefdom has its headquarter town in Bumpe. Bumpe chiefdom has an estimated population of 48,600 inhabitants (2004 census report). The main economic activities of the people are crop plant farming including cash and food production, and rearing of small ruminants on free range system.

Design of the Study

The study design used was descriptive field survey design. Fraenkel and Wallen (1993) describe descriptive analysis as that method that involves asking a large group of people questions about a particular issue. Information is obtained from a sample rather than the entire population at one point in time which may range from one day to a few weeks. The design is considered appropriate because it focuses on the observation and perception of an existing situation, describes, and interprets what is concerned with issues, conditions and practices and relationship, views, beliefs, attitudes, process and trends which concern the issue of Impact of Ebola crisis on agricultural activities in Kakua and Bumpe Ngao chiefdoms in Bo district, Southern Sierra Leone. Also, any research undertaking involves lot of cost implications hence this design was deliberately selected for the study because it allows for

quick data collection at a comparatively cheap cost (Grinnel, 1993).

Population

The population of 200 subjects were randomly selected for this study between February 2015 and June 2015; 50 respondents from every section. These include men, women and chiefs who are active farmers in the two chiefdoms. These were randomly selected for this study. The researchers targeted four (4) sections for this study: Korjeh and Kpandebu sections from Kakua chiefdom and Taninahun and Kpetema sections from Bumpe/Ngao chiefdoms.

Sampling procedure and sample size

A multistage sampling procedure was used in selecting respondents for the study. In the first stage, two chiefdoms Kakua and Bumpe Ngao chiefdoms out of fifteen (15) chiefdoms in Bo district were purposively selected. These two neighbouring chiefdoms were purposively selected because they were the most important Ebola affected chiefdoms and share similar culture in the Southern region. The second stage was characterized by the purposive random sampling of respondents from four (4) sections in the two chiefdoms; Korjeh and Kpandebu sections from Kakua chiefdom, and Taninahun and Kpetema sections from Bumpe Ngao chiefdom. The sections were affected by the Ebola outbreak and residents in the communities were quarantined for a period time.

The sample size is 176, forty-four (44) respondents from every section. These include men, women and chiefs who were active farmers in the two chiefdoms.

Instrumentation and Data Collection

In order to elicit information pertinent to the study under investigation, a set of questionnaires was developed for the people in the chiefdoms. The questionnaires were carefully designed to obtain relevant information from the respondents in order to achieve the objectives of the research. The instrument was designed bearing in mind that it produced exactly the type of data that is required for the study. That is the researchers ensured that the questionnaires developed were valid and reliable as they were consistent in measuring what they were intended to measure by pre-testing the instrument. Some modifications were made to finalize the instrument before final distribution. The questionnaires were used to collect data from the study sample in the study area.

The researchers and enumerators also conducted personal interview with the study sample selected from the study population in the two chiefdoms. Focus group discussions were also conducted among homogeneous population from the study sample which included men, women and chiefs who were active farmers in the two chiefdoms.

RESULTS AND DISCUSSIONS

Data collected were analyzed using computer software called statistical package for Social Sciences (SPSS). Descriptive statistics was used for the analysis of the data that was generated. The descriptive statistics included frequency counts and percentages which were used to describe the socio-economic characteristics of the respondents and to measure other variables of interest in the study.

The findings of the study clearly reveal that there was Ebola outbreak in Kakua and Bumpe Ngao chiefdoms and farmers in the two chiefdoms were infected with the disease. About 61.3% of the respondents indicated that there was an outbreak of Ebola Virus Disease (EVD) in towns and villages in the two chiefdoms. Forty percent (40%) of the respondents claimed that EVD infected farmers in Korjeh section. Also 30.0% and 22.0% of the respondents indicated that EVD infected people (farmers) in Taninahun and Kpetema sections respectively. But only 8.0% of the respondents stated that EVD infected people in Kpandabu section. About 76.1% of the respondents claimed that the main economic activity of the people in the two chiefdoms is farming while 10% indicated trading.

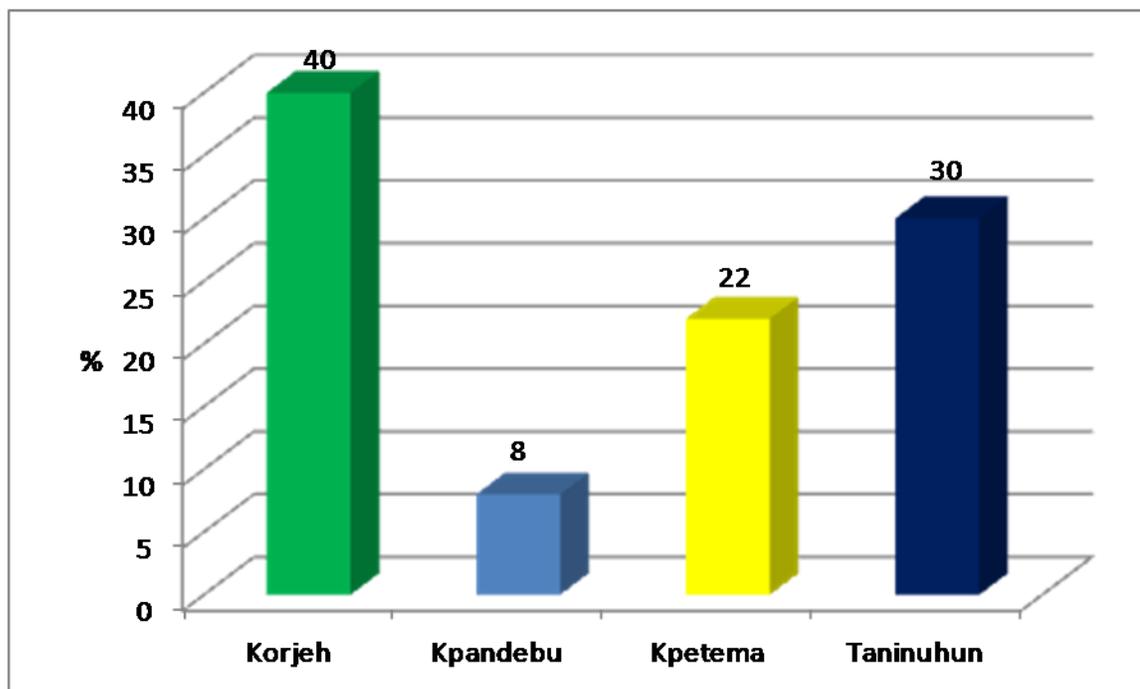


Figure 1: A bar chart showing the percentage of farmers infected by Ebola Virus Diseases (EVD) in Kakua and BumpeNgao Sections, Bo District.

All the four (4) sections in the two chiefdoms experienced Ebola Crisis; but the section that was seriously hit by the EVD was Korjeh section in Kakua chiefdom. Unlike past outbreaks which were generally confined to remote villages, the outbreak of Ebola in March 2014, in West Africa hit several communities: villages, towns and cities.

In Sierra Leone, the 2014 outbreak of Ebola

over runned the entire country which consists of fourteen (14) districts; all the districts including Western area recorded Ebola cases. In Sierra Leone, about 70.0% of the population lives in rural areas and 80.0% are small scale farmers. This is evident in the study as the results revealed that the main economic activity of the people in the two chiefdoms is farming.(figure1-3)

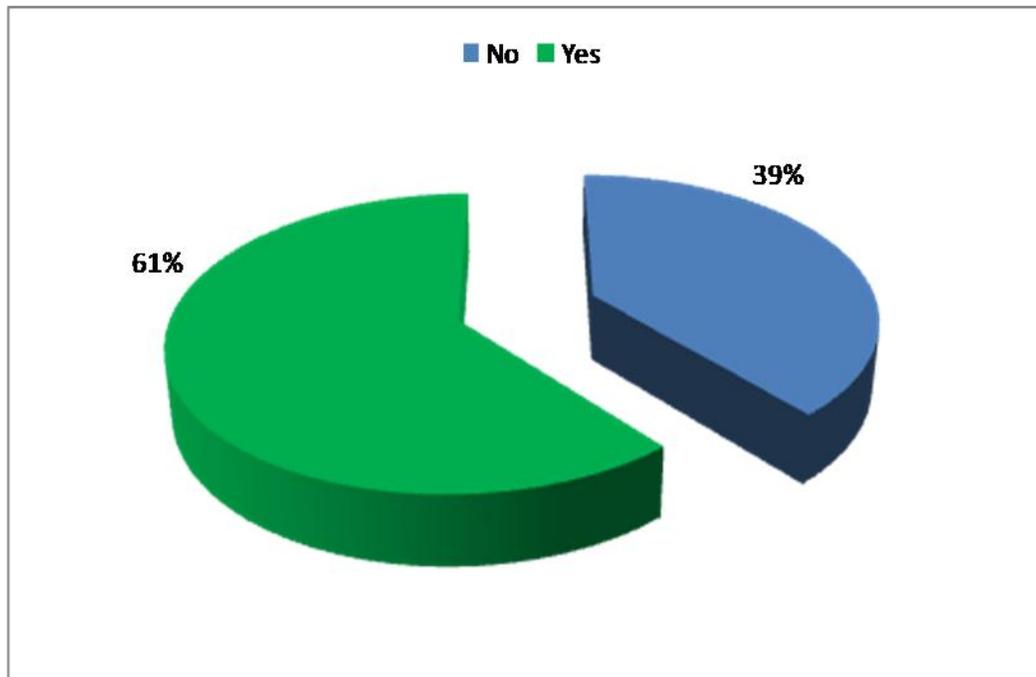


Figure 2 : A pie chart showing the percentage of Ebola Outbreak in Towns and Villages in Kakua and Bumpengao Chiefdoms.

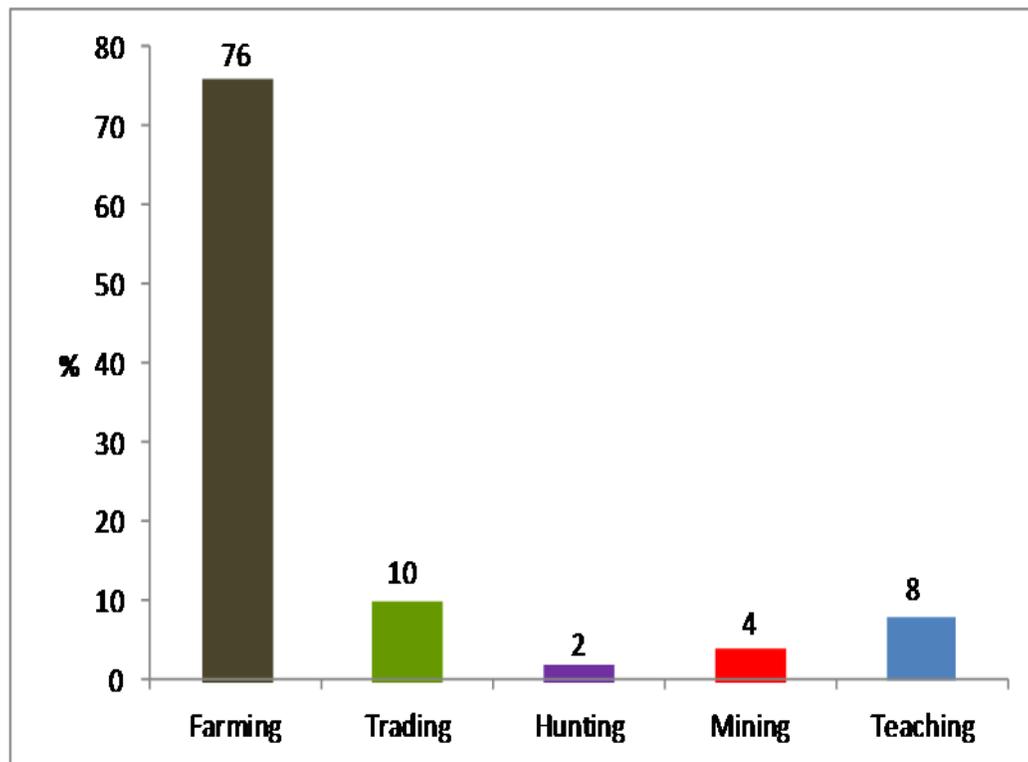
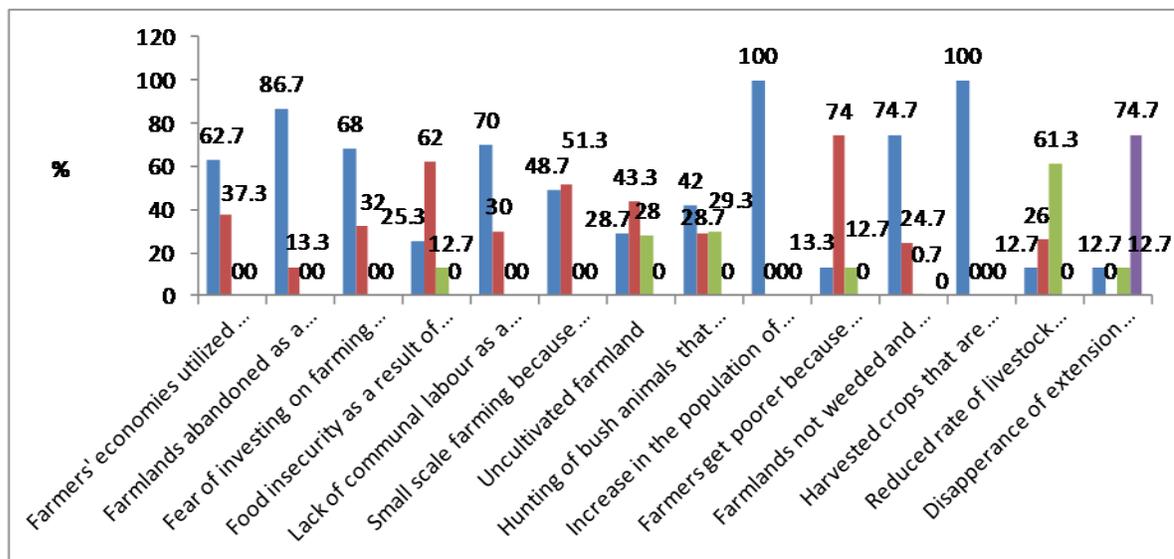


Figure 3: A bar chart showing the Percentage of Economic Activities in Kakua and Bumpengao Chiefdoms

Effects of outbreak of Ebola Virus Disease (EVD) on Farming in Kakua and Bumpe Ngao chiefdoms

The study further revealed that the measures taken to combat the Ebola outbreak in the two chiefdoms had negative effects on the farmers and the farming communities (figure 4). Food insecurity was high as farmlands were abandoned due to the lockdown and quarantine. About 87.3% of the respondents claimed high to moderate effect of food insecurity in the two chiefdoms. Also 62.7% of the respondents claimed that the lockdown and the quarantine had high effects on the economies of farmers. Hundred percent (100%) of the respondents claimed high effect of increase in population of animal pests that destroyed crop plants on the field and high effect of harvested perishable crops that were damaged as a result of closed market, road blockades and the quarantine measures. Also 68.0% of the respondents indicated high effects of farmers' fear of investing in farming as a result of the outbreak while 74.7% of the respondents claimed high effects of farmland not weeded and protected from pest resulting into poor yield.



Key

High effect
Moderate effect
Low effect
Don't know

Figure 4: The Effects of the Ebola Virus Outbreak in Kakua and Bumpe Ngao Chiefdoms.

The United Nations Food and Agricultural Organization (2014) and world Food Programme (WFP) estimated that over 12,000 Sierra Leoneans will be food in-secured as a result of the Ebola outbreak in the country.

In Kakua and Bumpe Ngao chiefdoms most farmers abandoned their farmlands as a result of lockdown and death of farmers caused by EVD. This resulted in food insecurity in the two chiefdoms. The situation may have long-lasting impacts on farmers' livelihoods and the rural communities. Most farmers who had received loans prior to the Ebola outbreak were in no proper position to invest their loans on farming activities either because they themselves were hit to death by the epidemic or suffer from other consequences of Ebola virus. Hence most farmers were

not able to pay back the loans as a result of the disease outbreak. This led to a halt in their farming activities.

Socio-economic impact of Ebola Virus Disease (EVD) on lives of People in Kakua and Bumpe Ngao chiefdoms

The findings of the study revealed in figure 5 that 61.3% of the respondents indicated high impact "of increase cost of food and other items" in the two chiefdoms. Also 88.0% of the respondents claimed high impact "of decrease in farm income" while 62.0% of the respondents indicated very high impact of inadequate market facilities in the two chiefdoms. About 90.7% of the respondents stated high impact "of reduced econo-

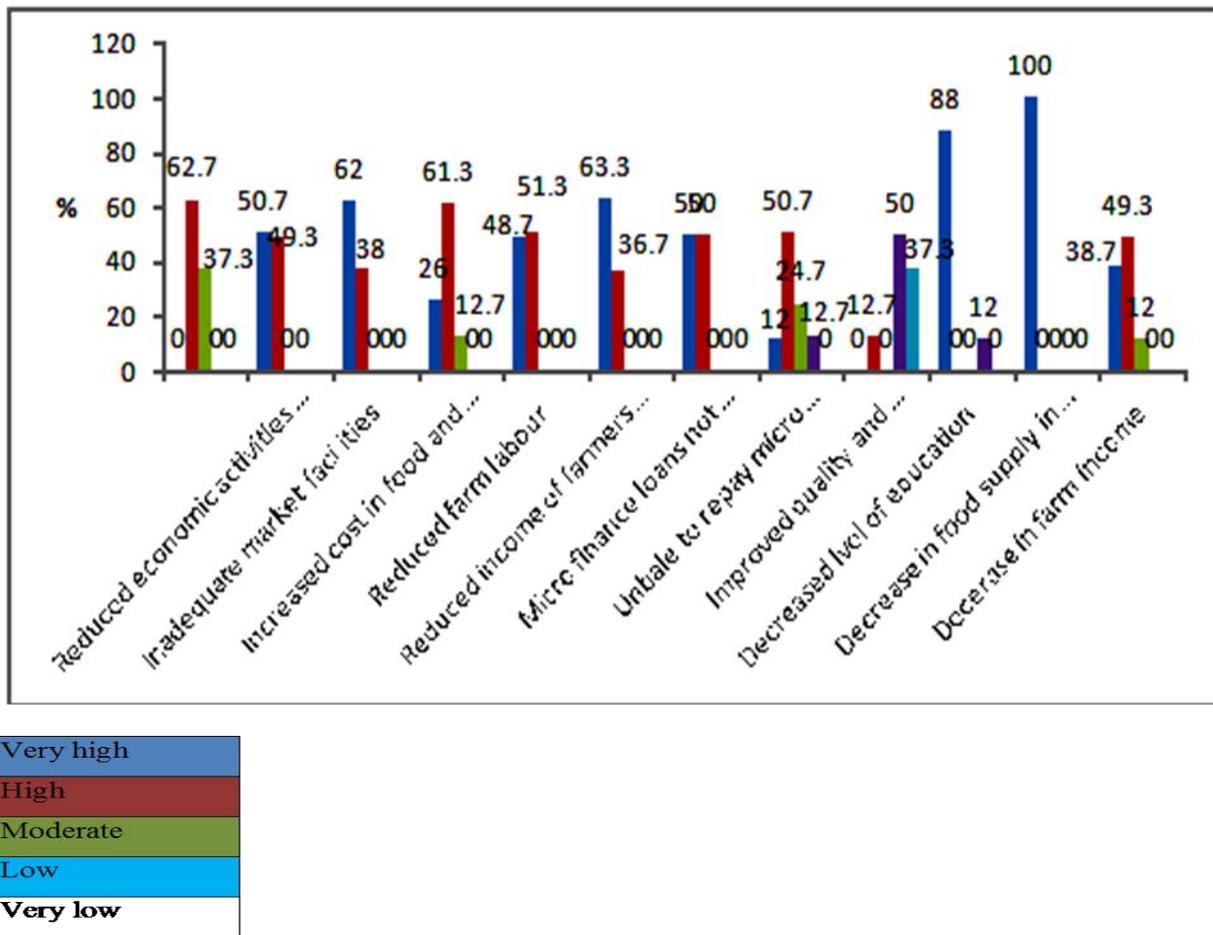


Figure 5: Socio-Economic Impact of Ebola Virus Disease (EVD) on Lives of People in Kakua and Bumpengao Chiefdoms.

mic activities and employment”. Also hundred percent of the respondents indicated high impact “of reduced farm labour in the two chiefdoms.

The nature of the outbreak of EVD imposes serious impact on the economy of Sierra Leone. People’s primary source of income, savings and loan schemes has been depleted and food prices have been rising. Due to limited or lack of access to jobs, livelihoods are compromised. For example many farmers were not able to access their farms, the few who did lacked workers to assist in planting and harvesting. Throughout the Ebola outbreak in the country, farmers in the two chiefdoms were not engaged in any meaningful agricultural activities.

Assessing the type of farming activities in Kakua and Bumpengao chiefdoms

The results of the study clearly revealed that people in Kakua and Bumpengao chiefdoms were engaged in subsistence farming (see table 1). The type

of farming practices they were engaged in, include: shifting cultivation, livestock farming and food crop production. About 62.7% of the respondents claimed that the residents of the two chiefdoms were engaged in subsistence farming. Also 74.0% of the respondents indicated they were involved in crop production. About 83.3% of the respondents indicated that the people were not involved in permanent crop production while 87.3% of the respondents claimed that residents of the two chiefdoms were not involved in fish farming.

According to Okigbo (1982), the existing agricultural or farming systems in different ecological zones of West Africa are designed to produce subsistence food, cash sales and materials for local or industrial use. There is no generally accepted classification of farming systems in tropical Africa, but convenience is based on intensity of cultivation and/or annual rearing based on subsistence and/or commercial farming. Farmers in Kakua and Bumpengao chiefdoms were engaged in shifting cultivation, mixed cropping, subsistence farming and livestock farming which includes pig and poultry farming.

Table 1: Assessing the types of Farming Activities in Kakua and BumpeNgao Chiefdoms

A – TYPE OF FARMING	YES	NO
Commercial Farming	0.0	100.0
Subsistence Farming	62.7	37.3
B – CATEGORIES OF FARMING	YES	NO
Livestock Farming	74.0	26.0
Crop production	62.7	37.3
Fish farming	12.7	87.3
C – SYSTEM OF FARMING	YES	NO
Shifting cultivation	50.0	50.0
Continuous farming	12.7	87.3
Mixed farming	12.7	87.3
Mixed cropping	37.3	62.7
D – LIVESTOCK ENTERPRICES	YES	NO
Poultry	47.3	52.7
Goat	36.0	64.0
Sheep	26.0	74.0
Cattle	0;0	100.0
Swine	66.7	33,3
E – SYSTEM OF LIVESTOCK MANAGEMENT	YES	NO
Free range	50.7	49.3
Semi – intensive	36.0	64.0
Intensive	13.3	86.7
F – CROP PRODUCTION	YES	NO
Food crop	64.0	36.0
Permanent crop	16.7	83.3

Stigmatization of Victims of Ebola Virus Disease in Kakua and Bumpe Ngao chiefdoms

Table 2 below depicts the level of stigmatization of victims of the Ebola Virus Disease in the two chiefdoms. Fifty percent of the respondents indicated that Ebola Victims were abandoned by family members and the community after surviving the EVD infection. This same of Ebola Virus Disease (EVD) were abandoned at treatment centres while 50.0% of the respondents stated that they were not abandoned.

Table 2: Percentages of Victims of Ebola Virus Disease Stigmatized in Kakua and BumpeNgao Chiefdoms, Bo District.

LEVEL OF STIGMATIZATION ENCOUNTERED BY VICTIMS OF EBOLA VIRUS DISEASE	YES	NO
Abandoned by medical personnel at the treatment center.	50.0%	50.0%
Inadequate supply of medical facilities.	12.7%	87.3%
Inadequate counseling at the treatment center.	38.0%	62.0%
Abandoned by family members after surviving at (EVD)	50.0%	50.0%
Abandoned by community members after surviving the (EVD)	50.0%	50.0%
Survivors' children not allowed associating with other children in the community.	50.0%	50.0%
Neglected in places of worship and market places.	37.3%	62.7%
Deprived of basic amenities in the community.	24.7%	75.3%
Deprived of basic facilities in the family.	24.7%	75.3%

Fear and stigma are often common human reactions to a disease; in particular when it comes to

Ebola, a highly infectious disease with no known cure. Avoiding direct contact with people carrying Ebola Virus

is one of the key measures used to reduce the spread of the disease. But this control measure has negative effect as it leads to stigmatization.

Survivors of Ebola who had family members that have died of EVD suffer from stigmatization. Lazuta (2014) stated that as medical experts work to control the Ebola outbreak in West Africa, the doctors and nurses were stigmatized in their communities. Majority of the medical personnel and service providers in hospitals and health centres were stigmatized in Kakua and Bumpa Ngao chiefdoms in Bo district, Southern Sierra Leone. Some of these workers were driven from premises they occupied.

CONCLUSION AND RECOMMENDATION

Conclusively there was an Ebola outbreak in Kakua and Bumpa Ngao chiefdoms and all the four sections in the two chiefdoms were affected. The Ebola outbreak did not only destroy human lives but the disease affected all facets of the economy, especially agriculture being the primary industry of majority of Sierra Leoneans. The EVD outbreak in the two chiefdoms had high effects on the economies and food production. Food insecurity was high in the two chiefdoms. Business activities came to a halt as investors were scared to invest into farming and other business activities. People's primary source of income and savings were depleted and food prices escalated due to EVD outbreak.

There were high unemployment and inadequate health and market facilities in the two chiefdoms. Thus the EVD outbreak had devastating effect on the economies of farmers.

RECOMMENDATIONS

Considering the conclusions made from the research findings, the following recommendations are made:

1. The World Health Organization's recommended practices to prevent the disease should be strictly adhered by everybody in the two chiefdoms.
2. Regular washing of hands should prevail in every household especially after visiting the toilets.
3. Traditional practices which include shaking hands, hugging each other, washing of dead bodies should stop or be minimized in the two chiefdoms.
4. In case of future outbreak, the towns, villages, cities or districts affected should be isolated and quarantined immediately to avoid future spread of the disease to the entire country.
5. The drastic measures taken to combat the disease

such as lockdown and quarantine should not be instituted in case of any future outbreak as these measures will have devastating effect on the country's economy and leads to unemployment and food insecurity in the country.

6. The government should ensure that health workers and military personnel are placed at the borders and crossing points in and out of the country to monitor the movement of travelers. Anyone suspected of being infected with any disease should be isolated and quarantined.

7. Adequate health facilities with trained personnel should be provided at strategic communities in the two chiefdoms.

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