

Awareness Level and Attitude of Students in Kogi State College of Education (Technical), Kabba Kogi State, Nigeria towards Ebola Virus Disease (EVD) Infection

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Abstract: The study investigates awareness level and attitude toward the outbreak of Ebola Virus Disease Infection (EVDI) among students in Kogi State College of Education (T), Kabba, Nigeria. Ebola virus is a disease associated with bodily fluids that may easily be spread among students'. Therefore there is need to target students for public health education. Research questions and hypothesis were formulated for the study based on students' awareness and attitude towards the infection of the disease. Fish bowl sampling method was used to select 500 male and female students from the total number of students in the three schools of the college. Self developed and validated instrument was used to gather information from the students. SLAEVDI Test at 0.72 reliability and SAEVDI Scale at 0.67 reliability using. Descriptive statistic of X^2 at 0.05 degree of freedom 1 was used to analyse the data collected. Result shows that H_0 on awareness ($X^2_{cal} \geq X^2_t$) was reject H_0 , while H_0 on attitude ($X^2_{cal} < X^2_t$) was accepted. This indicates that there is a need for adequate information and prevention on health risks associated with Ebola Virus Disease infections. Suggestions were made to prevent the outbreak in the college.

Keywords: Ebola virus, Awareness level, Attitudes, Disease Infection, Prevention.

1. INTRODUCTION

Ebola virus disease (EVD) is a Zoonotic (animal-borne) disease formerly known as Ebola hemorrhagic fever. The disease is a global health concern but its outbreak is more prevalent in West Africa which includes Nigeria. Ebola disease is a lethal, viral, sever, highly contagious and deadly immune blood destroyer virus for which there is presently no treatment. Its outbreak fatality illness and death rate in human is often up to 90% (WHO, 2014 and Science Daily, 2014). Science Daily (2014) reported that INSERM (Institute national de la santé et de la recherche médicale (2014) disclosed that between 30 and 90% of those infected with this organism die as a result of no treatment. EVD was first discovered in 1976 in two simultaneous outbreaks in Nzara, Sudan and in Yambuku, tropical rainforests, (remote villages in Democratic Republic of Congo, Central and West Africa). The latter was in a village situated near the Ebola River, from which the disease takes its name. Since then, outbreaks have been appearing sporadically. Researchers disclosed that they believe that a 2-year-old boy, later identified as Emile Ouamouno, who died in December 2013 in the village of Meliandou, Guéckédou Prefecture, Guinea, was the index case of the current Ebola virus disease epidemic. His mother, sister, and grandmother then became ill with similar symptoms, and also died. People infected by those initial cases spread the disease to other villages. Fruit bats of the *Pteropodidae* family are considered to be the natural host of the Ebola virus (WHO 2014 and Science Daily 2014).

WHO (2014), confirmed that in Africa, infection has been documented through the handling of animals like chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found infected, ill or dead in the rainforest. Fruit bats,

particularly species of the general *Hypsignathus monstrosus*, *Epomops franqueti* and *Myonycteris torquata* (WHO, 2014), are considered possible natural hosts for Ebola virus. As a result, the geographic distribution of Ebola Viruses may overlap with the range of the fruit bats. Although non-human primates have been a source of infection for humans, they are not thought to be the reservoir but rather an accidental host like human beings. Since 1994, Ebola outbreaks from the EBOV and TAFV (WHO, 2014) species have been observed in chimpanzees and gorillas. Further that the epidemic appeared to have originated from a single introduction from animal to human and apart from the present epidemic, the endemic area for Ebola virus is greater than previously known and that as a consequence, West Africa should henceforth be considered an area of risk for Ebola virus (WHO, 2014). Furthermore, the assistant director-general of the WHO warned that there could be as many as 10,000 new Ebola cases per week by mid-October, December 2014. Coupled with warning by assistant director-general of WHO the WHO and respective government have reported a total of 17,991 suspected Ebola cases and 6,756 deaths cases which have occurred in almost all of the three initial countries.

The outbreak, disaster and calamity of the dreadful disease in Nigeria occurred in Lagos the commercial capital of Lagos State, Enugu and Port Harcourt which are other commercial cities in Nigeria. This outbreak in Nigeria began when "Patrick Sawyer, a 40-year-old American living in Liberia flew to Nigeria on July 20, 2014 on Arik Airline to attend a conference in the country. The man died in Lagos the commercial capital of Lagos State, on the 25th July, 2014, on arrival from Liberia. This was not without infecting a few Nigerians with the same virus. As of 22nd September 2014, the immediate past Health Minister Onyebuchi Chukwu (2014), reported that 20 people who had close contact with the Patrick Sawyer including the nurse and doctor who attended to the man died of Ebola in Nigeria. This he said could have been worse if not for the timely, deliberate and thoughtful actions taken by the Nigerian government to combat the virus. As part of the effort to contain the disease, possible contacts were monitored – 353 in Lagos and 451 in Port Harcourt. The leadership of President Goodluck Jonathan was commended because it demonstrated that Nigeria is capable of solving complex problems if synergy prevails in government's approach to tackling the issue (Author Breaking News, Health and Science, 2014).

However, the World Health Organization representative (Rui Gama Vaz) (2014), and Channel Television (2014), gleefully declared that "Nigeria is now free of Ebola virus disease," He said in a news conference on October 20, 2014 in Abuja that "this is a spectacular success story," that indicates that the spread of the deadly disease could be contained as Nigeria is rightfully positioned to be the international laboratory where skills on how to control infectious diseases could be learned. The news was precisely and received with unimaginable sense of relief by Nigerians abroad, who were already suffering some veiled stigmatization in their countries of abode, and to the international community that wanted to stem off the spread of the virus. In this regard, Acho Orabuchi (2014) said the spectacular declaration when Western media carelessly and indifferently lumped Nigeria into Ebola-plagued West African countries such as Sierra Leone, Guinea, and Liberia because they were considered as countries without adequate health care infrastructure, at a time Nigeria was doing everything possible to curb the disease was cheered and its confirmation from WHO was riveting and highly commendable.

According to report of WHO Media Centre (2014) and Centre for Diseases Control and Prevention (2014), Ebola Virus spread in the community through human-to-human transmission, in families and friends who come in contact with infection resulting from direct contact with infection resulting from direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and indirect contact with environments contaminated with such fluids. Burial ceremonies in which mourners have direct contact with the body of the deceased person also play a role in the transmission of Ebola. Men who have recovered from the disease can still transmit the virus through their semen for up to 7 weeks after recovery from illness (WHO Media Centre, 2014; and Centre for Diseases Control and Prevention, 2014). However, the only available evidence comes from healthy adult males. It would be premature to extrapolate the health effects of the virus to all population groups, such as immunocompromised persons, persons with underlying medical conditions, pregnant women and children. More studies of Ebola Virus Disease (EVD) are needed before definitive conclusions can be drawn about the pathogenicity and virulence of this virus in humans (WHO Media centre 2014).

There are 5 distinct species of Ebola Virus namely (Bundibugyo Ebola Virus (BDBV), Zaire Ebola Virus (EBOV), Reston Ebola Virus (RESTV), Sudan ebolavirus (SUDV) and Taï Forest Ebola Virus (TAFV)). Three of these species originated from African countries. Bundibugyo Ebola Virus (BDBV), Zaire Ebola Virus (EBOV), and Sudan Ebola Virus (SUDV) have been associated with large EVD outbreaks in Africa and have caused illness and death in humans, whereas

Reston Ebola Virus (RESTV) and Tai Forest Ebola Virus (TAFV) have not. The RESTV species, found in Philippines and the People's Republic of China, has caused severe EVD outbreaks in macaque monkeys (*Macaca fascicularis*) farmed in Philippines and detected in monkeys imported into the USA in 1989, 1990 and 1996, and in monkeys imported to Italy from Philippines in 1992. Also, the specie can infect humans, but no illness or death in humans from this species has been reported to date (WHO 2014).

Adequately and continued knowledge on practices and beliefs will limit the rate of spread of Ebola virus disease among the populace. Thus providing adequate information for the masses especially students will help to reduce the outbreak of Ebola virus disease, correct misconceptions and curtail its further transmission across borders. Centers for Disease Control and Prevention (2015) disclosed that awareness level and attitudes on Ebola virus disease is still poor. The result of a survey conducted by the Center in September and October 2014 among five counties in Liberia revealed that the people scored low in the knowledge areas where questions related to Ebola transmission, such as eating bush meat and attending burials (where persons might come in contact with the body) of Ebola patients and the believe that a curse or spell could result in Ebola transmission. also that some have fear for cured patients and persons who live with Ebola patients, fear of Ebola treatment units and fear of seeking care, and thought they would die if they sought care. However, Nwozichi (2015) in a study conducted in Lagos state of Nigeria on Ebola virus disease on participants' knowledge about EVD and attitude toward Ebola survivors; found that majority (79%) of the participants had moderate knowledge of EVD. he further reveaveled some factors that have promoted the outbreak of the infectionas poor public health infrastructure, lack of knowledge/low levels of health literacy, lack of or limited infection prevention and control resources, increased population and highly transmissible nature of the viral infection (Nwozichi, 2015).

Other means of transmission may include men who have recovered from the disease can still transmit the virus through their semen for up to 7 weeks after recovery from illness. Also the disease can spread quickly through close contact within health care settings through exposure to needles on clinics or hospitals staff when infection control precautions are not strictly practiced like wearing appropriate protective equipment, such as masks, gowns, and gloves. Health-care workers have frequently been infected while treating patients with suspected or confirmed EVD. A typical example of this is the case of the medical personnel who died in Lagos after attending to a Liberian man (Patrick Sawyer) in 2014. Symptoms of Ebola HF typically may include a rash, red eyes, hiccups, cough, sore throat, chest pain, difficulty breathing and difficulty swallowing. The disease is also often characterized by the sudden onset of fever, headache, joint and muscle aches, diarrhea, vomiting, stomach pain, lack of appetite and intense weakness in severe acute viral illness. Severe cases can also be followed by impaired kidney and liver function and in some cases both internal and external bleeding. There can also be slow white blood cell and platelet counts and elevated liver enzymes in the laboratory findings (WHO 2014; Centre for Diseases Control and Prevention 2014).

Not that alone, The Inquisitor News (2008-2014) submitted a commentary to the Center for Infectious Disease Research and Policy (CIDRAP) in September, 2014 disclosed the report of some researchers at the University of Minnesota claimed that Ebola may have the potential to be airborne. The authors believed the "scientific and epidemiologic evidence that "Virus-laden bodily fluids may be aerosolized and inhaled while a person is in proximity to an infectious person and that a wide range of particle sizes can be inhaled and deposited throughout the respiratory tract," therefore they agreed that Ebola virus has the potential to be transmitted via infectious aerosol particles both near and at a distance from infected patients." They further warned that surgical facemasks will not prevent the transmission of Ebola in this regard.

Also WHO (2014) and Centre for Diseases Control and Prevention (2014) disclosed that the incubation period (the time interval from infection with the virus to onset of symptoms) is usually abruptly between 2 to 21 days after exposure to Ebola virus though 8-10 days is most common. People are infectious as long as their blood and secretions contain the virus. Ebola virus was isolated from semen 61 days after onset of illness in a man who was infected in a laboratory. Ebola HF cannot be easily diagnosed in an individual who has been infected for only a few days, because the early symptoms, such as red eyes and a skin rash are nonspecific to Ebola virus infection are seen often in patients with more commonly occurring diseasesWHO (2014) and Centre for Diseases Control and Prevention (2014).

However, the report of Ebola virus disease eradication by WHO representative Rui Gama Vaz, Ebola (2014), shows that virus diseases transmission can be contained. Nigeria had 20 cases in total, of which eight died. He however the representative warned that there is need for continuous vigilance to prevent new importation cases because of the

vulnerability of the country due to the geographical position and extended borders. Therefore if a person has the early symptoms of Ebola HF and there is reason to believe that Ebola HF should be considered, the patient should be isolated and public health professionals notified. Samples from the patient can then be collected and tested to confirm infection (WHO 2014; Centre for Diseases Control and Prevention 2014). Some other diseases that should be ruled out before a diagnosis of EVD can be made should include Malaria, Typhoid fever, Shigellosis, Cholera, Leptospirosis, Plague, Rickettsiosis, Relapsing fever, Meningitis, Hepatitis and other viral hemorrhagic fevers. Ebola virus infections can be diagnosed definitively in a laboratory through several types of tests which may include Antibody-capture enzyme-linked immunosorbent assay (ELISA), Antigen detection tests, Serum neutralization test, Reverse transcriptase polymerase chain reaction (RT-PCR) assay, Electron microscopy and Virus isolation by cell culture. Samples from patients are an extreme biohazard risk therefore testing should be conducted under maximum biological containment conditions (WHO 2014; Centre for Diseases Control and Prevention 2014).

Severely ill patients require intensive supportive care but no specific treatment or vaccine is available for use in people or animals though new drug therapies are still being evaluated therefore not yet any standard and licensed vaccine and treatment for the disease. However, WHO 2014; Centre for Diseases Control and Prevention 2014 declare that several vaccines for Ebola Virus are being tested and used. Also that experimental treatments tested have proven effective in animal models but have not yet been used in humans. However there are limited supportive therapy for Ebola HF such as: balancing the patient's fluids and electrolytes (patients are frequently dehydrated and require oral rehydration with solutions containing electrolytes or intravenous fluids); maintaining their oxygen status and blood pressure and treating them for any complicating infections. Timely treatment of Ebola HF is important but challenging since the disease is difficult to diagnose clinically in the early stages of infection. Because early symptoms such as headache and fever are nonspecific to Ebola viruses, cases of Ebola HF may be initially misdiagnosed (WHO 2014; Centre for Diseases Control and Prevention 2014).

In this regard, certain preventive and control measures can be adopted towards Ebola Virus infection. WHO (2014) and Centre for Diseases Control and Prevention (2014) suggested that the following procedures to prevent Ebola HF: routine cleaning and disinfection of pig or monkey farms (with sodium hypochlorite or other detergents) to inactivating the virus; if an outbreak is suspected, the premises should be quarantined immediately; culling of infected animals, with close supervision of burial or incineration of carcasses, is also very necessary to reduce the risk of animal-to-human transmission; restricting or banning the movement of animals from infected farms to other areas will reduce the spread of the disease; veterinary and human public health authorities should take adequate precaution in controlling Ebola virus in domestic animals. The organization and center said that the disease can also be prevented in human by adopting barrier nursing techniques which include: wearing of protective clothing (such as masks, gloves, gowns, and goggles); the use of infection-control measures (such as complete equipment sterilization and routine use of disinfectant); isolation of Ebola HF patients from contact with unprotected persons; avoidance of contact with the blood or secretions of an infected patient; burial of Ebola HF victim deceased body and direct contact be prevented should be protected diligently; proper cleaning and disposal of instruments, such as needles and syringes, is also important. If instruments are not disposable, they must be sterilized before being used again. Without adequate sterilization of the instruments, virus transmission can continue and amplify an outbreak (WHO 2014; Centre for Diseases Control and Prevention 2014).

Educational public health messages should focus on reducing the risk of pig-to-human transmission as a result of reducing the risk of wildlife-to-human transmission from contact with infected fruit bats or monkeys/apes and the consumption of their raw meat; handling of animals with gloves and other appropriate protective clothing; eradication of unsafe animal husbandry and slaughtering practices and unsafe consumption of fresh blood, raw milk or animal tissue (thoroughly cooking of animal products - blood and meat before consumption). Further still, reducing the risk of human-to-human transmission in the community arising from direct or close contact with infected patients, particularly with their bodily fluids; close physical contact with Ebola patients should be avoided; gloves and appropriate personal protective equipment should be worn when taking care of ill patients; regular hand washing is required always, after visiting patients in hospital and after taking care of patients at home; adequate information to others people in the communities affected by Ebola disease and about outbreak containment measures, including burial of the dead; people who have died from Ebola virus disease should be promptly and safely buried.

Health care workers should apply standard precautions consistently with all patients regardless of their diagnosis in all work practices at all times. These include basic hand hygiene, respiratory hygiene, and use of personal protective

equipment (PPE) according to the risk of splashes or other contact with infected materials, safe injection practices and safe burial practices. Health-care workers caring for patients with suspected or confirmed Ebola virus should apply, in addition to standard precautions, other infection control measures to avoid any exposure to the patient's blood and body fluids and direct unprotected contact with the possibly contaminated environment. When in close contact (within 1m) of patients with EBV, health-care workers should wear face protection (a face shield or a medical mask and goggles), a clean, non-sterile long-sleeved gown and gloves (sterile gloves for some procedures). Also laboratory workers are also at risk therefore samples taken from suspected human and animal Ebola cases for diagnosis should be handled by trained staff and processed in suitably equipped laboratories (WHO 2014; Centre for Diseases Control and Prevention 2014, Wikipedia 2014).

Research Objective:

The study determines the awareness level among students' in Kogi State College of Education (T), Kabba towards the existence of Ebola virus disease infection, and how the awareness of the disease can prevent infections among the students.

Research Questions:

- What is the awareness level of students' in Kogi State College of Education (T) Kabba about the existence of Ebola virus disease around the world?

Hypothesis:

- Students in Kogi State College of Education (Technical), Kabba do not significantly have the knowledge of the existence of Ebola virus disease in the world.
- Students in Kogi State College of Education (Technical), Kabba will not significantly be infected of Ebola virus disease if any of them is infected by the disease.

2. METHOD AND MATERIAL

Descriptive survey research design was used for the study. Fish bowl technique was used to select 500 male and female students out of 630 students in the three schools (School of Sciences (160) students, School of Education (280) students and School of Vocations and Technical Education (190) students) of the College. *Self developed instrument on awareness and attitude of students towards ebola virus disease (evd) infection and split half validated instrument was used to gather information from the students. SLAEVDI Test was 0.72 reliability and SAEVDI Scale at 0.67 reliability.*

The information gathered for the study was analysed using descriptive statistic of frequent counts and X^2 at 0.05 degree of freedom.

3. RESULT AND DISCUSSION

Table 1: Showing the awareness level of students about the existence of Ebola virus disease globally.

S/N	T	F	N	TOTAL
1	48	2		50
2	40	10		50
3	46	4		
4	41	8	1	
5	43	7		
6	46	4		
7	48	2		
8	20	30		
9	50	-		
10	46	4		
	428	71	1	500

$$\chi^2 \text{ cal} = 254.9$$

$$\chi^2 = 16.92 \text{ at } \alpha \leq 0.05$$

$$\chi^2 \text{ cal} \geq \chi^2 \text{ t}$$

degree of freedom 1 using a two tailed test

Calculated value ($\chi^2 \text{ cal} = 254.9$) of students who are aware that Ebola virus disease exist globally is greater than the table value ($\chi^2 = 16.92$ at $\alpha \leq 0.05$), therefore H_0 is rejected and H_1 ($\chi^2 \text{ cal} = 254.9$) is accepted.

S/N	A	SA	D	SD	TA	TD	T ₀
1	7	13	10	20	20	30	50
2	5	7	13	25	12	38	✓
3	24	8	4	14	32	18	✓
4	5	8	13	24	13	37	✓
5	10	11	12	17	21	29	✓
6	9	9	15	17	18	32	✓
7	6	7	13	24	13	37	✓
8	12	14	12	12	26	24	✓
9	11	15	15	9	26	24	✓
10	19	23	4	4	42	8	✓
11	4	3	15	28	7	43	✓

112 118 126 194 230 320

Using $\chi^2 \frac{(O-E)^2}{E}$

$$\chi^2 \text{ cal} = 14.8$$

$$\chi^2 \text{ t} = 43.8$$

$$\text{at } \alpha = 0.05$$

$$\chi^2 \text{ cal} < \chi^2 \text{ t}$$

accept H_0

Calculated χ^2 value ($\chi^2 = 14.8$ at) of students who know that they can be infected with Ebola virus disease if any of them is infected by the disease is less than the table value ($\chi^2 \text{ t} = 43.8$), therefore H_0 is accepted and the H_1 ($\chi^2 \text{ t} = 43.8$) is rejected.

Discussion:

Result of the study shows that students are already aware of Ebola Virus Disease the disease (EVD). The calculated value ($\chi^2 \text{ cal} = 254.9$) of students who are aware that Ebola virus disease exist globally is greater than the table value ($\chi^2 = 16.92$ at $\alpha \leq 0.05$). This result is in accordance with the findings of Nwozichi (2015) in a study conducted in Lagos state of Nigeria on Ebola virus disease on participants' knowledge about EVD and attitude toward Ebola survivors; showed that the majority (79%) of the participants had moderate knowledge of EVD. But then proper necessary information about the disease should still continues during lessons and special gatherings with different techniques like the use of fliers, postal about the disease placed on strategic places in the college to serve as reminder and further enlighten the students of

continuous caution about how to avoid been infected by the disease. The report of past Health Minister Onyebuchi Chukwu 22nd September (2014) that 20 people who had close contact with the Patrick Sawyer including the nurse and doctor who attended to the man died of Ebola in Nigeria and that WHO (2014), that in Africa, infection has been documented through the handling of animals like chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found infected, ill or dead in the rainforest ascertained that the infection is known worldwide. Also, the result of findings agreed that the students are aware that they they can be infected with Ebola virus disease if any of them are infected by the disease. The calculated χ^2 value ($\chi^2 = 14.8$ at) is less than the table value ($\chi^2 t = 43.8$), therefore H_0 is accepted and the H_1 ($\chi^2 t = 43.8$) is rejected. The understanding should therefore make students to be extra careful to avoid been infected if any of them is suspected to be infected by the disease. However, the school authority should provide and mount means of regular and adequate screening, observation and care to prevent any of the students from been infected by the disease. This is because infection can be transmitted along at any moment as people move and travel from one place to another and. Also school health workers should be on the lookout for any of the students who develop sudden signs and symptoms of the disease such as fever headache, joint and muscle aches, diarrhea, vomiting, stomach pain, lack of appetite and intense weakness in severe acute viral illness etc; in other to place such student on quarantine for proper investigation and observation to rule out possibility of the disease.

4. CONCLUSION

This study concludes based on the findings of the study that Ebola Virus Disease (EVD) was found to exist and could infect human/students. Continuous training and adequate observation, screening and care could help to prevent its occurrence and successfully reduce its spread among students in Kogi State College of Education (T), Kabba Kogi State, Nigeria. This would help to keep the students safe from the infection and prevent sudden death from ebola virus disease and allow them to concentrate on their studies and as well prevent expenses on medical bills and lose of lives.

5. RECOMMENDATIONS

Risk of Ebola Hemorrhagic Fever infection can be reduced in people by educating the public through health messages on causes, risk factors and prevention and controlling measures through mass media, public addresses in the communities, religious organizations.

- Students should always keep adequate hand hygiene (constant proper washing of hands with soap and sanitizing them always).
- Discard the proposition of eating bitter cola (“orogbo”), bathing and drinking hot/warm salted water as remedy or preventive measure for Ebola Virus Disease. Bitter cola contains caffeine and nicotine which is addictive and can predispose to other health problems, and excess salt could be dangerous and aggravate high blood pressure in the body.
- Suspected sick students should be placed on monitor quarantines for at least 21 days or the two consecutive terms of 42 days to prevent possible infection
- Massive joint response should be implemented toward prevention of Ebola virus by all the staff members in the college
- Each school should provide careful, accurate and timely identification and efficient breaking of the links/chains of Ebola virus disease infection such as providing proper access to soap and running water for hand washing to help contain and control the spread virus in the college.
- Do not care for suspected Ebola patients alone in school clinic but seek prompt adequate and proper medical treatment.
- Students should be taught to avoid beliefs in traditional medicines and cultural practices that involve physical contact with the deceased, especially death customs such as washing the body of the deceased.
- Students should avoid eating bush meats especially those that can travel far across borders like chimpanzees, gorillas and bats.

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