



Evaluation of the level of knowledge, Attitude and Misconceptions about Ebola Virus Diseases (EVD) among some University undergraduates in Ondo State, Nigeria

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Abstract

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Curtailing a highly virulent infectious disease like Ebola requires good knowledge about the symptoms, transmission and control measures. This study was therefore design to assess the level of knowledge about these parameters among undergraduates of a tertiary institution in Ondo State, Nigeria. A well-structured questionnaire was given to each of the 492 consenting students from all the six Faculties of Adekunle Ajasin University, Akungba-Akoko, Nigeria. Data generated were analysed using SPSS package version 21. All respondents (100%) agreed to have heard about Ebola Virus Disease(EVD). Male to female ratio of the respondents was not significant, however, 481 (97.8%) were between age 15 and 30 years. Respondents agreed that EVD can be transmitted through kissing an infected person (87.6%) washing corpse of EVD patient (84.3%) and breast feeding by a symptomatic mother (85.6%). One hundred and forty two (142) respondents believed that EVD can be healed traditionally. Respondents (90.9%) agreed to hand washing as a major control measure. Only 61(12.4%) of respondents know at least one EVD emergency contact number. This study showed that the respondents has good knowledge about EVD. However, the author suggests that hand washing which the respondents agreed to be a good control measure should be resuscitated in all our public places. There should be enlightenment about EVD emergency contact numbers possibly, making it conspicuously displayed in all our public places in Nigeria by the authorities in-charge

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INTRODUCTION

Ebola virus disease (EVD) which is a viral haemorrhagic fever of human and primates was first discovered in West Africa in 1976 (WHO, 2014). It is caused by Ebola virus of the family Filoviridae and has the fruit bat and non-human primates as reservoirs. The transmission of EVD is usually by physical contact with body fluids, urine, breast milk, semen and secretions from infected individuals or corpse of an infected individual especially during funeral rites (Osterholm *et al.*, 2015). The virus enters the host primarily through mucosal surfaces or skin abrasion. Ingestion of meats from infected wild animals has been incriminated as sources of infection with the hunters and bush meat processors and sellers at the

highest risk of infection (Vingolo *et al.*, 2015). There are varied clinical disorders which ranges from mild to life threatening situations. Fever, chills, malaise and myalgia occur 8 – 12 days after exposure. These can then be followed by more specific symptoms like terrible diarrhea, nausea, vomiting, abdominal pain, puerperal, bruises, mucosal haemorrhage or oozing of blood from venipuncture sites and unexplained bleeding (Park *et al.*, 2015). In history, there has been many outbreaks of EVD reported mostly in West African countries. The 1976 outbreak was confined to one village and affected 318 people resulting in 280 deaths while in the 2014 outbreak, more than 28,675 people were infected and about 11, 315 people died of Ebola disease. The spread showed

that 4,809 deaths were said to have occurred in Liberia, 3,955 in Sierra Leone, 2,536 in Guinea, 8 in Nigeria, 6 in Mali and 1 in the United States of America (WHO, 2014; Rogo and Auwal, 2018). Air travel was the major course of Ebola virus disease to Nigeria. On July 20th, 2014, an infected airline passenger, a Liberian, arrived Nigeria and caused an outbreak in Lagos and Port Harcourt before the spread was curtailed. In that episode, a total of nineteen (19) people were infected, out of whom eight (8) died on October 20th, 2014 (WHO, 2014). The 2017 outbreak in Congo generated some panic measures against its spread to Nigeria hence no single case was reported. This emphasized the usefulness of preparedness for medical emergencies. It should be noted, that in every preparation, good knowledge of the disease is very crucial. Many studies have been carried out to assess the knowledge of different categories of people about EVD at international level and within Nigeria. Kobayashi *et al.*, (2015) reported a survey covering five (5) counties in Liberia, while others reported on responses among health workers (Joseph *et al.*, 2017; Nchako, 2017) among Tricycle riders (Nwonwu *et al.*, 2017) and among Secondary school students (Ilesanmi and Alele, 2016). The current study was designed to assess the knowledge of Undergraduates of none-medical College about EVD since last episode of 2014, about 5 years ago, to determine our level of preparedness for medical emergencies like EVD.

MATERIALS AND METHODS

Setting:

The study was conducted among undergraduates of Adekunle Ajasin University, Akungba-Akoko, Ondo Nigeria.

Sample Size

Using $n = \{(4 * p * (1 - p)) / L^2\}$,

$n = \{(4 * 0.5 / 100 * (1 - 50 / 100)) / (10 / 100)^2\}$

$= 2 * 0.5 / 0.0025$

$= 1.0 / 0.0025 = 400$

Where;

'p' is assumed to be 50%

'L' precision required = 10% of p

Expected range = 40 – 60%

the significant sample size was calculated to be 400, however, 492 respondents were enlisted for this study.

Sampling Method

The enlisted students were interviewed with a well structure questionnaire, which were collected back and checked for completeness in both number and attempt at all the questions therein. Student were enlisted from all the six Faculties of the University between October and November, 2017. Participation was made voluntary after explanation of what the study was all about and assurance that responses will be kept confidential and used for the purpose of the study only.

Data Analysis

Collected data were analyzed using percentages and chi-square test to ascertain the significance of some groups at 5% level of significance with SPSS version 21 package

RESULTS

Majority of response in this study falls within the age range of 15-30 (97.8%) and mostly single 428 (87%). These and other socio-demographic characteristics of the respondents are listed in Table 1. Table 2 revealed the responses of participant about their awareness of Ebola disease. All the respondents 492 (100%) agreed to having heard of Ebola Virus Disease while 41 (8.3%) agreed that Nigeria previously had four (4) episode of Ebola Virus Disease. Only 61 (12.4%) agreed knowing an Ebola Virus Disease emergency contact number. Knowledge of respondents about the mode of transmission are captured in Table 3. Kissing a symptomatic person and breast feeding by a symptomatic mother were accepted by 432 (87.6) and 421 (85.6) respectively as means of Ebola Virus Disease transmission. However only 81(16.5%) believed Ebola Virus Disease can be acquired by attending the burial of an Ebola Virus Disease corpse. Ebola Virus Disease is believed to be a curse or spell by 90(18.3%) respondents while 368 (74.8%) believed it is caused by a virus as shown in Table 4. The respondents knowledge about treatments of Ebola Virus Disease showed in Table 5 that 142 (28.9%) and 59 (12.0%) agreed that Ebola Virus Disease can be cured by traditional method and bathing with salt and hot water respectively. Table 6 showed the respondents knowledge about control of Ebola Virus Disease. Regular hand washing 447(90.9%) adequate environmental and personal hygiene 450 (91.5%), wearing of protective gears by care givers 439 (89.2%) and proper disposal of dead bodies of Ebola Virus

Disease victims were agreed to by respondents as the major control measures for the spread of Ebola Virus Disease. Respondents attitude are captured in Table 7 where 41 (8.3%) believed that Ebola Virus Disease is not real as against 450 (91.5%) that consented to the fact that Ebola Virus Disease is a serious disease. About 88(17.9%) agreed to keep Ebola Virus Disease sick family member in their houses while 159 (32.3%) deny them of family re-union. Religious leaders 392

(79.7%), Radio 358 (72.8%) and newspapers 337(68.5%) were the main sources of information as responded to by volunteers in this study. This is shown in Table 8. Table 9 shows that there was no significant difference in the responses of male and female respondents to their knowledge of treating Ebola Virus Disease with salt and water. However, the differences across religion, age, marital status were statically significant.

Table 1. Socio-demographic pattern of the respondents

Variables	Frequency	%
Ages (years)		
15-30	481	97.8
31-34	11	2.2
Total	492	100.0
Gender		
Male	259	52.6
Female	233	47.4
Total	492	100.0
Marital Status		
Single	428	87.0
Married	64	13.0
Total	492	100.0
Educational Level		
Undergraduate	411	83.5
Graduate	79	16.1
Others	2	0.4
Total	492	100.0
Religion		
Christianity	392	79.7
Islam	85	17.3
Traditional	12	2.4
Others	3	0.6
Total	492	100.0
Faculty Spread		
Agricultural	52	10.6
Science	184	37.4
Social and Management Science	85	17.3
Law	32	6.5
Arts	44	8.9

Education	95	19.3
Total	492	100.0
Ethnicity		
Yoruba	391	79.5
Igbo	45	9.1
Hausa	5	1.0
Others	51	10.4
Total	492	100.0

Table 2. Participants level of awareness about Ebola Virus Disease

Variables	Yes Frequency	%
Have you heard of Ebola Virus Disease?	492	100
Do you think it is curable?	450	91.5
Can traditional medication cure Ebola Virus Disease	142	28.9
How many Episode(s) of Ebola Virus Disease in Nigeria do you know		
1 Episode	104	21.1
2 Episodes	288	58.6
3 Episodes	59	12.0
4 Episodes	41	8.3
Do you know any EVD emergency contact number?	61	12.4

Table 3: Respondents' knowledge about Transmission of Ebola Virus Disease

Variables	Yes Frequency	%
Through a healthy person	180	36.6
Kissing a symptomatic person	432	87.6
Sharing spoon/fork with a symptomatic person	387	78.7
Eating bush meat	381	77.4
Cleaning up vomit from a symptomatic person	380	77.2
Washing a corpse due to Ebola Virus Disease	415	84.3

Breastfeeding by a symptomatic mother	421	85.6
Having sex with a symptomatic person, even if a condom is worn	402	81.7
Cleaning up the urine or faeces of a symptomatic person	319	64.8
Attending burial of an Ebola Virus Disease victim	81	16.5

Table 4: Respondents' knowledge about the misconception of Ebola Virus Disease

Variables	Yes Frequency	%
Curse or spell	90	18.3
Air borne	157	31.9
Mosquito bites	61	12.4
Virus borne	368	74.8

Table 5: Respondents' knowledge about the treatment of Ebola Virus Disease

Variables	Yes Frequency	%
Traditional healers can cure Ebola Virus Disease	142	28.9
Ebola Virus Disease can be cured by Bathing with salt and hot water	59	12.0
Spiritual healers can cure Ebola Virus Disease	185	37.6

Table 6: Respondents' knowledge about Ebola Virus Disease control measures

Variables	Yes Frequency	%
Regular and thorough hand washing	447	90.7
Thorough cooking of all bush meat	392	79.7
Wearing of protective gears by care givers	439	89.2
Isolation and barrier nursing	400	81.3
Proper disposal of dead bodies	442	89.8
Adequate environmental/personal hygiene	450	91.5
Institution of infection control & sterilization procedure	431	87.6
Reduce contact with the infected person	432	87.8

Table 7: Respondents' attitudes toward Ebola Virus Disease

Variables	Yes Frequency	%
Ebola is not real	41	8.3
EVD is a serious disease	450	91.5
Afraid of people cured of Ebola Virus Disease	270	54.9
Ebola Virus Disease can be prevented by appeasing the gods	50	10.2
Ebola Virus Disease is God's plan to reduce human population	44	8.9
Will take sick family members to traditionalist/spiritualist for treatment	112	22.8
EVD sick family member will be kept in my house.	88	17.9
I know how to protect myself against EVD	339	68.9
I will no longer see my family if I submit myself for treatment	159	32.3
I will know if I have Ebola symptoms	318	64.6

Table 8: Respondents' main sources of information

Variables	Yes Frequency	%
Neighbour	273	55.5
Friends	282	57.3
Radio	358	72.8
Newspaper	337	68.5
Health Workers	317	64.4
Relatives	264	53.7
Others	179	36.4
Religious leaders	392	79.7

Table 9: Association between some socio-demographic characteristics and knowledge scores

on treatment of EVD with salt and hot water.				
1.	Sex:	Yes (%)	No (%)	X ² P-values
	Male (259)	51(19.7)	208 (80.3)	
	Female (233)	33 (14.2)	200(85.8)	2.65 0.01
2.	Age (years)			
	15-30 (481)	79 (16.4)	402 (83.6)	
	31-45 (11)	5 (45.5)	64 (54.5)	8.4 0.35
3.	Religion			
	Christianity (392)	42(10.7)	350(89.3)	
	Muslim (85)	31 (36.5)	54(63.5)	35.8 0.52
4.	Marital Status			
	Married (64)	3(4.7)	61(95.3)	
	Single (428)	81(18.9)	347(81.1)	8.0 0.35
5.	Faculty Spread			
	Agriculture (52)	15(28.8)	37(71.2)	
	Arts (44)	10(22.7)	34(77.3)	
	Education (95)	22(23.2)	73 (76.8)	
	Law (32)	5 (15.6)	27(84.4)	
	Science (184)	11(6.0)	173(94.0)	

DISCUSSION

Ebola Virus Disease (EVD) is an infectious disease with high virulence and pathogenicity usually with high mortality. This high mortality rate is further enhanced by lack of effective therapeutic and prophylactic measures. Therefore effective control of this often sporadic disease is for the people to know what to do at a particular time based on good knowledge of the disease. Most of the respondents in this study are between the age range of 15 to 30 years and mostly of the Yoruba tribe. This is expected since they are undergraduates of a university system situated in Yoruba land of Nigeria. It is heart-warming that all the respondents agreed to have heard about Ebola Virus Disease, which means the subject is familiar to them and they can give candid responses. Awareness about Ebola Virus Disease has also been reported to be high among Secondary school students, medical students and communities in the five counties of Liberia. (Ilesanmi and Alele, 2016; Nchako *et al.*, 2017; Kobayashi *et al.*, 2015). It is however not encouraging that only 12.4% of the respondents know EVD emergency contact numbers, which means the larger population might be helpless should any case be noticed within their environment. Knowledge of respondents about

transmission of EVD is very encouraging. Higher percentages agreed that EVD can be transmitted by contact with body fluids of an infected individual. This also agrees with some studies in South-west Nigeria (Mohammed *et al.*, 2017; Shittu *et al.*, 2015). Knowledge of modes of transmission will no doubt aid preparedness and prevention of EVD (Basch *et al.*, 2014). EVD been viral borne was known by 74.8% of the respondents. However, it might be a difficult thing for the group that believe EVD is a curse or spell cast on their victims to comply with control or preventive measures, thereby hampering the efforts aimed at curbing its spread.

The concept of bathing with salt and hot water was accepted though by very few respondents. This portends a situation where an EVD patient might result to self-medication of salt and hot water rather than seeking proper and prompt treatment at designated centers.

Respondents' knowledge about control measure gives hope for ability to handle any future epidemics. Regular hand washing was agreed by 90.9% of respondents, a result similar to those reported by other researchers (Rogo and Auwal, 2018; Sarkar *et al.*, 2015). Proper disposal of EVD corpses, isolation of infected individuals or barrier

nursing and wearing of protective gears by care givers are other control measures agreed to by the respondents. Specific antiviral therapy is not available to treat EBV infection. The treatment approach depends on clinical presentations, host immune status and underlying conditions (Zhang *et al.*, 2014). There is equally no licensed vaccine for EVD in humans. However, two experimental vaccines are at various stages of clinical trials and further evaluation in United Kingdom, United States, Switzerland and some African countries (Ledgerwood *et al.*, 2017).

Reasonable number (68.7%) of respondents know how to protect self against EVD, however, 159 (32.3%) respondents do not agree to submitting themselves for treatment should they be infected. This is a very dangerous stance as more family members may be infected and spread thus enhanced. According to the respondents, religious leaders and Radio news are the major sources of information about EVD to people. These assertions agreed with studies of Mohammed *et al.*, (2017) Ilesanmi and Alele (2016) and Shittu *et al.*, (2015). There was no statistical difference between the responses of male and female participants to the treatment of EVD with salt and hot water as indicated in Table 9. However, their responses differed along the lines of other socio-demographic lines like religion, age, marital status and faculty spread. This might be affected by the distribution of respondent which are higher among age group 15-30, singles and Christianity religion.

CONCLUSION

It has been observed that more and regular education through the radio and religious leaders is germane to sustaining our preparedness as a nation for any future EVD epidemic in Nigeria. Emergency EVD phone lines should be conspicuously displayed at all health facilities for people to see and store on their mobile phones. The major control measures agreed to by respondents (hand washing) is speedily disappearing in our public places and this should be re-introduced without further deadly.

REFERENCES

- Basch, C.H., Basch, C.E. and Redlener, I. (2014). Coverage of the Ebola Virus Disease Epidemic in Three Widely Circulated United States Newspapers: Implications for Preparedness and Prevention. *Health Promotion Perspectives* 4(2): 247-251
- Ilesanmi, O. and Alele, F.O. (2016). Knowledge, Attitude and perception of Ebola Virus Disease among Secondary School Students in Ondo State, Nigeria. *PLOS Current outbreaks* 3(4): 1-10
- Joseph, A. O., Mohammed, A.Y., Raji, A., Atolagbe, E., Joseph, A. and Kadiri, K. (2017). A multi-site assessment of knowledge of Ebola virus disease among health workers in South-west Nigeria. *Research Journal of Health Sciences* 5(3):159-166
- Ledgerwood, J.E., DeZure, A.D., Stanley, M. S., Coates, E.E. Novik, L., Graham, B. S. and VRC Study Team (2017). Chimpanzee Adenovirus Vector Ebola Vaccine. *New England Journal of Medicine* 376(10):928-938
- Miwako, K., Karllyn, D. B., Adam, B., Kevin, C., Cara, C.C., Sampson, A., Wilmot, F., Odell, K., Joseph, S. and Tolbert, G. N (2015). Community Knowledge, Attitudes and Practices Regarding Ebola Virus Disease – Five Counties, Liberia. *Morbidity and Mortality Weekly Report* 64(26): 714-718
- Mohamed, F.J., Sengeh, P., Monash, R., Mohammad, B.J., DeLuca, N., Dyson, M., Golf, S., Sakurai, Y., Conteh, L., Sesay, S., Brown, V., Li, W., Mermin, J. and Bunnell, R. (2017). National survey of Ebola-related knowledge, attitudes and practices before the outbreak peak in Sierra Leone: August 2014. *BMJ Global Health* 2: 1-10
- Nchako, E., Nesbeth, C. and Odoh, C. (2017). Assessment of knowledge of Ebola virus disease management of medical residents in a tertiary medical college. *Journal of Public Health and Epidemiology* 9(11): 286-291
- Nwonwu, E.U., Nwafor, S., Nwafor, N., Chikere, E., Nwaejike, C., Eze, N.C. and Azuogu, B.N. (2017). Knowledge and Attitude towards Ebola Virus Disease among Commercial Tricycle (Keke) Riders in Abakaliki, South-East Nigeria. *Asian Journal of Medicine and Health* 4(1): 1-7
- Osterholm, M.T., Moore, K.A., Kelly, N.S., Brosseau, L.M. Wong, G., Murphy, M.A., Sanders, D.A. and Kobinger, G.P (2015). Transmission of Ebola viruses: What we know and what we do not know. *MBio* 6(2): e00137
- Park, D.J., Dudas, G., Wohl, S., Goba, A., Whitmer, S.L., Andersen, K.G., Sealfon, R.S., Ladner, J.T., Kugelman, J.R., Matranga, C.B., Rambaut, A., Garry, R.F. and Sabeti, P.C. (2015). Ebola Virus Epidemiology, Transmission and Evolution during Seven months in Sierra Leone. *Cell* 161(7): 1516-1526
- Rogo, L.D. and Auwal, I.K. (2018). Ebola Virus – A Review. *Sokoto Journal of Medical Laboratory Science* 3(1): 69-87
- Sarkar, S., Aryal, S. and Ahmad, A. (2015). The Ebola outbreak – Controversies and Solution 2014- 15. *International Journal of Microbiology and Allied Sciences* 1(4): 10-17
- Shittu, O.R., Sanni, A. M., Odeigah, O.L., Akanbi, A.A., Sule A. G. Isiaka-Lawal, S. Aderibigbe,

- S.A. (2015). Awareness, Knowledge and Misconceptions about Ebola Virus Disease (EVD) in a Family Practice Setting in Nigeria, West Africa. *Journal of Antivirals and Antiretrovirals*7(1): 010-014
- Vingolo, E.M., Messano, G.A., Fragiotta, S. (2015). Ocular Manifestations of Ebola Virus Disease:An Ophthalmologist's Guide to Prevent Infection and Panic. *Biomed Research International*; 10(1155): 487073
- WHO (2014). Ebola virus disease, West Africa – update 28 August 2014 (www.who.int) Accessed on 20th April, 2019
- Zhang, Y., Li, D., Jin, X. and Huang, Z. (2014). Fighting Ebola with ZMapp: spotlight on plant-made antibody. *China Life Science* 57(10): 987-988