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Predictors of knowledge regarding Ebola virus disease among medical and nursing students in a Nigerian teaching hospital

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ABSTRACT

Background: The Ebola Virus disease is one of the deadliest re-emerging diseases; the 2014 outbreak has been devastating with thousands of deaths resulting in global panic.

Methods: A cross-sectional study was conducted involving 423 under-graduate medical and nursing students from University of Maiduguri Teaching Hospital using multi-stage stratified random sampling. Data was collected using a pretested self-administered questionnaire and analyzed using IBM-SPSS version 22. Chi-square was used for association between categorical variables while Spearman's correlation was used for correlation between continuous variables. Multiple Logistic regressions were used to determine independent predictors of knowledge.

Results: Mean knowledge score was 30.4±6.4, only 40.9% had good knowledge. Predictors of knowledge were Age (AOR=1.164, 95% CI=1.07-1.26), Field of study (AOR=4.64, 95% CI=2.33-9.23) and Year of studies (AOR=2.27, 95% CI = 1.06-4.84).

Conclusions: There is still poor knowledge regarding this disease and the need for improvements.

Keywords: Ebola, Predictors, Knowledge, Medical and nursing students, Nigeria

INTRODUCTION

The Ebola Virus disease (EVD) is one of the deadliest diseases of all time known to affect humans with a fatality ratio of up to 90%.1 It first appeared in Africa in the year 1976, since then this virus and other genetically similar species have been involved in over 25 outbreaks in both central and western parts of Africa.²⁻⁴

The recent 2014 West African outbreak has been the more devastating of them both in terms of death rate and wide spread transmission. Cumulatively it has resulted in over 22, 495 cases and 8981 deaths out of which 495

were Health Care Workers (HCW) in a period of one year.4 This has caused a lot of chaos and has been referred to as the most serious cause of panic thus far in public health.5

The virus is highly infectious and can be transmitted from one host to another in a short time through contact with infected bodily fluids and secretions of both living and dead people. 6 The infection initially presents with nonspecific symptoms such as fever, headaches, malaise, cough, dysphagia followed by abdominal and muscle pain, nausea and vomiting then diarrhea.⁷ Later on features such as bleeding from multiple orifices,

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disseminated intravascular coagulation, multiple organ failure manifest and may lead to death 60%-90% of cases. There is currently neither a cure nor vaccine publicly available for the disease, therefore if not prevented and controlled maintains an existing threat of recurrence. 9

There is currently poor knowledge of key features of the EVD among HCW whom are concurrently more at risk of infection and death from the virus compared to the general public. HCW have an EVD incidence rate of 104.5 per 10,000 compared to 3.3 per 10,000 for non-HCW (RR=42.2; 95% CI= 36.0-49.5). Similarly reports from Sierra Leone have also shown a 103-fold higher incidence rate infection in HCW compared to the general public with doctors and nurses making up two thirds of the high risk group. This is a source of concern as HCW are in charge of treating the public and therefore ought to have lower incidence rates thus depicting their level of expertise on the subject matter.

Nigeria is one of the West African countries affected by the 2014 Ebola virus outbreak and although it has been declared free of the virus by the World Health Organization (WHO), high risk practices such as bush meat consumption are still practiced in several parts of the country which poses an existing threat. 15-17

There is also deficient recent data available on knowledge regarding key features of the Ebola virus among medical and nursing students in Nigeria. Without continuous updates then intervention strategies and policies aimed at addressing this important problem will be difficult to implement. Therefore, this study aims to determine predictors of knowledge regarding EVD among medical and nursing students in a Nigerian teaching hospital.

METHODS

A cross-sectional study was conducted on 423 medical and nursing students during their clinical years of training at the University of Maiduguri Teaching Hospital Nigeria between August and September 2015. Respondents were selected via multistage stratified random sampling with probability proportionate to size using student rosters. The respondents were initially stratified based on field on study the secondly based on year of studies before selection using simple random sample with a response rate of 90.7%.

Data on socio-demography and knowledge regarding key features regarding EVD such as definition, etiology, epidemiology, mode of transmission, incubation period, clinical features, diagnosis, management, prevention and control as well as availability of a cure and vaccines was collected using a pre-tested structured self-administered questionnaire after a written consent was obtained. The knowledge questionnaire comprised of 15 structured questions containing 46 items which had responses of either yes, no or I don't know. One mark was awarded for correct answers and 0 marks were awarded for wrong and I don't know answers. The minimum possible score was 0 and the maximum score was 46. Knowledge was categorized as either good or poor based on a cumulative score \geq 70% or <70% of the total marks achievable respectively.

Face and content validity of the questionnaire were assessed by experts in the field while pilot testing for internal consistency was done on 48 students and the Cronbach's α value was 0.80. Data was analyzed using IBM SPSS version 22. Association between categorical variables was analyzed using Chi-square test while correlation between continuous variables was analyzed using Spearman's correlation. To obtain odds ratios, variables were first analyzed for association using simple logistic regression to obtain unadjusted odds ratios, subsequently variables with α value of <0.05 were entered into the final model and analyzed by Multiple Logistic Regression for adjusted odds ratios using Forward Likelihood-ratio (Forward L-R) at α <0.05 and 95% confidence interval.

RESULTS

The study comprised of about 223 males which were the majority based on gender, the median age was 24 years. Most of the respondents were from the Medical Faculty (59.3%), the majority ethnicity was Hausa, religion was Islam (65.7%) and about 80% were single.

Responses to the knowledge questionnaire are presented in Table 1. The mean knowledge score was 30.4±6.4 and cumulatively only 40.9% of respondents had good knowledge. About 142 (56.6%) of medical students had good knowledge while 31 (18.0%) of nursing students had good knowledge scores. Associations as well as correlation between socio-demographic variables and knowledge are presented in Table 2. Gender, field of studies and marital status were associated with knowledge while age and year of studies positively correlated with knowledge scores. Multivariate Logistic regression analysis results showed that age, field and year of studies were independent predictors of knowledge. As shown in Table 3, the odds of having good knowledge were higher with increasing age (AOR = 1.164, 95% CI = 1.07-1.267, p<0.001).

With regards field of study, the odds of having good knowledge was more than four times higher for medical students as compared to nursing students (AOR = 4.643, 95% CI = 2.334-9.233, p<0.001) and third year students were twice more likely of having good knowledge (AOR = 2.274, 95% CI = 1.067-4.847, p = 0.033).

Table 1: Participants responses to knowledge questionnaire (n = 423).

Question	Yes n (%)	No n (%)	I don't know n (%)
Have you ever heard of the term Ebola?	421 (99.5)	2 (0.5)	Tuon timo (10)
Ebola is a virus that causes Ebola virus disease	370 (87.5)	31 (7.3)	22 (5.2)
Countries affected by the 2014 Ebola outbreak are	370 (07.5)	31 (7.3)	22 (3.2)
Guinea	299 (70.7)	49 (11.6)	75 (17.7)
Sierra Leone	325 (76.8)	41 (9.7)	57 (13.5)
Liberia	356 (84.2)	41 (9.7)	26 (6.1)
Nigeria	324 (76.6)	45 (10.6)	54 (12.8)
Routes of transmission of EVD are	324 (70.0)	43 (10.0)	34 (12.6)
Direct contact with bodily fluids of infected living persons	365 (86.3)	33 (7.8)	25 (5.9)
Direct contact with bodily fluids of infected fiving persons Direct contact with bodily fluids of infected dead persons	346 (81.8)		
Direct contact with bodily fluids of infected dead persons Direct contact with bodily fluids of infected asymptomatic persons		45 (10.6)	32 (7.6)
• • • •	243 (57.4)	107 (25.3)	73 (17.3)
Through air if infected people cough or sneeze	163 (38.5)	176 (41.6)	84 (19.9)
By mosquito bites	57 (13.5)	310 (73.3)	56 (13.2)
The Ebola virus has an incubation period of 2-21 days	313 (74.0)	38 (9.0)	72 (17.0)
Signs and symptoms of the EVD are	2=0 (00.4)	• • • • •	4= 44.00
Fever	378 (89.4)	28 (6.6)	17 (4.0)
Sore throat	321 (75.9)	54 (12.8)	48 (11.3)
Headache	353 (83.5)	31 (7.3)	29 (9.2)
Rashes	304 (71.9)	51 (12.1)	68 (16.1)
Diarrhea	340 (80.4)	42 (9.9)	41 (9.7)
Vomiting	335 (79.2)	45 (10.6)	43 (10.2)
Bleeding	356 (84.2)	34 (8.0)	33 (7.8)
The most common symptom of EVD is	Fever = 196	Bleeding =	52 (12.3)
	(46.3)	175 (41.4)	
Is laboratory testing the best way to confirm a diagnosis of EVD?	272 (64.3)	94 (22.2)	57 (13.5)
What laboratory tests would you do to confirm for EVD?			
RT-PCR	202 (47.8)	100 (23.6)	121 (28.6)
ELISA	239 (56.5)	70 (16.5)	114 (27.0)
Western blot technique	133 (31.4)	159 (37.6)	131 (31.0)
The immediate management of a patient with EVD involves		(5,7,7)	- (3 / 3 /
Isolation	355 (83.9)	40 (9.5)	28 (6.6)
Fluid therapy	339 (80.1)	47 (11.1)	37 (8.7)
Dietary rehabilitation	249 (58.9)	105 (24.8)	69 (16.3)
Vaccination	148 (35)	203 (48.0)	72 (17.0)
Antibiotics	214 (50.6)	127 (30.0)	82 (19.4)
Concerning survivors of EVD	214 (30.0)	127 (30.0)	02 (17.4)
Mothers can breastfeed as soon as they are declared free of the virus	134 (31.7)	180 (42.6)	109 (25.8)
·			
They can have sexual intercourse immediately they are declared free of the	123 (29.1)	187 (44.2)	113 (26.7)
Virus It is better to wait for 00 days before breast feeding	220 (54.1)	92 (10.4)	112 (26.5)
It is better to wait for 90 days before breast feeding	229 (54.1)	82 (19.4)	112 (26.5)
It is better to wait for 90 days before sexual intercourse	225 (53.2)	87 (20.6)	111 (26.2)
Can EVD be cured?	171 (40.4)	161 (38.1)	91 (21.5)
How can EVD be cured?	101 (22.0)	220 (52.0)	0.4 (0.2.2)
By using anti viral drugs	101 (23.9)	228 (53.9)	94 (22.2)
By vaccination	76 (18.0)	260 (61.5)	87 (20.6)
By supportive therapy	120 (28.4)	217 (51.3)	86 (20.3)
By bathing with salt and hot water	29 (6.9)	309 (73.0)	85 (20.1)
Traditional healers	34 (8.0)	311 (73.5)	78 (18.4)
Prayers	103 (24.3)	239 (56.5)	81 (19.1)
How can EVD be prevented?			
Good personal hygiene	309 (73.0)	69 (16.3)	45 (10.6)
Wearing protective clothing when performing procedures	358 (84.6)	39 (9.2)	26 (6.1)
Avoiding practices like bush meat consumption	355 (83.9)	38 (9.0)	30 (7.1)
Vaccination Vaccination	247 (58.4)	124 (29.3)	52 (12.3)
	349 (82.5)	38 (9.0)	36 (8.5)
ISOIAHOH			20 (0.2)
Isolation Is there an available vaccine for the EVD?	131 (31.0)	190 (44.9)	102 (24.1)

Abbreviations EVD, Ebola virus disease; RT-PCR, Reverse Transcriptase Polymerase Chain Reaction; ELISA, Enzyme Linked Immunosorbent Assay.

Table 2: Association and correlation between socio-demographic variables and knowledge N = (423).

Socio-demography	Knowledge categor	Knowledge categories				
	Good knowledge n (%)	Poor knowledge n (%)	χ2	rs	P	
Gender			6.425		0.011*	
Male	104 (46.6%)	119 (53.4%)				
Female	69 (34.5%)	131 (65.5%)				
Age				0.514	<0.001*	
Field of study			62.75		<0.001*	
Medicine	142 (56.6%)	109 (43.4%)				
Nursing	31 (18.0%)	141 (82.0%)				
Year of studies						
Medicine (4,5,6)				0.161	0.011*	
Nursing (1,2,3)				0.501	<0.001*	
Ethnicity			0.365		0.546	
Hausa	127 (40.1%)	190 (59.9%)				
Others	46 (43.4%)	60 (56.6%)				
Religion			0.958		0.328	
Islam	109 (39.2%)	169 (60.8%)				
Christianity	64 (44.1%)	81 (55.9%)				
Marital status		·	5.832	<u> </u>	0.016*	
Single	128 (38.0%)	209 (62.0%)				
Married	45 (52.3%)	41 (47.7%)				

Abbreviations: χ2, Chi-square; rs, Spearman's correlation; *, p<0.05

Table 3: Independent predictors of knowledge (N=423).

Variables	AOR	95%CI	p
Age	1.164	1.07-1.267	<0.001*
Field of study			
Medicine	4.643	2.334-9.233	<0.001*
Nursing (0)			
Year of studies (3)	2.274	1.067-4.847	0.033*

Abbreviations: AOR -Adjusted Odds Ratio; CI-Confidence interval; *P<0.05.

DISCUSSION

The Ebola virus disease continues to be a global threat despite efforts to control and prevent its occurrence, thus assessing the knowledge of future HCW regarding the disease becomes necessary. Previous studies have reported poor knowledge of this disease among HCW which are similar to findings in this study thus makes prevention and control even more so difficult. Present results show majority of respondents had poor knowledge. Some misconceptions as well as knowledge gaps exist as well which will be elaborated further.

Awareness was high as almost all (99.5%) had heard of the disease which was similar to other studies in Nigeria Sierra Leone and Liberia. ^{11,15,18-20} This may not come as a surprise considering the media attention and resulting global panic the 2014 Ebola outbreak has incited. We realized however that this awareness did not necessarily translate to good knowledge as despite the high level of awareness in this study, less than half (40.9%) had good knowledge. Intervention therefore needs to be improved

from only creating awareness campaigns to educating HCW on core aspects of the disease.

There was overall good knowledge of the etiology of the disease where majority (87.5%) correctly identified it as a disease of viral origin which correlates to what was reported from Nigeria but differed from others in Sierra Leone and Liberia. ^{11,18,20} Similarly, a majority were able to identify the country's most affected by the 2014 EVD outbreak, the most popular choice was Liberia (84.2%) which might not come as a surprise considering the fact that the index case in Nigeria was a Liberian immigrant. ²¹ Doctors in England however had poor knowledge concerning this aspect as there was only 46% knowledge of the countries affected. ¹⁰

Certain misconceptions concerning the transmission of the virus still exist from findings in our study as only one-fourth of our respondents knew that the virus could not be transmitted from an asymptomatic person. Similar results were reported from studies in Germany as well as others from Liberia and Sierra Leone. Report Amajority also thought that the disease is airborne, the same misconception was also the case among other respondents in Nigeria, Sierra Leone and Germany. This shows that a further understanding of the difference between air borne and aerosol transmission is needed as although they may be similar to the layman, it is necessary for HCW to correctly identify this.

Fever and bleeding were popular signs and symptoms among respondents, this correlates with a study in Nigeria. ¹¹ There were split opinions however on which clinical feature occurred more frequently as almost half

of respondents thought that bleeding was the most common sign. This was different from another study in Nigeria. This knowledge gap is a major problem as bleeding in EVD is one of the later signs and occurs in only about 40% of patients. Therefore, waiting for bleeding to occur before making a diagnosis may frustrate efforts at early detection and isolation which is key in the management and control of an outbreak. This may be related to its rapid spread across communities as HCW probably waited for bleeding manifestations before making diagnosis and initiating infection control protocols which often might be too late.

Most of the respondents knew that laboratory testing is the best method of confirming a diagnosis of EVD which coincided with other reports in Nigeria however, a majority could not identify the specific tests required to reach such a diagnosis. HCW in Nigeria have been reported to have poor knowledge on laboratory diagnosis of hemorrhagic fevers, this unfamiliarity may be explained by unavailability of equipment in these regions. ^{24,25}

A majority of present respondents understood the role of isolation as an integral part of the management of EVD which was similar to a study in Liberia but contrasted from others Sierra Leone and England. 10,18,20

This knowledge is vital especially in young inexperienced HCW as it is a necessary initial step in preventing further transmission of the virus in the community. Knowledge in the field of vaccines was deficient among respondents which correlated with another study in Nigeria. About one-third thought there was a vaccine available for the Ebola virus and a similar proportion would use this in managing an already infected patient. Almost half of our respondents also did not know a vaccine could be used as a preventive tool.

These findings are a setback from earlier studies on HCW as well as the general public in Nigeria. 11,15,21 A vaccine is currently not publicly available for the Ebola virus however it is in the trial phase and shows great potential for success. Vaccination is probably one of the most efficient ways of preventing diseases and knowledge of this should be at the fingertips of our future HCW. A majority of respondents in Germany were of the opinion that vaccination against Ebola virus should be mandatory for residents in endemic countries. 22

The Ebola virus remains in the blood and secretions of survivors for as long as 91 days therefore activities such as breast feeding and sexual intercourse should be preferably avoided during this period. Knowledge of this was rather poor in this study, as only a minority of our respondents would discourage survivors from these activities. Although the role of survivors in reintroducing the virus into the community is still being investigated, the knowledge of this period of abstinence is a necessary precaution to prevent its recurrence. ²⁷

The recent improvements in the prognosis of EVD patients and the control of the recent outbreak in West Africa may be misunderstood by some as an availability of a cure for the disease. Over one-third of participants thought that a cure is available for the disease which was a higher proportion compared to other studies in Nigeria. Supportive therapy is currently the mainstay of treatment of the EVD and it is necessary to differentiate this from availability of a cure. ²⁸

Other myths such salt and hot water bath as well as traditional healers that were initially thought to cure EVD by respondents in Nigeria, Liberia and Sierra Leone was refuted by a majority of our respondents. ^{18,20,21} This shows that there is a certain degree of improvement concerning this knowledge gap which was also reported by another study in Nigeria. ¹⁵

Knowledge concerning prevention was generally good and popular preventive measures were barrier methods, isolation, good personal hygiene and avoidance of bush meat consumption. This was in agreement with another study in Nigeria which shows that despite a majority having poor comprehensive knowledge, our respondents have a sound understanding of the means to protect themselves. The good knowledge of preventive measures may have been as a result of the large number of HCW infected by this virus in recent times.

After multivariate analysis, the odds of having good knowledge was higher with increase in age; this meant older respondents possessed a higher tendency to have good knowledge compared to younger ones and therefore knowledge increased with age however, this differed from another study in Nigeria. ¹⁵

This study involved first to sixth year students but after controlling for potential confounders third year of studies was a predictor of knowledge. A possible explanation for this is that the third year is the final phase of clinical training for the nursing students in the study location. Therefore this stage typically would be characterized by more intensive studying in preparation for final exams and unsupervised clinical practice.

The odds of having good knowledge were also higher for medical students compared to their nursing counterparts. In bivariate analysis medical students also had a higher proportion with good knowledge compared to nursing students, this was similar to studies among HCW in Nigeria and India. 11,29

These findings may suggest that the level of training in the medical program is more comprehensive and intense compared to the nursing which might not necessarily be the case. To achieve maximum effectiveness among HCW, a high level of synergy is required between the two occupations especially in very sensitive situations such as handling EVD patients. Improvements are therefore mandatory be it in the curriculum or clinical

training or both in order to bridge this difference in level of knowledge.

CONCLUSION

Comprehensive knowledge regarding EVD is still low. Misconceptions and knowledge gaps still exist especially in the ability to differentiate between clinical features the disease and other infectious diseases endemic in the region. Identification of the disease at its early phase is also still an issue. This means that previously existing problems of late and missed diagnosis could most likely still be a concern in the near future.

More synergy needs to be created between the laboratory and clinical aspects of health care as our findings show a deficiency in knowledge of laboratory diagnostic tests.

A part of the curriculum should be dedicated to practical sessions most especially on highly sensitive and specific laboratory diagnostic methods that can easily be used on the field. The current curriculum as whole can be improved upon. Lectures on vaccination and the use of vaccines should be incorporated to compensate for the deficient knowledge reported from our findings.

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REFERENCES

- CDC. 2014 Ebola Outbreak in West Africa Case Counts. Ebola Hemorrhagic Fever. CDC. CDC. 2014. http://www.cdc.gov/ vhf/ ebola/ outbreaks/ 2014-west-africa/ case-counts.html. Accessed June 22, 2015.
- 2. Matua GA, Van der Wal DM, Locsin RC. Ebola hemorrhagic fever outbreaks: strategies for effective epidemic management, containment and control. Braz J Infect Dis. 2015;19(3):308-13.
- 3. Lefebvre A, Fiet C, Belpois-Duchamp C, Tiv M, Astruc K, Aho Glélé LS. Case fatality rates of Ebola virus diseases: A meta-analysis of World Health Organization data. Médecine Mal Infect. 2014;44(9):412-6.
- 4. WHO. Ebola Situation Reports | Ebola. WHO. 2015. http://apps.who.int/ ebola/ ebola-situation-reports. Accessed June 13, 2015.
- 5. Rajak H, Jain DK, Singh A, Sharma AK, Dixit A. Ebola virus disease: past, present and future. Asian Pac J Trop Biomed. 2015;5(5):337-43.
- 6. Shears P, O'Dempsey TJD. Ebola virus disease in Africa: epidemiology and nosocomial transmission. J Hosp Infect. 2015;90(1):1-9.
- 7. Wong SS-Y, Wong SC-Y. Ebola virus disease in nonendemic countries. J Formos Med Assoc. 2015;114(5):384-98.

- 8. Sousa ZL. Key features of Ebola hemorrhagic fever: a review. Asian Pac J Trop Biomed. 2014;4(11):841-4.
- 9. Ohimain EI. Recent advances in the development of vaccines for Ebola virus disease. Virus Res. 2016;211:174-85.
- 10. Fazekas B, Fazekas J, Moledina M, Fazekas B, Karolyhazy K. Ebola virus disease: awareness among junior doctors in England. J Hosp Infect. 2015;90(3):260-2.
- 11. Olowookere SA, Abioye-Kuteyi EA, Adepoju OK. Knowledge, Attitude, and Practice of Health Workers in a Tertiary Hospital in Ile-Ife, Nigeria, towards Ebola Viral Disease. J Trop Med. 2015:2015:1-6.
- 12. Fasina FO, Adenubi OT, Ogundare ST, Shittu A, Bwala DG, Fasina MM. Descriptive analyses and risk of death due to Ebola Virus Disease, West Africa, 2014. J Infect Dev Ctries. 2015;9(12). doi:10.3855/jidc.6484.
- 13. CDC. Ebola in Health Care Workers-Guinea. CDC. 2015:23-7.
- CDC. Ebola Virus Disease in Health Care Workers
 — Sierra Leone, 2014. CDC. 2015.

 http://www.cdc.gov/ mmwr/ preview/mmwrhtml/ mm6349a6.htm. Accessed October 19, 2015.
- 15. Shittu RO. Awareness, Knowledge and Misconceptions about Ebola Virus Disease (EVD) in a Family Practice Setting in Nigeria, West Africa. J Antivir Antiretrovir. 2015;07(01):10-4.
- WHO. WHO declares end of Ebola outbreak in Nigeria. WHO. 2014. http://www.who.int/ mediacentre/ news/ statements/2014/nigeria-endsebola/en/. Accessed June 22, 2015.
- 17. African Development Bank. Open Data for Nigeria. Borno State. 2015. http://nigeria.opendataforafrica.org/ search?query=borno bush meat consumption. Accessed July 18, 2015.
- 18. Monasch R. Study on Public Knowledge, Attitudes, and Practices Relating to Ebola Virus Disease (EVD) Prevention and Medical Care in Sierra Leone. Unicef. 2014. http://reliefweb.int/sites/reliefweb.int/files/resources/Ebola-Virus-Disease-National-KAP-Study-Final-Report_final.pdf.
- 19. Kobayashi M, Beer KD, Bjork A. Community Knowledge, Attitudes, and Practices Regarding Ebola Virus Disease Five Counties, Liberia, September-October, 2014. MMWR Morb Mortal Wkly Rep. 2015;64(26):714-8.
- 20. Ministry of Health Liberia. National Knowledge, Attitudes and Practices (KAP) Study on Ebola Virus Disease in Liberia. 2015. http://www.unicef.org/cbsc/files/KAP-Study-Liberia-March-2015.pdf.
- Oguntimehin O, Musa E, Nzuki C. Public Knowledge, Perception and Source of Information on Ebola Virus Disease -Lagos, Nigeria; September, 2014. 2015. doi:10.1371/

- currents.outbreaks.0b805cac244d700a47d6a3713ef2
- 22. Rübsamen N, Castell S, Horn J. Ebola risk perception in Germany, 2014. Emerg Infect Dis. 2015;21(6):1012-8.
- 23. Meyers L, Frawley T, Goss S, Kang C. Ebola Virus Outbreak 2014: Clinical Review for Emergency Physicians. Ann Emerg Med. 2015;65(1):101-8.
- 24. Tobin E, Asogun D, Isah E, Ugege O, Ebhodaghe P. Assessment of knowledge and attitude towards Lassa fever among Primary care providers in an endemic suburban community of Edo state: implications for control. J Med Med Sci. 2013;4(8):311-8.
- 25. Amoran O, Onwube O. Infection control and practice of standard precautions among healthcare workers in northern Nigeria. J Glob Infect Dis. 2013;5(4):156.
- 26. CDC. Sierra Leone Trial to Introduce a Vaccine against Ebola (STRIVE) Q&A | Ebola Hemorrhagic

- Fever | CDC. CDC. 2015. http://www.cdc.gov/ vhf/ebola/ strive/qa.html. Accessed June 13, 2015.
- CDC. Questions and Answers: 2014 Ebola Outbreak. Ebola Hemorrhagic Fever. CDC. CDC. 2015. http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/qa.html. Accessed February 3, 2016.
- 28. To KKW, Chan JFW, Tsang AKL, Cheng VCC, Yuen K-Y. Ebola virus disease: a highly fatal infectious disease reemerging in West Africa. Microbes Infect. 2015;17(2):84-97.
- 29. Vailaya CGR, Kumar S, Moideen S. Ebola Virus Disease: Knowledge, Attitude, Practices of Health Care Professionals in a Tertiary Care Hospital. 2014;2(August):13-8.

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