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Awareness, Knowledge and Misconceptions about Ebola Virus Disease (EVD) in a Family Practice Setting in Nigeria, West Africa

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Abstract

Background: An epidemic of Ebola Virus Disease (EVD), perhaps the most ravaging epidemic in contemporary history is on-going in certain West Africa Countries with significant mortality.

Although the WHO's representative in Nigeria officially declared Nigeria Ebola free on 20th October 2014, comprehensive knowledge of EVD is generally low in Nigeria with associated paucity of data on the subject matter, hence the objective of this research was to assess the awareness, knowledge and misconceptions about EVD in Nigeria.

Methods: This was a hospital based, cross sectional, descriptive study of four hundred respondents who attended the Kwara State specialist hospital, Sobi, Ilorin, Nigeria, West Africa from 1st October, 2014-1st December, 2014. A semi-structured questionnaire was used to collect data on socio-demographics, awareness, knowledge and misconceptions among the respondents.

Results: The minimum age of the respondents was 20 years while the maximum was 80 years. The mean age was 43.3150 ± 17.11133. There were more female 344 (86.0%) than male 56 (14.0%). Majority were married 264 (66.0%). One hundred and nineteen (29.8%) had primary education, 171 (42.8%) secondary while 82 (20.5%) were without formal education. They were predominantly Muslim 288 (72%) and of Yoruba extraction 358 (89.5%). Majority were traders 131 (32.8%) only (14.0%) were students. Although 370 (92.5%) had heard of EVD, only 16 (4.0%) knew the number to call when EVD was suspected. In addition, One hundred and fifty six (39.0%) had poor knowledge of EVD, 102 (25.5%) had a fair knowledge, while 142 (35.5%) had good knowledge. Eighty eight (22.0%) thought EVD was curable. Three hundred and twelve (78.0%) knew that neither drug nor vaccine is currently available. Twenty six (6.5%) of the 88 (22.0%) who thought that EVD was curable believed that traditional medication could cure EVD. The major source of information was through the radio 313 (78.2%) followed by 37 (9.3%) from neighbours. Health workers constituted only 32 (8.0%). One hundred and fifty eight (39.5%) believed that EVD was air borne, 32 (8.0%) through mosquito bites, 26 (6.5%) by bacteria. Eighty nine (22.2%) had the right knowledge of EVD being of viral origin. Seventy nine (19.8%), 76 (19.0%), 53 (13.2%) believed that traditional healers, spiritual healers and bathing with salt and hot water respectively could treat EVD successfully.

Conclusion: In Nigeria, EVD awareness is high, but comprehensive knowledge of EVD is generally low with serious misconceptions. Radio is by far the preferred means for receiving information about EVD.

Keyword: Awareness; Knowledge; Misconceptions; Ebola Virus Disease (EVD); Nigeria

Introduction

Ebola virus belongs to the *Filovirus* family. They are pleomorphic, negative-sense RNA viruses. Of the four identified strains of Ebola virus, three-the Zaire, Ivory Coast, and Sudan strains-have been shown to cause disease in both humans and nonhuman primates, with the Zaire strain exhibiting the highest lethality rate [1,2]. Patients with Ebola Virus Disease initially present with non-specific influenza-like symptoms and later progress to multi-organ failure and septic shock. Common signs and symptoms reported from West Africa during the 2014 outbreak include: fever (87 per cent), fatigue (76 per cent), vomiting (68 per cent), diarrhoea (66 per cent), and loss of appetite (65 per cent) [3].

As at 25 October 2014, the World Health Organization (WHO) reported a total of 10,141 suspected cases and 4,922 deaths [4]. The first case in Nigeria was a Liberian-American, who flew from Liberia to Nigeria's commercial capital Lagos on 20 July, 2014. He became critically ill upon arriving at the airport and died five days later. On 19 August, 2014, the doctor who treated him also died of EVD. The first person reported to be infected in the spread to Sierra Leone was a tribal

healer. Her body was washed for burial and this appears to have led to infections in women from neighbouring towns [5]. On 29 July, 2014, Sierra Leone's only expert on haemorrhagic fever, died after contracting Ebola at his clinic in Kenema [5]. On 29 August, Senegalese Minister of Health announced the first case in Senegal [6]. In August 2014, an outbreak of EVD was reported in the Democratic Republic of Congo [7,8]. The index case was a pregnant woman who prepared bush meat from an animal that had been killed by her husband. As at October 20, 2014, a total of 66 cases of EVD, including 49 deaths, have been connected to this outbreak [4]. Many of the areas seriously affected by the outbreak were areas of extreme poverty [9]. Other factors responsible for the spread of EVD include reliance on traditional medicine and cultural practices involving physical contact with the deceased, especially death customs such as washing and kissing [10]. Some hospitals lack basic supplies and are understaffed, increasing the chance of staff contracting the virus themselves. In August 2014, the WHO reported that ten per cent of the dead have been health care workers [11].

So far, there is no study in Nigeria which examined the awareness and knowledge of EVD. The only source of reference in West Africa was the study in Sierra Leone [12]. In the study 97% had heard of Ebola and believed in the existence (97%), with only 53% knowing the number to call to report suspected EVD cases or ask questions about the disease [11]. In Sierra Leone, comprehensive knowledge of EVD prevention was generally low. In the study, one-third of the respondents believed that EVD was transmitted by air or through mosquito bites [13].

In Sierra Leone, radio was by far the primary channel of receiving information on EVD (88%), followed by religions venues (42%), megaphone announcements (21%) and television (21%). About 40-43% of respondents received EVD information through television [10].

Methodology

Following institutional ethical approval by the Kwara State Ministry of Health, Nigeria, the study was conducted at the General Outpatients Clinic of Kwara State Specialist Hospital, Sobi, Ilorin, Nigeria. Using Fishers Formula [13],

$$n = \frac{z^2 pq}{d^2}, \text{ where}$$

n = the desired sample size (when population is greater than 10,000)

z = the standard deviate, usually set at 1.96 (or more simply at 2.0), which corresponds to the 95 percent confidence level,

p = the proportion in the target population estimated to have a particular characteristic since there is no reasonable estimate, 50% was used (i.e. 0.50).

q = 1.0 - p

d = degree of accuracy desired, usually set at 0.05 or occasionally at 0.02.

$$n = \frac{(1.96)^2 (0.50)(0.50)}{(0.05)^2}$$

n = 384.

Since

n (the entire population) is less than 10,000, the required sample size will be smaller.

$$nf = \frac{n}{1 + \frac{(n)}{(N)}}$$

where;

nf = the desired sample size when populations is less than 10,000

n = the desired sample size when the population is more than 10,000

N = the estimate of the population size

$$nf = \frac{n}{1 + \frac{(n)}{(N)}} = \frac{384}{1 + \frac{384}{1000}} = \frac{384}{1.38} = 278$$

A minimum sample size of 278 was calculated but 400 were used to provide for the non-response rate and non-response bias. The inclusion criteria were all concerted patients who attended the GOPD within the period of 1st October to 1st December 2014. The exclusion criteria were those who were very sick.

A semi-structured questionnaire, made up of close ended questions was used to collect data (Appendix). It was serially numbered

Variables	Frequency	(%)
Age Groups		
<30	107	-26.8
30-39	76	-19
40-49	59	-14.8
50-59	69	-17.2
60-69	56	-14
>=70	33	-8.2
Total	400	-100
Gender		
Male	56	-14
Female	344	-86
Total	400	-100
Marital Status		
Single	65	-16.2
Married	264	-66
Divorced	14	-3.5
Widow	53	-13.3
Separated	4	-1
Total	400	-100
Level of Education		
None	82	-20.5
Primary	171	-42.7
Secondary	119	-29.8
Tertiary	28	-7
Total	400	-100
Religion		
Islam	288	-72
Christianity	112	-28
Total	400	-100
Occupation		
Trader	131	-32.8
Civil Servant	45	-11.2
Self Employed	125	-31.2
Unemployed	43	-10.8
Student	56	-14
Total	400	-100
Ethnicity		
Yoruba	358	-89.5
Igbo	16	-4
Hausa	4	-1
Nupe	10	-2.5
Others	12	-3
Total	400	-100

Table 1: socio-demographic variable of the respondents.

and interviewer administered. The researcher administered the questionnaire personally, assisted by well-trained research assistances. Administration of questionnaire was done during normal clinic hours after normal consultation.

Pretesting was carried out at the Kwara State Civil Service Hospital, using 40 respondents (10% of the sample size).

Have you heard of EVD?	Frequency	(%)
Yes	370	-92.5
No	30	-7.5
Total	400	-100
Do you know the number to call?		
Yes	16	-4
No	384	-96
Total	400	-100
Are you aware of the current epidemic?		
Yes	327	-81.8
No	73	-18.2
Total	400	-100
Do you think EVD is Curable?		
Yes	88	-22
No	312	(78.0
Total	400	-100
Can traditional medication cure EVD?		
Yes	26	-6.5
No	374	-93.5
Total	400	-100

Table 2: Awareness of Ebola Virus Disease (EVD).

Knowledge was determined after interviews were completed by scoring the patients from fifteen questions based on the causes and symptoms as well as transmission of the disease. Respondents that scored below 5 were considered as having poor knowledge while those that got 5-9 questions correctly were considered fair, good knowledge involved getting more 10 questions correctly. Chi-square analysis was used for the data.

Results

Table 1 shows the socio-demographic of the respondents. The minimum age of the respondents was 20 years while the maximum was 80 years. The mean age was 43.3 ± 17.1. There were more female 344 (86.0%) than male 56 (14.0%). Majority were married 264 (66.0%), 65 (16.2%) single while 53 (13.3%) were widows. One hundred and nineteen (29.8%) had primary education, 171 (42.7%) secondary education while 82 (20.5%) were without formal education. They were predominantly Muslims 288 (72%) and of Yoruba extraction 358 (89.5%). Majority were traders 131 (32.8%) while 56 (14.0%) were students.

Table 2 shows awareness of EVD among the respondents. Three hundred and seventy (92.5%) had heard of EVD but only 16 (4.0%) knew the phone number to call when suspicion of EVD was made. In addition, 327 (81.8%) were aware of the current epidemic in West Africa. Eighty eight (22.0%) thought EVD was curable. Three hundred and twelve (78.0%) knew that neither drug nor vaccine is currently available. Twenty six (6.5%) of the 88 (22.0%) who thought that EVD was curable believed that traditional medication could cure EVD.

Table 3 shows the EVD knowledge of the respondents. One hundred

Variables	Knowledge Group			Total	Chi-square	P- value
	Poor Knowledge	Fair Knowledge	Good Knowledge			
Age Groups						
<30	19 (12.2%)	24 (23.5%)	64 (45.1%)	107 (26.8)	78.072	<0.001
30-39	33 (21.2%)	16 (15.7%)	27 (19.0%)	76 (19.0)		
40-49	18 (11.5%)	17 (16.7%)	24 (16.9%)	59 (14.7)		
50-59	38 (24.4%)	22 (21.6%)	9 (6.3%)	69 (17.3)		
60-69	34 (21.7%)	6 (5.8%)	16 (11.3%)	56 (14.0)		
>=70	14 (9.0%)	17 (16.7%)	2 (1.4%)	33 (8.2)		
Total	156(100.0%)	102(100.0%)	142(100.0%)	400(100%)		
Gender						
Male	16 (10.3%)	19 (18.6%)	21 (14.8%)	56 (14.0)	3.703	0.157
Female	140(89.7%)	83 (81.4%)	121(85.2%)	344(86.0)		
Total	156(100.0%)	102(100.0%)	142(100.0%)	400(100%)		
Marital Status						
Single	15(9.6%)	20(19.6%)	30(21.1%)	65 (16.3)	51.95	<0.001
Married	88(56.4%)	78(76.5%)	98(69.0%)	264 (66.0)		
Divorced	10(6.4%)	0(0.0%)	4(2.9%)	14 (3.5)		
Widow	39(25.0%)	4(3.9%)	10(7.0%)	53 (13.2)		
Separated	4(2.6%)	0(0.0%)	0(0.0%)	4 (1.0)		
Total	156(100.0%)	102(100.0%)	142(100.0%)	400(100.0%)		
Level of Education						
None	30(19.2%)	22(21.6%)	30(21.1%)	82(20.5)	3.129	0.792
Primary	69(44.2%)	42(41.2%)	60(42.3%)	171(42.7)		
Secondary	50(32.1%)	29(28.4%)	40(28.1%)	119(29.8)		
Tertiary	7(4.5%)	9(8.8%)	12(8.5%)	28(7.0)		
Total	156(100.0%)	102(100.0%)	142(100.0%)	400(100.0%)		

Table 3: association between socio-demographic factors and knowledge of Ebola Virus Disease.

and fifty six (39.0%) had poor knowledge of EVD, 102 (25.5%) had a fair knowledge, while 142 (35.5%) had good knowledge. Age group and marital status were statistically significant. Level of education was of no statistical importance.

Table 4 shows the main source of information of EVD among the subjects. The major source of information was through the radio 313 (78.2%) followed by 37 (9.3%) from neighbours. Health workers constituted only 32 (8.0%). The radio was also the main source of information of EVD epidemic.

Table 5 shows misconceptions about causes and treatment of EVD. One hundred and fifty eight (39.5%) believed that EVD is air borne, 32 (8.0%) from mosquito bites, 26 (6.5%) bacteria. Eighty nine (22.2%) had the right knowledge of EVD being of viral origin. Seventy nine (19.8%), 76 (19.0%), 53 (13.2%) believed that traditional healers, spiritual healers and bathing with salt and hot water respectively could treat EVD successfully.

Table 6 shows the preventive measures as well as practices of preventive measures of EVD. Although 309 (77.2%) believed that regular and thorough washing of hands would prevent EVD, only 299 (74.5%) practiced regular and thorough hand washing, while 229 (57.2%) felt reducing contact with the infected EVD patients would prevent EVD, although only 136 (34.0%) would practice it. Though 202

Main Source of Information of EVD	Frequency	(%)
Neigbours	37	-9.3
Friends	6	-1.5
Radio	313	-78.2
Newspaper	4	-1
Health workers	32	-8
Relatives	4	-1
Others	4	-1
Total	**400**	**-100**
Main Source of Information of EVD Epidemic		
Neigbours	34	-8.5
Friends	2	-0.5
Radio	334	-83.5
Newspaper	4	-1
Health workers	22	-5.5
Others	4	-1
Total	**400**	**-100**

Table 4: Main source of information of EVD.

Misconceptions	Frequency	(%)	
Misconceptions about Causes of EVD			
Air	158	-39.5	
Mosquito bites	32	-8	
Virus	89	-22.2	
Bacteria	26	-6.5	
Don't know	95	-23.8	
Total	**131**	**-100**	
Misconceptions about Treatment of EVD	**Yes (%)**	**No (%)**	**Total**
Traditional healers can treat EVD successfully	76 (19.0)	324 (81.0)	400 (100.0)
Spiritual healers can treat EVD successfully	79 (19.8)	321 (80.2)	400 (100.0)
Bathing with salt and hot water	53 (13.2)	347 (86.8)	400 (100.0)

Table 5: Misconceptions about causes and treatment of EVD.

Preventive and Practice Measures of EVD	Yes (%)	No (%)	Total
Preventive Measures of EVD			
Regular and thorough hand washing	309 (77.2)	91 (22.8)	400 (100.0)
Thorough cooking of all bush meat	262 (65.5)	138 (34.5)	400 (100.0)
Wearing of protective gears by care givers	154 (38.5)	246 (61.5)	400 (100.0)
Isolation, precaution and barrier nursing	133 (33.2)	267 (66.8)	400 (100.0)
Reduce contact with the infected	229 (57.2)	171 (42.8)	400 (100.0)
Infection control and sterilization	176 (44.0)	224 (56.0)	400 (100.0)
Proper disposal of dead bodies	202 (50.5)	198 (49.5)	400 (100.0)
Adequate environmental/personal hygiene	268 (67.0)	132 (33.0)	400 (100.0)
Practices of Preventive Measures of EVD			
Regular and thorough hand washing	299 (74.5)	101 (25.5)	400 (100.0)
Thorough cooking of all bush meat	211 (52.8)	189 (47.2)	400 (100.0)
Wearing of protective gears by care givers	104 (26.0)	296 (74.0)	400 (100.0)
Isolation, precaution and barrier nursing	87 (21.8)	313 (78.2)	400 (100.0)
Reduce contact with the infected	137 (34.2)	263 (65.8)	400 (100.0)
Infection control and sterilization	123 (30.8)	277 (69.2)	400 (100.0)
Proper disposal of dead bodies	165 (41.2)	235 (58.8)	400 (100.0)
Adequate environmental/personal hygiene	244 (61.0)	156 (39.0)	400 (100.0)

Table 6: Preventive and practice measures of EVD.

(50.5%) knew that proper disposal of dead bodies would prevent EVD, only 165 (41.2%) would practice it.

Discussion

Awareness of EVD in Nigeria is not as high as that of Sierra Leone; this is because Sierra Leone, Guinea and Liberia were most affected by EVD [14]. In Sierra Leone, there were 717 cases (631 confirmed), including 298 deaths (case-fatality ratio 42%), compared to Nigerians, 13 cases (0 confirmed, 7 probable, and 6 suspected), including 2 deaths [15]. Moreover, in an attempt to control the EVD, Sierra Leone imposed a three-day lockdown on its population from 19 to 21 September. During this period, 28,500 trained community workers and volunteers went door-to-door providing information on how to prevent infection, as well as setting up community Ebola surveillance teams16. Awareness is a key to containing the deadly EVD in West Africa. To a large extent, lack of information will further complicate government and humanitarian agencies' response to the crisis. Since currently, there is neither vaccine nor drugs for EVD, we must act fast by ensuring that correct information reaches affected communities.

In Nigeria 156 (39.0%) had poor knowledge of EVD, this is comparable to the studies in Sierra Leone where only 39% of the respondents were able to identify three means of prevention and rejected three misconceptions. While not sufficient in itself, comprehensive knowledge is a critical component in increasing the likelihood of individuals to adopt the promoted prevention and medical seeking behaviours [10].

Similar to the study in Sierra Leone, radio was by far the primary channel of receiving information on EVD (78.2%), followed by neighbours (9.3%). In Nigeria, health workers constituted only (8.0%) of the respondents as compared to 28% of the study in Sierra Leone were health professionals moved from house to house, this was not the

case in Nigeria. House visit by health professionals was not one of the practices adopted in Nigeria. Not only does the radio have the widest reach, it was also the main source of information of EVD epidemic. Hence, there is the need to maximally use radio as it is the most preferred channel with the widest geographic reach. There is also the need to ensure that key information is communicated directly by health professionals through home visits [10].

In this study, there were serious misconceptions about causes and treatment of EVD. Moreover, (39.5%) of the respondents believed that EVD is air borne. This was similar to the findings in Sierra Leone where nearly one-third believed that EVD is transmitted by air or through mosquito bites [10]. Only 22.2% of the respondents had the right knowledge of EVD being of viral origin. There is a need to address misconceptions about the disease, which include clearly spelling out modes of transmission in the local languages, developing clear messages in local languages on protective practices (including burials), developing special messages around community acceptance of EVD affected persons and families, supporting inter-personal engagement at grassroots levels in order to improve community response and ownership of the social mobilization efforts [10].

Furthermore, quite a number of the respondent still believe that traditional healers, spiritual healers and bathing with salt water could treat EVD successfully. This misconception of treatment is similar to the Sierra Leone study where about 2 in 5 respondents believe that they could protect themselves from EVD by washing with salt and hot water while nearly 1 in 5 believe that spiritual healers can successfully treat the disease [10].

The government of Nigeria needs to place a major focus on educating the public on the concept and mis-concepts, characters, causes, complications, care and how to prevent the transmission of EVD as well as encouraging people to promptly seek medical care in the event that they experience signs and symptoms associated with the disease. Myths, misconceptions and misinformation about the disease can put a strain on the fight against EVD, hence, the need to address misconceptions about the disease.

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