

Original Research

Misconceptions about Ebola Virus Disease among Residents of Calabar, Cross River State, Nigeria: A Mixed-Method Approach.

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Abstract

Background: The Ebola Virus Disease (EVD) has a high risk of death killing an average of about 50% of those infected. Several outbreaks have occurred intermittently since the disease was first described. The 2014 outbreak was the largest and most complex in recorded history. Rumours were rife especially through social media that a salt ritual amongst other unverified claims could prevent or cure EVD. This study aimed to determine the knowledge, perception and practices to prevent EVD in Calabar and to highlight the role of social media in health seeking behaviours.

Methodology: This was a mixed method study, a combination of cross-sectional design and Focused Group Discussion conducted between November 2016 and June 2017.

Results: Ninety-three percent (93%) of the respondents had heard about EVD with the radio (82%) being the dominant source of information. Virus as the causative agent and contact with body fluids as the most common mode of transmission were correctly identified by 72%. Fever ranked as the most common symptom by 75% and washing of hands (60%) was perceived as the most common way to prevent EVD. Sixty-three percent (63%) responded that salt is used to cure EVD, 57% participated in the salt ritual and 85% of those who partook in the salt ritual later realized it did not cure or prevent EVD.

Conclusion: People should be encouraged to seek health related information from the appropriate sources. Effective and sustained communication strategies are advocated to mitigate rumour mongering and misinformation to curb unhealthy practices.

Key Words: Ebola Virus Disease; Misconceptions; Calabar; Cross River State; Nigeria.

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Quick Response Code:



Introduction

Ebola virus disease (EVD) also known as Ebola haemorrhagic fever is a disease of humans and primates caused by Ebola viruses. The disease has a high risk of case fatality rate killing between 25 & 90 percent of those infected with an average of about 50 percent. [1]

Signs and symptoms typically start between 2 to 21 days after contracting the virus with a fever, sore throat, muscle pain and headaches then, vomiting, diarrhea and rash usually follow, along with a decreased function of the liver and kidneys. The virus spreads by direct contact with body fluids, such as blood of an infected human or other animals.[2] This may also occur through contact with an item recently contaminated with bodily fluids. Spread of the disease through the air between primates, including humans, has not been documented in either laboratory or natural conditions.[2]

Fruit bats are believed to be the normal carrier in nature, able to spread the virus without being affected by it. Control of outbreaks requires coordinated medical services, alongside a certain level of community engagement. Ebola virus disease first appeared in 1976 in simultaneous outbreaks, one in Nzara, Sudan and the other in Yanbuku, Democratic Republic of Congo. The latter occurred in a village near the Ebola River from which the disease takes its name. [3]

Ebola disease outbreaks occur intermittently in tropical regions of Sub-Saharan Africa.[1] Between 1976 and 2013, the world health organization reported a total of 24 outbreaks involving 1,716 Cases. [1, 4]

The 2014 Ebola outbreak is the largest and most complex Ebola outbreak since the Ebola virus was discovered in 1976. There were more cases and deaths in this outbreak than all other outbreaks combined. It also spread between countries starting in Guinea then spreading across land borders in Sierra Leone and Liberia, by air to Nigeria, and by land to Senegal. On August 8, 2014, the WHO Director-General declared the outbreak a Public Health Emergency of international concern (PHEIC) [5,6]. The outbreak ended with more than 28,600 cases and 11,325 deaths. [7,8]

Nigeria's outbreak started in July 2014 when, an American of Liberian descent, travelled by air from Liberia to Lagos, Nigeria, the country's most populous city starting a chain of infection that spread the disease to 19 other people and resulted in 8 deaths. [9, 10] Health education, Good personal hygiene like regular hand washing and basic sanitation like household and facility cleaning with disinfectants, eating well cooked meat (especially wild animals), as well as non-body contact with a very sick Ebola victim or a corpse remain the key to prevention and control.

In August 2014, rumours that quickly went viral on social media and text messaging platforms were circulated that a salt bath ritual or salt ingestion amongst other unverified claims could cure or prevent Ebola virus disease [11, 12, 13].

The Nigerian government debunked the claims that bathing with salted water or drinking salt water was a cure for the deadly Ebola virus [14]

This study aimed to determine the knowledge, perception and practices for the prevention of Ebola virus disease in Calabar, Cross River State of Nigeria. It was also intended to highlight the role of social media in health care seeking behaviors.

Methodology

The study setting was Calabar, the capital city of Cross River State located in Southern Nigeria.

This was a mixed-method study, a combination of quantitative and qualitative approaches. The quantitative component was cross-sectional in design while the qualitative was Focus Group Discussion (FGD).

Adult Subjects who gave written consent were recruited to partake in the study conducted between November 2016 and June 2017.

A self-administered pre-tested semi-structured questionnaire was issued to 180 respondents. The 22-item questionnaire captured the socio-demographic variables of study participants in the 1st part, awareness and knowledge of Ebola in the 2nd and practices to prevent Ebola virus disease in the 3rd part.

For the qualitative assessment, six (6) focused groups were arranged and stratified based on gender and age. Each focus group consisted of 8 participants, purposively selected. One of the criteria for selecting the FGD participants was ability to communicate at least in Pidgin English. The authors ensured that the location for FGD was free from interference and consent was sorted for participation, note taking, digital voice recording. Interview was done using a valid and semi-structured FGD guide with probes generated from existing literature and in conformity with research questions. The sitting arrangement was arc-like to ensure proper eye contact and attention. The moderator ensured that every member of the group participated, and the discussion continued until saturation point was reached.

Data obtained from the questionnaires were entered and analyzed with the use of Statistical Package for Social Sciences (SPSS) version 28.0 for windows (License number: ce0a9404059066680b33). Descriptive statistics were used to summarize variables while inferential statistics were used to establish association between two categorical variables. The level of statistical significance was set at p-value of ≤ 0.05 , and at 95% confidence interval.

Recorded audio from FGDs was transcribed verbatim and analyzed using ATLAS.ti version 8.0. A framework analysis was done using transcripts uploaded into the qualitative software as primary documents and coded in vivo and on a list. Codebook was generated from the research questions and existing literature reviewed. The qualitative interview was transcribed inductively and deductively and imputed to guide coding as well as to ensure coding reliability between documents across study groups. The data from the FGDs were then presented as narratives.

Ethical approval for the study was obtained from the Cross River State Health Research Ethics Committee (CRS-HREC) dated the 10th of October 2016 with REC number: RP/REC/2016/414

Results

Table 1: Socio-demographic characteristics of the study population (N=180)

Variable	Frequency n=180	Relative frequency (%)
Age group (years)		
<25	37	20.6
25-34	62	34.4
35-44	50	27.8
≥ 45	31	17.2
Sex		
Female	66	36.7
Male	114	63.3
Education		
None	14	7.8
Primary	33	18.3
Secondary	33	18.3
Tertiary	100	55.6

Occupation		
Artisan	39	21.7
Civil servant	45	25.0
Public servant	12	6.7
Retiree	6	3.3
Student	27	15.0
Trader	33	18.3
unemployed	18	10.0
Marital status		
Single	99	55.0
Married	72	40.0
Divorced	3	1.7
Widow/widower	6	3.3
Religion		
Christianity	174	96.7
Traditional African Religion	6	3.3

In Table 1, about one-third (34%) of the respondents were in the 25–34-year age category, while the least number (17%) of the respondents were 45 years or older. There were more males (63%) than females (37%) in the study population. A little more than half (56%) of the respondents had tertiary education, while 8% of them had no education. Civil servants made up one-quarter (25%) of the study population, more than half of the respondents were single (55%) and Christianity was the dominant religion (97%).

Table 2: Awareness of Ebola Virus Disease (EVD) and source of awareness (N=180)

Variable	Frequency n=180	Relative frequency (%)
Awareness of EVD		
Yes	168	93.3
No	12	6.7
Source of awareness*		
Radio	147	81.7
Word of mouth	117	65.0
Social media	105	58.3
Local TV	87	48.3
International TV	84	46.7
Phone/SMS from family members.	75	41.8
Medical personnel	63	35.0
IEC material	51	28.3
Town crier	48	26.7
Internet	45	25.0
Others	15	8.3

*Multiple responses

A considerable number (93%) of the study participants had heard about EVD and radio was the dominant (82%) source of information (Table 2).

Table 3: Knowledge of Ebola Virus Disease (N=180)

Variable	Frequency n=180	Relative frequency (%)
Knowledge of the organism that causes EVD		
Bacterium	18	10.0
Fungus	12	6.7
Protozoan	18	10.0
Virus	132	73.3
Knowledge of the mode of transmission of EVD*		
Direct contact with body fluids	129	71.7
Contact with sick or dead animals	108	60.0
Touching of objects	87	48.3
Through air, food or water	78	43.3
Casual contact	51	28.3
Mosquito bites	21	11.7
Disobeying your pastor	18	10.0
Knowledge of the symptoms of EVD*		
Fever	135	75.0
Weakness	114	63.3
Aches and pain	93	51.7
Headache	87	48.3
Skin rash	87	48.3
Red eyes	81	45.0
Loss of appetite	78	43.3
Vomiting	78	43.3
Bleeding	69	38.3
Sore throat	63	35.0
Fatigue	63	35.0
Muscle and joint pain	63	35.0
Abdominal pain	48	26.7
Diarrhoea	42	23.3
Knowledge of the prevention of EVD*		
Washing of hands always	108	60.0
Avoiding contaminated surfaces	102	56.7
Avoiding contact with body fluids	96	53.3
Avoiding eating potentially infected bush meat	93	51.7
Health education talk	90	50.0
Bathing with or drinking salt water	69	38.3
Receiving EVD vaccines	66	36.7
Eliminating rats	45	25.0
Prayer and fasting	36	20.0
Drinking or rubbing python oil	30	16.7
Sleeping under mosquito nets	27	15.0
Eating bitter cola	27	15.0
Visiting native doctors	18	10.0
Does EVD have a cure?		
Yes	99	55.0
No	33	18.3
Do not know	48	26.7

*Multiple responses

Seventy-two percent (72%) of the participants correctly identified virus as the agent that causes EVD, and the same percentage identified direct contact with body fluids as the most common mode of transmission of the virus (Table 3). Fever was the most common symptom of EVD (75%) and washing of hands always was perceived to be the most common (60%) way of preventing the infection. More than one-half (55%) of the respondents reported that EVD has a cure.

Table 4: Knowledge of Ebola Virus Disease prevention (N=180)

Variable	Frequency n=180	Relative frequency (%)
Use of salt to cure EVD		
Yes	114	63.3
No	66	36.7
Source of information*		
Word of mouth	105	58.3
Social media	87	48.3
Phone and SMS from a family member.	75	41.7
Radio	72	40.0
Local TV	45	25.0
International TV	45	25.0
Internet	30	16.7
Town crier	30	16.7
Medical personnel	30	16.7
IEC materials	18	10.0
Others	15	8.3

*Multiple responses

In Table 4, 63% of the respondents reported that salt is used to cure EVD and the most common (58%) source of this information was via word of mouth.

Table 5: Ebola Virus Disease-related practices (N=180)

Variable	Frequency n=180	Relative frequency (%)
Participation in salt ritual		
Yes	110	61.1
No	70	38.9
Voluntariness of salt ritual participation (n=110)		
Yes	52	47.3
No	58	52.7
Reasons for participating in the salt ritual (n=110)		
Afraid to die	64	58.2
No reason	34	30.9
People were doing it	12	10.9
Method of salt ritual (n=110)		
Bathing	72	65.5
Oral intake	38	34.5
Symptoms following salt ritual (n=110)		
Runny stomach	73	66.4
Malaise	25	22.7
Increased thirst	7	6.4
None	5	4.5
Did you later hear that salritual does not cure EVD? (n=110)		
Yes	93	84.5
No	17	15.5
If yes, what was the source of information? (n=93)*		
Radio	87	93.5
Word of mouth	78	83.9
Medical personnel	57	61.3
Social media	54	58.1
Local TV	48	51.6

International TV	42	45.2
Phone and SMS from a family member.	42	45.2
Internet	33	35.5
IEC material	18	19.4
Town crier	12	12.9
Others	9	9.7

*Multiple responses

Sixty-one percent (61%) of the respondents reported participating in a salt ritual to prevent EVD and 47% of these did so on their own volition, with the main reason being that they were afraid to die (58%). The salt rituals involved bathing with (65%) or drinking (34%) salt solution. Of those who partook in the salt ritual, 66%, 23% and 6% had runny stomach, malaise, and increased thirst, respectively. On the other hand, 5% of them had no complication from participating in the salt ritual. Eighty-five percent (85%) of those who partook in the salt ritual later understood that the ritual does not cure EVD and the most common source of this information was via radio (94%) (Table 5).

Qualitative Results

Knowledge of cause, reservoirs, symptoms and mode of transmission of Ebola disease

Many individuals had good knowledge of the cause and reservoirs of Ebola as deciphered from their responses. Clearly, most of them identified Ebola to be of viral agent and the reservoir to include bat, monkeys, etc. Most participants across all groups in the FGDs admitted the benefits of health education in preventing the spread of Ebola disease, especially the teachers and traders, then the other groups. However, there are some whose level of knowledge is rather very poor, worse among the mechanic workers where FGD participants opined that Ebola disease is air-borne and therefore acquired through 'breathing air'. All participants clearly said native intervention is not a remedy for Ebola disease. Beside wrong knowledge of Ebola disease, there were some participants during the FGD sessions among the Police Officers, mechanics and teachers who opined that Ebola disease is not real.

In their own words: 1. *'For me, I no believe on all those things say it existed. If the America say the eboladey, how dem take know say this thing is ebola? (FGD among Police Officers/Mechanics)'* 2. *'My mum told me from the village that they don't believe the Ebola (FGD among Teachers)'*

Excerpts in response to the question 'what do you know about Ebola?'

I think it's a virus; Based on bats that travel far, and monkeys that travel far; I heard it's from bush meat; I heard that it's dirty environment; And also when you get in contact with a contaminated animals like rats, bats and monkey (FGD among traders)

I know it's a virus. I know it's a virus caused by bats and rats. I know it's a virus that came into Nigeria through a man called Patrick Sawyer, though I can't actually tell the year. When the pandemic was on, mostly according to speculations that it was derived.

Through bats. I heard that when you eat the rats, it causes virus. I don't know, I just know that when you eat rats (FGD among students)

Rat. Bush meat, dog, bat, and dirty environment. Ebola dey waka like air, air-borne disease. And ehn, through washing of hands and through breathing (FGD among mechanic workers)

It's a disease that human being can contact through washing of hand, or through shaking, and through breathing air. Like this air that we are breathing so, normal air that we are breathing. Through that we can contact this ebola. E dey take through oxygen. If one of us here get am, maybe you come sit down

with am, through the oxygen wey we dey breathe e fit spread. As Number3 don talk, through blood transfusion. Because as it is now, if I wound now, blood pour now, if person fit get wound on the same spot now, if the person now no use that blood, since him no know say I don wound and see the kind disease wey I get, and the blood don attach for there, from there him go get am. All those bush meat wey we dey chop, antelope, grasshopper. Through sexual transmission (FGD among mechanics).

It's a virus, a viral disease. The virus that causes ebola is a haemorrhagic virus. It leads to bleeding. I also know that as a virus, it stays in an animal, then eventually when you have contact with the animal, you can also contact it. Like some of these wild animals. Bats, wild rats, or some species of rats, and so on. I'm also supporting him on the rats. And the one we call in our local dialect, okoncalabar'. I heard of monkeys. Because during that time, we were told not to eat bush meat. (FGD among teachers).

Knowledge of symptoms

It was clear from the responses that no single individual had complete knowledge of all the symptoms associated with Ebola. Rather, different participants could only mention one or two symptoms at the most. The symptom that appears more prominent in their mention of symptoms across all categories of discussants was fever, followed by headache, sore throat, bleeding, fatigue, then GIT-related symptoms. Students had more knowledge regarding Ebola disease compared with all other categories of study participants.

Excerpts from discussants in answer to the question 'do you know the symptoms of Ebola virus disease?' Like when somebody has Ebola, what will you see in the person that will give you an idea that this thing seems to be Ebola?

'I heard that if you have ebola, you'll have high fever. That is one of the symptoms you should always be watchful of. I heard you'll have headache, sore throat and high fever. I heard you'll be bleeding from the eyes, the nose. Ehn, you'll be bleeding from your ear. I heard some people were bleeding from the ear, nostrils and other sensitive parts of their bodies. I heard running temperature, cough. I heard you'll begin to experience dizziness and weakness of the joints. I heard you'll be vomiting' (FGD among students)

'Red eye, fever and sore throat. Boil. Fever. Headache. Loss of appetite. Fever, body pains, and all of that. Fever, headache, sore throat, fatigue. That's what I know. Fever, headache' (FGD among Police Officers)

'High fever, bleeding too from the nose, mouth and anus, as well as fatigue (FGD among teachers)

Knowledge of mode of transmission of Ebola virus

Almost all discussants regardless of socio-demographic differences had correct knowledge of the cause, mode of transmission and symptoms of Ebola virus disease.

However, their perception and view towards Ebola and its preventive practices was ambivalent. While majority of discussants belief that Ebola is a genuine medical condition, one among the Police officers opined that he does not accept Ebola is real, while a teacher who also participated in the FGD said her mother in the village said what people call 'Ebola' is not real.

Knowledge of prevention of EVD

The knowledge of preventive measures was good among discussants across all categories of FGDs. Top on the list of preventive practices mentioned were proper cooking of meat before eating and good practice of personal hygiene. Other preventive or precautionary measures mentioned were avoiding animals that are known to serve as reservoir of Ebola viral disease such as bats and monkeys, regular

hand washing practices, to refrain from sharing sharp instruments like razor blade and needles. The Teachers, who clearly appeared to be more knowledgeable of Ebola prevention compared with other categories during their FGD session also mentioned quarantine and isolation as means of halting the spread of Ebola disease. About half of FGD among all homogenous categories of FGD conducted mentioned prayer to play a significant role, except for one participant in the Police Officer's FGD who said he does not believe prayer plays any role in the prevention of Ebola.

Excerpts:

Stay away from animals known to carry Ebola. Constant washing of hands. Avoid eating bush meat, and those that have rats in their house should pour rat medicine. By maintaining personal cleaning and sanitation (FGD among traders)

Before you eat bush meat, you go carry the bush meat, cooking, put am for fire. Make sure say you boil am very well. When you catch the bush meat, you make sure say you boil am very well, the meat go done. Before you go eat. Washing of hands, washing of eye and cleaning of environment. This bush meat of a thing, when you buy it, when you want to boil it, you use this kaun (limestone) first wash am before you boil. After you boil, the other water from inside you filter that one out. Then you take another water take prepare it. Like 3 or 4 people demdey eat food at a time, maybe dem go like to wash hand, make the first person wash hand, then pour the water, make the next person wash with new one do the same thing. Like some people always say, we should not chop monkey and bat. Don't use sharp objects wey another person don use. Because you can contact ebola disease through that person (FGD among mechanics)

Excerpts in response to the question: Please share with me the different things you know about how Ebola virus can be prevented'

'By washing your hands regularly. And also, not touching the animals that are carrying the virus. You avoid fluids from infected people. And also, animals that are suspected to be carrying the virus. Avoid body contact with infected persons. Anybody suspected to have died of Ebola, you dispose the corpse properly under protective environment. And you protect yourself before disposing the corpse immediately. Thorough cooking of meat. Cooking it sufficiently at appropriate temperature. When we cook at home, we don't use that, what we use to judge is a reasonable length of time. And ensure that the colour of blood has completely changed from red to dark red (FGD among teachers).

Ebola Disease Prevention Practices

The belief and practice of salt drink/salt bath to prevent Ebola was ambivalent among individuals as revealed in the FGDs. Most of the students, about half of the students and Police Officers and some of teachers were of the belief that drinking and/or bathing with salt could prevent or cure Ebola disease, many of whom practiced it especially mechanic workers, followed by the teachers and traders, then students and Police Officers. The belief and practice of salt drink and bath cut across all socio-demographic groups and, as many of them opined, they were compelled to drink salt and/or bath with it through direct influence or through phone calls coming from parents, friends, siblings and other people they held at high esteem. An FGD participant stated that a doctor advised them where they live to drink salt, then they all drank. This goes a long way to tell the influence of perception and negative influence of opinion leaders in propagating negative beliefs and perception that could be life-threatening. While some did not oblige to the calls to practice 'salt therapy', some did and had complications that led to the death of some. However, some clearly stated their noncompliance to the plea to take salt because they believed salt therapy is dangerous. Furthermore, some as well had believed in the use of bitter kola and python oil to prevent Ebola.

Excerpts

If you take salt thinking that it will help prevent, you'll rather kill yourself. Salt is very deadly to our body. There's no way salt can prevent ebola. All the food wey we dey eat, salt no bin dey inside before? You still want come pack another one. The use of salt to prevent ebola will not work. Salt does not do anything, it rather kills. So excessive salt will cause body rash. So there's no way salt is going to prevent ebola, it was just a gossip that was spread round. It killed some people. (FGD among Police Officers)

I drank salt with warm water. I used 2 tablespoons in a little cup of water and drank it. After then, come and see me on salt. My skin. And my children also. Immediately my husband came back, I said, "Just stand there o. Don't come in. In fact stand at the backyard and take your bath with hot water and salt and drink it. If not you'll not step into this house. In fact you're leaving this house." So after then, my husband said "This woman don come with trouble o." So he took his bath with the salt. I said Why won't he drink? When there is fire on the mountain in the house with your wife. You'll have to take it. After then it now occurred to him. He said, "But this thing you're doing, we have a family doctor. Why don't you call him and ask all these things?" I now called him and asked if he had drank salt and water, I was talking to a medical doctor. I told him to go and drink the salt and water o, I don't want to hear that he is dead. He laughed, and then told me that there is nothing like that o, that if I had taken the salt, I should go and take a lot of water to flush my system. I said okay o, let me do as he had said, I know though that I had taken it and nothing will come to me. That day, I was sleeping o. The whole compound was shaking. Even my enemy came and knocked on my door, "Kpamkpamkpam! Wake up and bath with salt water." Around 4 O'Clock. I was confused. Everybody in my house was going to bath. I was like, they said it's coming on air to meet you. So I was shocked, so I want to see it before I'll run because I know that before it will come to me, I will go to my kitchen and bath with the salt. But I was waiting to see it coming on air. So after I did not bath, many people bath, it looked like many people were stigmatising. "Why didn't you bath, don't touch me, you did not bath." So they were doing that. Even my mom, when she came back, she was stigmatising me that I did not bath with salt and water. As I heard about to bath with salt and drink salt, I called my neighbor. I hear demdey come knock my door say make I bath with salt. My neighbor. So my next neighbor, I call am. I ask am say him hear this thing weydem say make we do? He come call another doctor. Ask am whether this thing na true o, that night. Doctor say make we do the thing wey we hear everybody dey do o. Na there me I start to boil water, carry salt put go bath (Police Officers)

Negative influences toward wrong preventive practices among participants

As seen in the FGD transcripts, the negative influences leading to adoption of unhealthy practices as expressed by FGD participants were very obvious. Many who imbibed the unhealthy practice of 'salt therapy' did so following influence from friends and respected individuals who they saw doing same or who persuaded them through phone calls to do so. The negative influences include siblings, neighbours, parents, and sadly, some health workers.

Excerpts:

'Na my friend just call me. He say make we no drink salt o. See wetin dem say make we do o. That one no hard us na. After all our friend dey sell am. We go pack am for market. Put am inside. We drink, we dey chop. Carry this red oil, ehen, we use am dey chop. So na my experience be that. (FGD among Mechanics)'

'My mother called me, even my daughter that was with my mother also called me. I had a similar call from my wife. Then my brother called. But I refused to listen because it didn't have any medical basis. So I refused to take salt water. But there is this other one which we have not mentioned. The use of bitter kola' (FGD for Teachers)

1. *'My neighbor. He asked me to use salt and water. So all my children, I now put salt and water. They said we should take it as early as 5 O'Clock. I said "Ha, so early?" They said yes. All of us in the house we now had our bath with it. But we did not drink salt.'* 2. *'A friend of mine called me. He told me "Tony, go and bath." I said "Ha ah, by this time? This is 3am, I can't go out and bath by this time 5. The guy call me again to ask whether I don bath. I tell am say I neva bath. He tell me say e don expire, make I no bath again. Say as e dey so, I don die say make I no bath again.'* 3. *'That day, it was my aunty that called me. When I just on my phone (because I usually off it before I sleep), she said she had been trying to call my number since, why is it that I don't want to pick? I said okay, I've picked now. What is it? She said I should go outside and bath with salt. Even though there is somebody inside the bathroom I should just stay outside and bath with salt.'* 4. *That night, my sister called me from Obubra. "Small sis you hear wetindey happen? They say eboladey everywhere, carry salt put for water." I carry salt, I no even call my husband, my husband don go night duty. I carry salt put for bathing rubber. Wake my first pikin up...*

My neighbour came out sand said, "Daddy Jay, better go and take your bath o. If not you will not enter that house."

They woke me up around 3 O'Clock, my neighbor. He said his son called him from Benin. So he wake the whole compound. From that our block so he was the one who announced it. Everybody wake. Because we did not hear any rumour or anything, rather than say the salt and the caller from Benin. Well, there's nothing we can do. Instead we obey (FGD among Police Officers).

My uncle normally sets trap for python. So the fat, you melt the fat. So we use the fat to rub on our bodies. Before the ebola we normally use the fat to rub our bodies, because they said that it helps to stretch the bone, and to brighten the skin. But during the ebola virus, he now said that we should not rub it again, that we should drink it (FGD among students).

The role of social media on health care seeking behaviour.

The social media was mentioned as source of information regarding Ebola, mostly during the FGDs among police officers and students. A student particularly mentioned surfing the internet to enable her to do an assignment on Ebola given to her by a lecturer.

"Our class teacher gave us assignment. That we should write an essay about ebola. So we went online trying to search for anything about ebola. We saw images of some people that were affected with salt and other things".

Behavioural modification to prevent Ebola infection

In every FGD group, almost all the participants admitted having adopted some level of behavioural modifications to stay safe from Ebola disease. Such changes included avoiding crowded environment and interactions that brings people very close.

"The stuff really affected my life. Because like, it made me to practice personal hygiene by washing my hands often, and then by not touching things the way I was touching before".

Excerpts:

1. *'My mummy no gree make we chop meat again. Even to buy meat at all she no deygree buy again sef.. Na fish we dey eat. (FGD among Police Officers)*

2. *I'm a Cross riverian. So my uncle is a hunter. So he normally brings bat bush meat. So they said that we should not eat that bush meat, that there's ebola virus. So that is how we stopped eating bush meat. And the salt issue, they said that we should bath with salt. But we didn't bath with salt (FGD among students)*

3. We became so conscious of our food, we didn't allow our food to stay overnight. We made sure that we finish the food we eat. And then if it was remaining we didn't eat it again. And then we covered our food. And whenever we saw rat faeces, we didn't eat that food again. We covered our foodstuffs and extra dried most of our foodstuffs. And then we were staying indoors. It was not really as severe as Covid-19, but we were asked not to over socialise with people. We were careful of people.

4. Actually, the level of social interaction reduced. And the level of going out also went down. I rather confined myself to my house and my room, and then I became more prayerful. 5. The level of handwashing increased. The hygiene to control it. And then prayers too intensified (FGD among teachers).

'We were so conscious of our food, we didn't allow our food to stay overnight. We made sure that we finish the food we eat. And then if it was remaining we didn't eat it again. And then we covered our food. And whenever we saw rat faeces, we didn't eat that food again. We covered our foodstuffs and extra dried most of our foodstuffs. And then we were staying indoors. It was not really as severe as Covid-19, but we were asked not to over socialise with people. 'I stayed away from some of my friends. They were this type of people that like traveling out of the country. So when they came back, they wanted to come to my house and stay with me. I said "No, please stay in your house, because I don't know where you went to maybe you went and brought in things that will come and start affecting me." So I was abstaining from them. I wanted them to be on their' (FGD among students)

'What about your family members and in your community? What did you notice that people were doing? Something different from how they've normally been behaving. Like my mum. She's this type of person that likes going to her shop. I noticed in that period of time that she didn't go to her shop. She left her shop and was just indoors, doing things in the house. I asked her why she was not going, she said she likes her life o, let her shop be there, till when everything is calm (FGD for students)

'If you enter taxi, especially when people don't already dey before you enter, I notice say most people deydey very careful, for taxi, even here for Calabar. People deydey very careful make your body no touch their own. I even get one experience where one guy, dem bin don already dey two of them inside taxi. I want enter. The other man say no o, that make the driver no carry again, that him go pay for the remaining seat. I also observed that also. Because like when that ebola news was everywhere, was rampant, like when you enter the taxi now, you realize that someone that is sitting down there is sweating, because you know that they said ebola is spread through body sweat. So once you just open and see that sweating person, you'll just resist it and say "I will not enter so I won't contact the virus." (FGD for Police Officers)

Discussion

Our study revealed a high level of awareness of EVD as majority of the respondents had heard of EVD. This was comparable to findings from similar studies across Africa. [15 - 20].

The high mortality rate associated with EVD made it a subject of public interest and concern. Furthermore, the 2014 EVD outbreak was declared a public health emergency of international concern (PHEIC) [5,6] by the WHO resulting in raised awareness levels of the disease globally through government and non-governmental agencies utilizing all available means of communication to inform the populace about EVD. The disease naturally became a topical issue for discussion and information sharing among individuals residing in Africa where the disease is predominant and has its origins. Also, most study respondents had received formal education which may positively impact on raised awareness levels about EVD.

The dominant source of information about EVD was through the radio, which was in conformity as reflected in other studies [15,17,18]. In contrast, discussion among community members [19] and understandably through lecturers among Nursing Students [21] obtained elsewhere as the main sources of information about EVD.

The radio has a wider coverage than other electronic media in sub-Saharan Africa [22]. There are several radio stations across disseminating information usually in languages understandable to the local target audience. A radio set is also affordable, easy to use and maintain and several individuals can listen simultaneously to a single radio set especially in rural and resource poor settings.

The causative organism for EVD, direct contact of body fluids as the mode of transmission and recognition of symptoms like fever amongst others were correctly identified by most study participants. However, some persons attributed transmission of EVD as being airborne, through mosquito bites, contaminated food and water. These misconceptions were in agreement with those expressed in similar studies [15,18,19,23]. Some individuals erroneously opined that EVD was not real but just a hoax, an opinion which was comparable to and attested by other authors [24,25].

Several studies agree that good personal hygiene by proper regular hand washing, avoidance of contaminated surfaces and contact with body fluids, proper cooking of bush meat before eating were proper ways of preventing EVD [15,18]. This knowledge resonated among our study participants.

Similarly, poor knowledge of the prevention of EVD such as bathing or drinking salt water, eating bitter cola, ingesting or rubbing python oil, through prayers and fasting as well as by visiting native doctors was demonstrated in this study which was consistent and comparable to findings obtained in similar studies [15 - 18, 20,26].

The poor knowledge about EVD culminated in several individuals partaking in the salt ritual by bathing in salt water or through oral ingestion to prevent EVD. Being afraid to die and seeing other people engaging in the salt ritual were amongst reasons respondents gave for participating in this unhealthy practice.

Incidentally, some adverse effects were documented among our study subjects who partook in the salt ritual whereas elsewhere across Nigeria a wide range of adverse effects and deaths were reported after participation in the salt ritual to prevent EVD [27].

Negative influences from Relatives, Friends, Neighbours and regrettably even from health care workers, poor knowledge about EVD, spirituality, unverified claims and rumours from multiple sources including social media about EVD were reasons attributable to the misconceptions and associated harmful preventive practices about EVD in this study.

Instructively, after participating in the salt ritual, some individuals became aware mainly through the radio that the salt ritual did not prevent or treat EVD. This underscores the need for people to verify information, especially from social media from relevant health authorities, to avoid participating in unhealthy practices and from disseminating misinformation about EVD.

Several studies have learnt credence to the fact that wrong or inaccurate information (as propagated during the ebola outbreak) can misinform people and shape their choices in health conduct and behaviours. [28,29].

The impact of traditional, cultural and religious practices on health behaviours and practices had been previously documented,[30] the last ebola outbreak has also demonstrated that scientifically proven methods of tackling the transmission of infectious diseases if not culturally and religiously acceptable may be likely resisted and rendered less effective [30] the social media has benefits and demerits. Some

disadvantages relevant to this discourse include but not limited to misinformation, disinformation, fake news and pluralistic ignorance. [31]

A study had identified social media as an effective tool that could be used in propagating health information [12] on this note, the authors advocate responsible use of social media and social media networking sites.

In conclusion, effective, swift and sustained health communication strategies are advocated to help mitigate managing rumours and misinformation especially during epidemic outbreaks. Verified social media handles should be made available and accessible to enhance health promotion and better healthcare seeking behaviours.

Health promotion strategies should be tailored to possibly conform to socio-cultural and religious beliefs to ensure adequate compliance.

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