

Health Crisis Communication and Post-Ebola Virus Disease Containment Era in Lagos State, Nigeria

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Abstract: Sequel to the outbreak of Ebola Virus Disease (EVD) in Nigeria in 2014, the Federal Government of Nigeria, Lagos State Government and other relevant organisations carried out series of awareness campaigns to curtail the spread of the disease. The index EVD case in Nigeria was imported from neighbouring Liberia in West Africa. The objectives of this study are to assess the extent to which residents of Lagos State were able to recall the EVD campaign messages, identify sources of information and current health behaviour regarding EVD. The study was anchored on Health Belief Model, Social Learning and Social Cognitive theories. The study, carried out in 2017, three years after Nigeria was declared Ebola virus free by the World Health Organization. It was adopted descriptive survey research design with questionnaire as major research instrument. A total number of 450 questionnaire respondents were selected through multi-stage and simple random sampling techniques. Study revealed that: a significant majority (92.2 %) of the respondents were able to accurately recall the campaign messages, 68.8% identified television as their major source of information and 86% confirmed that they still engage in the recommended health practices. To prevent re-occurrence of EVD and other infectious diseases, the study recommended consistent media awareness health campaigns to promote and sustain hygienic health habits among residents of Lagos State.

Keywords: Awareness campaign, public health emergencies, information sources, message recall, hand washing.

INTRODUCTION

One of the most devastating public health emergencies in the 21st Century was the outbreak of Ebola Virus Disease (EVD) in a large number of East and West African countries particularly Gabon, in East Africa as well as Sierra Leon and Liberia (in West Africa) where it disrupted delivery of basic services, affected economic sustainability of individuals and countries, and jeopardized social cohesion [1]. Nigeria had its first contact with EVD through Mr. Patrick Sawyer, an Ebola virus infected diplomat who came to the country on July 20, 2014. Subsequently, Nigeria's health experts, governments (Lagos State and Federal Government) and media organizations engaged in series of activities, including information dissemination, education, communication and entertainment programmes to create awareness aimed at containing the spread of EVD [2].

Studies revealed that awareness campaigns played a key role in curtailing the spread of EVD [3-6]. However, there was paucity of studies on knowledge and behaviour of residents of Lagos State, in the post-EVD containment era. In health awareness campaigns, emphasis is often placed on immediate behavior

change with little regards to sustainability of such behavior after the campaign. In other words, impacts of public health campaigns on the audience in eliciting desired health behavior change is frequently reported, while their potency during post campaign era are rarely explored, a gap that the present study attempted to fill.

Lagos State is Nigeria's economic and commercial capital. It is divided into twenty (Federal Government's recognized) Local Government Areas, or LGAs. It was created on May 27, 1967 through the State (Creation and Transitional Provisions) Decree No. 14 of 1967, which restructured Nigeria's Federation at the time into 12 states. The State took off as an administrative entity on April 11, 1968 with Lagos Island serving the dual role of the State and Federal Capital. However, with the creation of the Federal Capital Territory of Abuja in 1976, Lagos Island ceased to be the State capital and was moved to Ikeja. Equally, with the formal relocation of the seat of the Federal Government to Abuja on 12 December, 1991, Lagos ceased to be Nigeria's political capital. Lagos is a major regional hub of the media, the concentration of the nation's elites and the historical center of political activism in Nigeria [6]

This study therefore examined the ability of Lagos State residents to recall the 2014 EVD campaign messages during the post-containment era, identify commonly recalled sources of information and investigate the health habits of Lagos State residents in the post EVD containment years. To achieve this aim,

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the study was guided by three research objectives, amongst others:

1. assess the extent to which residents of Lagos State were able to recall Ebola Virus Disease (EVD) messages in the post-disease crisis containment era
2. identify the most commonly recalled sources of information on EVD by residents of Lagos State, Nigeria in the post-disease containment years
3. examine the commonly sustained health habits of residents of Lagos State towards EVD related issues in the post-disease crisis containment era in Nigeria

LITERATURE REVIEW

Health communication is a process for the development and diffusion of messages to specific audiences in order to influence their knowledge, attitudes and beliefs in favor of healthy behavioral choices [7]. It is the scientific development, strategic dissemination, and critical evaluation of relevant, accurate, accessible, and understandable health information communicated to and from intended audiences to advance the health of the public [8]. Health campaigns are usually designed to influence people's beliefs and actions toward their health or the health of others; for specific target audiences or groups, and hardly for the entire population; for implementation within a particular span of time and to be integrated with various media and other communication efforts to educate an audience about a health-related topic [9]. In addition, health communication also deploys crusader advertising to address certain social issues and advocate for social change. Crusader advertising or cause marketing involves the use of advertising messages and visuals to promote the well-being and development of the society beyond profit making [10].

The first known case of Ebola Virus Disease in Nigeria occurred through a Liberian diplomat, Mr. Patrick Sawyer, who was exposed to the disease in his country, Liberia. On July 17, 2014, while under observation in a hospital in Monrovia, Liberia, for possible Ebola treatment, Mr. Sawyer left the hospital against medical advice. On July 20, he flew by commercial airline from Monrovia via Accra, Ghana, to Lomé, Togo, then changed aircraft, and flew to Lagos [11]. On July 20, 2014, the acutely ill Mr. Sawyer

arrived at the international airport in Lagos, Nigeria, and was confirmed to have Ebola Virus Disease after been admitted to a private hospital, First Consultant Hospital, Obalende, Lagos State. According to a report by the Bureau of Public Service Reforms, Mr. Sawyer told the staff at the First Consultant Medical Centre, that he had malaria and denied having any contact with an Ebola patient. Since malaria is not transmitted from person to person, the staff at the First Consultant Medical Centre did not take protective precautions [2].

When doctors took his blood to test for Ebola, Patrick Sawyer insisted on being discharged. But a doctor, Stella Ameyo Adadevoh, who had spent 21 years at the hospital, realized that Sawyer's symptoms suggested something much more serious than malaria and with the help of her colleagues had to physically restrain the patient from leaving the hospital to attend the ECOWAS conference despite threats of legal actions by the patient [2]. Mr. Sawyer was moved to isolation Centre when test results confirmed he had Ebola virus. He died on July 25, 2014 and his corpse was cremated same day at Lagos Mainland Hospital, Yaba, after exposing 72 persons at the Lagos International airport and the hospital to the disease. One of the exposed victims was Dr. Stella Adadevoh, who attended to him at the Lagos hospital and later died of EVD [11].

The Federal Ministry of Health, with guidance from the Nigeria Centre for Disease Control (NCDC), declared an Ebola emergency in Lagos State. On July 23, the Federal Ministry of Health, with the Lagos State Government and international partners, activated an Ebola Incident Management Centre as a precursor to the Emergency Operations Center (EOC) to rapidly respond to the outbreak. One of the measures taken by the government to contain the spread of the virus was public awareness campaigns. The Lagos State Government and the Federal Government of Nigeria rose to the occasion by embarking on massive public awareness on television, radio, billboards, posters and social media as well as via bulk SMS [2]. The main message was *'Wash your hands'*. The Nigerian government also engaged traditional, religious and community leaders to ensure the message of *'hand-washing'* reached the remotest part of the country.

THEORETICAL FRAMEWORK

Three theories are relevant in the study dealing with awareness and perceived influences of EVD campaign on residents of Lagos Metropolis, Nigeria. These

include, Health Belief Model (HBM), Social Learning Theory, and Social Cognitive Theory. Each of these theories is now briefly discussed. Health Belief Model (HBM) is a cognitive model which posits that behavior is determined by a number of beliefs about threats to an individual's well-being and the effectiveness and outcomes of particular actions or behaviours. Some constructions of the model feature the concept of self-efficacy [12] alongside these beliefs about actions. These beliefs are further supplemented by additional stimuli referred to as 'cues to action' which trigger actual adoption of behavior.

Perceived threat is at the core of the HBM as it is linked to a person's 'readiness' to take action. It consists of two sets of beliefs about an individual's perceived susceptibility or vulnerability to a particular threat and the seriousness of the expected consequences that may result from it. The perceived benefits associated with a behaviour, that is its likely effectiveness in reducing the threat, are weighed against the perceived costs of and negative consequences that may result from it (perceived barriers), such as the side effects of treatment, to establish the overall extent to which a behaviour is beneficial. The individual's perceived capacity to adopt the behaviour (their self-efficacy) is a key component of the model. Finally, the HBM identifies two types of 'cue to action'; internal, which in the health context includes symptoms of ill health, and external, which includes media campaigns or the receipt of other information. These cues affect the perception of threat and can trigger or maintain behaviour. Therefore, being guided by HBM, EVD communication campaigns need to send strong cues to emphasize threats the disease constitute to life, about susceptibility or vulnerability, and self-efficacy in adoption of personal hygiene in the containment of the spread of the disease.

Social learning theory (SLT) was developed in the 1970s by a Canadian psychologist, Albert Bandura, adding a new dimension to understanding human behaviour and its influences. The theory claims that most human behaviour is learned observationally through modeling and that people learn from one another, via observation, imitation, and modeling [13]. The theory is often seen as a bridge between behaviorist and cognitive learning theories because it encompasses attention, memory, and motivation. The most important concepts of the theory are modeling, efficacy and para-social interaction. The theory explains human behaviour in terms of continuous

reciprocal interaction between cognitive, behavioral, and environmental influences.

Social cognitive theory is based on the idea that we learn from our interactions with others in a social context [14]. Separately, by observing the behaviors of others, people develop similar behaviours. After observing the behavior of others, people assimilate and imitate that behavior, especially if their observational experiences are positive ones or include rewards related to the observed behaviour. Social cognitive theory is founded on the model of causation. Human behavior has often been explained in terms of one-sided determinism. In such modes of unidirectional causation, behavior is depicted as being shaped and controlled either by environmental influences or by internal (personal) dispositions [15].

According to social cognitive theory, a learner is viewed as thoroughly integrated with the environment within which he or she is learning. The learner's cognitive responses, behaviors, and environment all work together to create learning. Learners observe models and build self-efficacy, their belief that they can accomplish the work modeled. Based on the learners understanding of why it is important to learn something and their belief that they can accomplish the learning, learners will then self-regulate their learning and become proactive in their efforts to gain mastery. Social cognitive theory favors a model of causation involving triadic reciprocal determinism. In this model of reciprocal causation, behavior, cognition and other personal factors, and environmental influences all operate as interacting determinants that influence each other bi-directionally. Thus, the use of icons, opinion leaders and political leaders to disseminate information, education, communication and entertainment and practices relating to health relies heavily on social cognitive theory.

RESEARCH METHODS AND MATERIALS

This study employed descriptive survey research design and used questionnaire to gather data. The study population included all residents of Lagos State, the first contact state with the EVD. National Bureau of Statistics [16] projected the population of Lagos State to be 12,555,598 residents. Respondents for the study were selected through multi-stage and simple random sampling techniques. A total of 450 respondents were selected from the projected population of over 12,555,598 Lagos State residents. Lagos State was stratified into three senatorial zones (Lagos West,

Lagos East and Lagos Central). Each zone was further delineated into Local Government Areas. Three local governments were selected from each senatorial zone through simple random sampling technique. Each LGA was stratified into wards (a ward was selected from each LGA through simple random sampling technique) and each ward was stratified into streets (two streets were randomly selected from each ward) and twenty five houses were picked from each street. Subjects were randomly selected at their areas of aggregation such as their residences or places of work. The selection of the respondents is provided in appendix 1, titled Selection of Respondents.

Of the 450 copies of questionnaire administered, 408 (90.6%) were duly filled and returned. Validity of the instrument was carried out to ensure that the research instrument was adequate for generating the required data while reliability measures were taken through the test-retest method, with an interval of two weeks. The sample adopted for the reliability test did not participate in the final study. The reliability coefficient of the first test was 0.645 or 64.5%. This indicates high reliability. The coefficient of the second test was 0.719 or 71.9%. This coefficient also indicates high reliability of the research instrument. The average of the two reliability tests was 0.652 or 65.2% which implies that the instrument was reliable.

RESULTS

Research Question 1: To what Extent are Residents of Lagos State able to Recall EVD-Related Messages in the Post-Disease Containment Era?

The study first examined the extent to which the respondents were exposed to the 2014 EVD messages. According to research findings, of the 408 completed questionnaire, a significant majority of the respondents (92.2 %) stated that they were exposed to information on EVD. Subsequently, the study attempted to investigate the ability of the respondents to recall the 2014 EVD messages. According to research findings, respondents were able to recall messages on the disease called Ebola. They were asked to indicate the full meaning of EVD. Data generated reveal that 89.2% of the respondents correctly indicated the full meaning of EVD (Ebola Virus Disease) while the remaining 10.8% were unable to. The study also enquired from the respondents messages received during the 2014 Ebola outbreak. According to research findings, a majority of the respondents (66.2%) identified hand washing as the

prominent message received during the EVD incidence. Some myths surrounding EVD like use of stated salt water and Kolanut as cure for Ebola, that Ebola can be spread through mosquito bite and that Ebola can be spread through contaminated food were also identified (see appendix II, titled Messages received during the Ebola outbreak in 2014).

Research Question 2: What are the Most Commonly Recalled Sources of Information on EVD by Residents of Lagos State in the Post-Disease Containment Era?

The study also attempted to identify the respondents' sources of information on EVD. Data reveal that 25.5% of the respondents identified television as their major source of information, followed by those who chose social media (15.2%); friends and family was identified as the third major source of information on EVD (12.3%). Other sources are radio (7.8%), newspapers (7.4%), religious leaders (6.1%), community health workers (5.9%), government website (2.5%), billboard (1.9%) and pamphlets and posters (1%). However, 14.5% of the respondents selected more than one information source, thus, those multiple choices are rendered void (see appendix III, titled Respondents' dominant sources of information on EVD).

The study intensified further to determine whether the respondents used any additional medium of information to complement information from the major source. In response to this, 39.2% of the respondents identified social media as the secondary source of information on EVD. This was followed by friends and family (26%), news media (15%), health workers (8.8%), government and health websites (6.9%), religious leaders (3.2%) and those with no response (1%) (appendix IV, titled Respondents' Secondary Sources of Information).

Research Question 3: What are the Commonly Sustained Health Habits of Residents of Lagos State Towards EVD in the Post-Disease Containment Era?

The study sought to determine the extent to which respondents engaged in the prescribed health habits in the EVD post-campaign era. According to research findings, 86% of the respondents agreed that after every activity, they still wash their hands; 69.6 equally agreed that after every handshake with friends, family members and strangers, they still wash their hands, 91% stated that they still use hand sanitizers, 87.8%

noted that they will report any member of their family that exhibits symptoms of EVD and 86.8% stated that they will seek the services of medical experts if they witness any health emergency. A significant majority of the respondents stated that in spite of the fact that the disease is no more, they still wash their hands after major activity. The data are captured in appendix V titled, Respondents' post campaign health habits on EVD.

DISCUSSION OF FINDINGS

Awareness on EVD-Related Messages in the Post-Disease Containment Era

The study discovered that a significant majority of the respondents (92.2%) had exposure to 2014 EVD messages. The study proceeded further to examine the ability of the respondents to recall messages received during the EVD crisis. About 66.2% of the respondents easily recollected the right message on EVD which hinges on hand washing. Based on the data, it was observed that the respondents were substantially exposed to the 2014 EVD awareness campaigns. This could be attributed to factors such as the perceived severity of the incidence, the effectiveness of health communication campaigns and socio-environmental factors. Influence of the perceived severity of a disease is also identified as a key factor in behavior modification processes according to Health Belief Model. Perceived severity as one of the core components of Health Belief Model refers to feelings about the seriousness of the consequences of developing a specific health problem. The major assumption of this model is that in order to engage in healthy behaviors, intended audiences need to be aware of their risk for severe or life-threatening diseases and perceive that the benefits of behavior change outweigh potential barriers or other negative aspects of recommended actions.

The perceived severity of the disease may be responsible for the audience's attention and importance attached to information on EVD. This may ultimately influence the extent to which they seek enlightenment on the disease. This scenario conforms to one of the assumptions of the Social Learning Theory. Attention is one of the stages of observational learning [13]. To acquire new knowledge, the audience must first pay detailed attention to information about the issue. The level of the audience attention is greatly influenced by the importance attached to the issue which is also driven by perceived severity of the issue.

Apart from the severity of the disease, the Lagos State Government quickly embarked on series of health interventions to curb the spread of the disease. A component of the intervention was an integrated health campaign aimed at creating awareness about the disease, its symptoms and prevention tips. The social mobilization sub-committee of the intervention team developed a communication and social engagement strategy that was evidence-based and risk informed. It included the use of traditional community mobilization, print, electronic and social media channels. The effectiveness of the 2014 EVD campaign was partially due to a Knowledge, Attitude and Practice (KAP) survey [17] conducted by the Operations Research sub-group under the Epidemiology/Surveillance Team in Lagos, which provided the basis for the State's communication campaign.

The creative use of repetition and frequency of the messages is perceived as another key factor that created mass awareness on the prevalence of the EVD messages during the period [18]. The adoption of principle of repetition for the EVD campaign messages also played an important role in the post crisis learning by the audience. Most of the 2014 EVD messages adopted the hand washing as the central message. It should be noted however that nearly 44% of the respondents were not able to easily recollect the right message on EVD due to the fact that shortly after Nigeria received EVD clean bill of health from WHO, governments and non-governmental organizations significantly reduced public awareness campaigns on hand hygiene as the most effective route for preventing the spread of infectious and contagious diseases. Hence, it thus appears that the more public health awareness campaigns are mounted and sustained, the more the audience are aware of health hazards, and the more the level of attention to health and hygiene.

Dominant Sources of Information on EVD in the Post-Disease Containment Era

This study examines the sources of information of the respondents on EVD messages. Data reveal that about 25.5% of the respondents identified television as their major source of information on EVD, followed by social media, family and friends and radio. The selection of television by the respondents as their major source of information on EVD is a confirmation of earlier studies on the role of television in campaigns and aiding audience learning. One of such studies was a study carried out [19] to demonstrate the increasing

usefulness of the “cool media” of television, film and video in facilitating teaching and learning in schools. The use of television as a cool medium aided learning because of its ability to make learning interesting, entertaining and relevant to the needs of the learner. Relating this to the EVD scenario, the use of television provided the audience of the EVD messages a unique opportunity to experience the EVD messages comprehensively through the audio-visual elements of the medium and in a relaxed mood.

The 2014 EVD campaign was built on effective media campaign strategies. Educating and enlightening the public about EVD was a critical part of the efforts to contain the outbreak and spread of the virus in Nigeria. Central to the 2014 EVD media strategy was the use of television to educate the respondents about the disease. Television has the power of imprinting messages on the mind and as such it performs an important function in dealing with social change especially attitudinal change that could bring about healthy living [20]. Television can also be effective for reaching people with limited literacy skills because relying on written materials on health information can be overwhelming. Therefore, health messages delivered through television outlets might be an effective option because of their visual appeal. It also cuts across literacy barrier which affords those in the rural region, especially for those with limited literacy skills to view health programmes directed at them. In view of the potentials of television in message dissemination, it was effectively deployed as part of the media vehicle for the 2014 EVD. Hence, its selection as the major choice of source of information by the respondents. This study also confirmed an earlier one [17] which investigated public knowledge, perception and sources of information on EVD in Lagos. The study discovered that that 68.8% of the respondents identified television as the most common source of information on EVD during the curtailment era. The entertainment component of the television medium, in addition to the power of sight and sound, also easily recommends it for wider use in relation to awareness campaigns before, during and after any health crisis.

The 2014 campaign as stated earlier was anchored on effective use of both the traditional and new media. The social media strategy was effectively utilized to provide real time information for the Lagos State residents on EVD. At 67 million users, Nigeria reportedly has the eighth largest internet population in the world [21]. About 30% of Nigeria's 200 million population use the Internet out of which 70 per cent are

using social media (Facebook, YouTube and Twitter all count in the top ten most visited sites in Nigeria) [21]. With so many Nigerians online, portals like *ebolalert.org* set up by volunteer doctors, and the public/private *ebolafacts.com* initiative, became important channels to provide accurate information to help people stay safe. They complemented telephone hotlines and more traditional public health approaches. Moreover, Lagos State has the highest concentration of social media users in Nigeria. There were about 4.1 million tweets that had some location data, 1.14 million came from users in Lagos and 454,000 from Abuja. Only around one per cent of all tweets included a precise latitude-longitude geo-tag [21].

The UN Children's Fund (UNICEF) played a critical role in the communications on EVD, using the SMS portal UReport, a free SMS platform designed as a community-based two-way information exchange mechanism. According to UNICEF Communications Specialist, Geoffrey Njoku, over 57,000 people received more than 3.6 million SMS containing key messages about Ebola and how to stay protected over a six-week period[21]. This provides the justification for the selection of social media as the secondary source of information on the EVD incidence. The integrated marketing communication approach is therefore deemed critical to health awareness campaigns.

Health Habits of Residents of Lagos State Towards EVD in the Post-Disease Containment Era

This study also examines the health related habits of the respondents towards EVD in the post campaign era. The ultimate goal of health awareness campaigns is to bring about desirable health habits. According to the present research findings, 86% of the respondents agreed that after every activity, they still wash their hands; 69.6% equally agreed that after every handshake with friends, family members and strangers, they still wash their hands, 91% stated that they still use hand sanitizers, 87.8% noted that they will report any member of their family that exhibits symptoms of EVD. Based on the Health Belief Model, perceived severity of a disease is considered a major influencing factor in behavior change. In order for behavior to change, people must feel personally vulnerable to a health threat, view the possible consequences as severe, and see that taking action is likely to either prevent or reduce the risk at an acceptable cost with few barriers [22]. In addition, a person must feel competent (have self-efficacy) to execute and maintain the new behaviour.

Apart from the perceived severity of the EVD incidence, the concept of self-efficacy also explains respondents' perception on the recommended health behavior, particularly, the hand washing practice. An assessment of EVD campaign materials during the outbreak of the disease shows that hand hygiene was the predominantly recommended health action. This requires little or no effort. The use of celebrities, artistes, public figures and school children to engage in the recommended health practices during the EVD crisis was aimed at encouraging the audience to learn and reproduce the new behavior. This conforms to some of the requirements of the social learning theory for adoption of new behaviour. Observational learning from a model requires four cognitive stages: attention, retention, reproduction and motivation [13]. The audience having been exposed to the message (attention) and convinced about it, retains or store the new information which he will reproduce at a later time for the prescribed behavior change to take place. Expectedly, the EVD campaigns creatively and repeatedly focused on key issues regarding the incidence such as factors of transmission and recommended health practices.

This study confirms the results of a similar study [23] on the effect of Ebola hand washing among secondary school students in Oyo State. According to the study, the level of hand washing practices among secondary school students improved significantly. This was due to great emphasis and attention paid to hand washing during the campaign in Oyo state. Good hand hygiene is an important control measure for the prevention of transmission of gastro-intestinal and respiratory infections. Improvement in hand-washing was higher among those who watched EVD health messages on television and those who listened to it in the church. A national emergency hand washing campaign was launched in Nigeria during the EVD outbreak. It is however significant to note that absence of health-related facilities and services are crucial to the sustenance of healthful practices in developing countries. With endemic poverty, lack of openness in governance, poor funding of health facilities and lack of political will, absence of water supplies, wash hand sinks, soap and sanitizers in public buildings and schools limit the rate of adoption of recommended behavior. Therefore, in addition to health awareness campaigns, there is a need for equal attention to the provision of the right health infrastructures, to halt incidences of infection and transmission of diseases in

sub-Saharan Africa. This has implications for the Corona Virus pandemic (COVID-19) which initially broke out in Wuhan China towards the end of 2019 and eventually spread to most countries of the world.

CONCLUSION

The study was carried out to examine the extent to which residents of Lagos were able to recall the 2014 EVD campaign and their current health habits towards EVD in post-disease containment era. This study shows that the respondents were exposed to the 2014 EVD media awareness campaigns and are able to sustain hand washing and other recommended health practices during the post-disease containment era. The findings confirmed the assumptions of health belief model, social learning and social cognitive theories. The study thus represents an attempt at post-disease containment evaluative study. Unlike previous studies that are limited to the campaign period, this study evaluated the audience knowledge and practice in the post-EVD era. Accordingly, it is recommended that state and federal governments in Nigeria should intensify awareness campaigns on healthy lifestyle, including regular hand-washing and sanitation measures to prevent a resurgence of health epidemics. Moreover, health awareness campaigns should be based on positive socio-cultural norms (religious and cultural practices) to encourage compliance. Equally important is the need for equal attention to the provision of health infrastructures to halt incidences of infection and transmission of diseases in sub-Saharan Africa.

A major limitation of the present study was that the questionnaire was designed in a self-report format, which made it impossible to confirm the veracity of the claims of respondents about post-EVD health hygiene practices. Equally, because of the nature of the research design, there was no opportunity for participant observation (obtrusive or otherwise), to confirm health practices in the post-EVD containment era. These limitations easily suggest the need for future researchers to adopt the triangulated research design so as to be able to report on influences of health awareness campaigns on behavior modifications with a high degree of certainty. Nevertheless, the present study has demonstrated that when health awareness campaigns are sustained after any health crisis is contained, the desired attitude and behavioral modifications can both be enhanced and sustained.

Appendix I: Selection of Respondents

No	Senatorial District	Local Governments	Selected Respondents
1.	Lagos West	Agege	50
2		Ifako Ijaye	50
3		Badagry	50
4	Lagos Central	Lagos Island	50
5		Oshodi-Isolo	50
6		Surulere	50
7	Lagos East	Ikorodu	50
8		Epe	50
9		Ibeju Lekki	50
		Total	450

Appendix II: Messages Received during the Ebola Outbreak in 2014

Which of the following messages did you receive during the 2014 Ebola outbreak	Percentage
Wash your hands to prevent spread of Ebola Virus Disease	66.2
Salt water and Kolanut can cure Ebola	13
EVD has no cure	12
EVD can be spread through mosquito bite	6.9
EVD can be spread through contaminated food	2
Total	100% (n=408)

Appendix III: Respondents' Dominant Sources of Information on EVD

Respondents' Major Sources of Information	Percentage %
Television	25.5
Social media	15.2
Multiple responses	14.5
Friend and family	12.3
Radio	7.8
Newspaper	7.4
Religious leader	6.1
Community health worker	5.9
Government website	2.5
Billboard	1.9
Pamphlet and poster	1
Total	100 (n=408)

Appendix IV: Respondents' Secondary Sources of Information

Respondents' Secondary Sources of Information	Percentage
Social media	39.2
Family and friend	26
News media	15
Health worker	8.8
Government and health website	6.9
Religious leader	3.2
No response	1
Total	100% (n= 408)

Appendix V: Respondents' Post Campaign Health Habits on EVD

Respondents' post campaign health habits on Ebola virus	SA	A	I	D	SD	Total
After every activity, I wash my hands regularly	58.5	27.5	12	1	1	100
I wash my hands after every handshake with friends, family members and strangers	34.8	34.8	20.2	4.1	6.1	100
I use hand sanitisers	64	27	6	2	1	100
I will report any member of my family suspected to be having EVD symptoms	56.5	31.3	7.2	3	2	100
If I witness any health emergency, I look for medical experts	62.1	24.7	10	3.2	0	100

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