

# Communicating health risk in Southeast Nigeria

## The case of media campaign against viral hepatitis and its implication for health communication

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### Abstract

The purpose of this study is to investigate the media coverage of viral hepatitis in Southeast Nigeria and the implication it has on health communication. This study was conducted with the aim of determining the level of awareness of viral hepatitis disease in Southeast Nigeria; and the extent of media coverage of hepatitis disease.

Cross-sectional survey study was carried out in the 5 states of Southeast Nigeria while structured questionnaire was used to generate data. A representative sample of 500 respondents was selected from the capital cities of the 5 states in the Southeast zone of Nigeria. The data generated were analyzed using mean, percentage (%), and analysis of variance tests of between-subjects effects in SPSS, version 20. Results were considered significant at  $P \leq .05$ .

Even though majority of the people are consumers of media products, only a few of the respondents were aware of viral hepatitis, its symptoms, mode of transmission, and curative measures. Inappropriate timing and scanty or limited scheduling of media health programs were significant hindrances to media campaign against viral hepatitis in Southeast Nigeria.

Regular media campaign programs against the disease are required to build more awareness as well as appropriate timing of media programs such as Sunday evenings and news hours, and media interactive forum with phone-in programs. Further research on the nature and impact of funding, support, and policy on media campaigns on this health risk are also recommended.

**Abbreviations:** HBV = hepatitis B virus, HDV = hepatitis D virus.

**Keywords:** awareness, disease, health communication, health education, infection, media campaign, viral hepatitis

## 1. Introduction

### 1.1. Use of media in communicating health risk

In spite of high-level advancement in healthcare services, infectious diseases have remained a worrying issue for humans. This led to the emergence of health communication as an important tool for achieving public health objectives in the 21st century.<sup>[1]</sup> In periods of health risks, the media serves as an outlet for intervening in modifying health behavior by creating awareness and mobilizing the public for prevention and curative actions.<sup>[2–12]</sup> The literature dominantly acknowledged and

recognized the role of the media as the society's watchdog, sensitizer, and mobilizer with the ability to enlighten heterogeneous audiences about diseases.<sup>[2]</sup> The media employ single or multiple media and conventional strategies that use television, radio, and print media, and lately, the new social media such as Internet websites; media campaigns are prominent because of their ability to reach out to vast and diverse audiences cost-effectively.<sup>[3–12]</sup>

The available literature on media communication of health crisis is summarized in Table 1 as follows:

The media is an indisputable purveyor of health information particularly in a period where health risks are high in any society.<sup>[2,12]</sup> It has the primary responsibility of generating awareness and knowledge, in this instance, about viral hepatitis. It strives to generate specific outcomes or effects in a relatively large number of individuals usually within a specified period of time and through an organized set of communication activities.<sup>[13]</sup> The health communication campaigns rely on media outlets such as television and radio public service announcements, paid commercials with print materials such as posters, booklets, brochures, as well as social media adverts or announcements.<sup>[14]</sup> The range of these campaigns can span from entertainment program, media advocacy, interactive health communication, and interpersonal communication<sup>[14]</sup> on issues relating to viral hepatitis and its consequences.

### 1.2. Viral hepatitis

Hepatitis is a viral infection characterized by the inflammation of the liver.<sup>[15–24]</sup> When the liver experiences this inflammatory

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**Table 1****Communicating health risks literature.**

Author	Geographical coverage	Thematic scope	Method of research	Method of analysis	Population/sample	Findings
Freimuth et al <sup>[3]</sup>	Not defined	Theoretical focus	Qualitative study	Content analysis	Not defined	Health risks expanded the role of communication as a vital component of public health practice
Winters et al <sup>[4]</sup>	Sierra Leone	Impact of information on the outbreak of Ebola	Quantitative study	Logistic regression within multilevel modelling	10,604	Communication created knowledge and protective behavior among the people
Bello <sup>[5]</sup>	Nigeria	Newspaper Coverage of HIV/AIDS, Malaria and Polio	Qualitative study	Content analysis	Not defined	Nigerian newspapers have not given adequate attention to HIV/AIDS, malaria and polio in their health coverage. This led to its prevalence
McQueen et al <sup>[6]</sup>	USA	Effects of personal narratives about mammography and breast cancer on African American women	Quantitative study	Structural equation modelling examined inter-relations among constructs	489	It generated significant influence on perceived barriers and cancer fatalism. Narratives also increased risk perceptions and fear via increased negative affect.
Adesina et al <sup>[7]</sup>	Nigeria	Media reportage of hepatitis disease as well as the perception of Nigerians on the awareness and knowledge of the disease	Quantitative study	Percentage and content analysis	230	27.0% were informed through the mainstream media (television, radio and newspaper), 18.3% through the Internet while 53.3% were informed by other non-media sources.
Olayinka et al <sup>[8]</sup>	Nigeria	Prevalence, distribution of HBV, and factors associated with infection in an apparently healthy population in Nigeria	Quantitative study	Descriptive, bivariate, and multivariate analyses were done	1000	National survey on sero-prevalence of hepatitis B describes the epidemiology and high prevalence of HBV infection in Nigeria and highlights the need for improved vaccination against HBV
Shamagana <sup>[9]</sup>	Nigeria	Communication approaches used by Viral Hepatitis Association of Nigeria (VHAN), an organization that is at the forefront of the fight against viral hepatitis in Nigeria	Quantitative and qualitative study	In-depth interview, focus group discussion and documentary observation	Not defined	They do not involve their target audience in the conception and design of hepatitis interventions. Equally, the approach lacks feedback mechanism in place to accommodate its audience contributions in its activities
Bello <sup>[10]</sup>	Nigeria	Coverage of health issues by Nigerian newspapers, emphasizing the degree of attention given to HIV/AIDS, malaria, polio and the northern region	Quantitative study	Survey and in-depth interviews	724	Nigerian newspapers have not given prominent coverage to health issues such as HIV/AIDS, Malaria, and Polio
Amiwerio et al <sup>[11]</sup>	Nigeria	Knowledge, awareness and prevalence of viral hepatitis among healthcare workers	Quantitative study	Used SPSS version 20 software to obtain descriptive statistics	248	Overall awareness of the various types of hepatitis was 70.6% with a marked trend over educational levels.
Nelson and Salawu <sup>[12]</sup>	Nigeria	Influence of media awareness campaigns on breast cancer care among women	Quantitative study	Cross tabulation and 1-way ANOVA	632	Significant difference in the level of knowledge about breast cancer among women, and a significant difference in the sources of awareness

condition, it negatively alter a function in the human body.<sup>[15]</sup> There are different types of viral hepatitis, namely, A, B, C, D, and E.<sup>[15–24]</sup> Hepatitis A is caused by a virus known as hepatitis A virus and its risk of infection is linked to ingestion of contaminated water and food, fecal-oral route by direct contact with an infected human, as well as poor sanitation and hygiene (like dirty hands).<sup>[16,17]</sup> Hepatitis B is caused by a virus known as hepatitis B virus (HBV) and is usually transmitted using the perinatal or horizontal route, injecting drug use or high-risk sexual behavior.<sup>[18,19]</sup> Hepatitis C which is caused by a virus known as hepatitis C virus is a blood borne virus, and its modes of infection are via exposure to small quantities of blood which may occur through unsafe injection practices, unsafe health care, and transfusion of unscreened blood and blood products.<sup>[20]</sup>

Hepatitis D is caused by a virus known as hepatitis D virus (HDV) and only occurs in patients who are infected with HBV; this is because HDV is an incomplete virus that requires the assistive role of HBV to replicate.<sup>[21]</sup> Thus, hepatitis D can be acquired either as a co-infection with HBV or as super-infection in individuals with HBV infection.<sup>[21]</sup> Hepatitis D is also transmitted via mucosal or percutaneous contact with infectious blood.<sup>[21]</sup> Presently, there is no vaccine for hepatitis D, but it can be prevented in patients who are not already HBV-infected by using hepatitis B vaccination.<sup>[21,22]</sup> Hepatitis E is caused by a virus known as hepatitis E virus, and it usually occurs as a result of drinking fecal contaminated water supplies and is more common during the rainy season in Nigeria.<sup>[23]</sup> These hepatitis viruses are somewhat different in terms of structure, modes of

transmission, diagnosis, epidemiology, clinical presentations, incubation period, natural history, prevention, and treatment modalities.<sup>[22]</sup>

The World Health Organization's report showed that the outbreak and the rate at which hepatitis disease is being spread has become so alarming to the extent that over 400 million people are currently living with the disease worldwide with an annual fatality rate of about 1.4 million.<sup>[24]</sup> Media reports indicate that between 20 to 26 million Nigerians have been affected by different types of viral hepatitis progressively.<sup>[25-27]</sup> Studies conducted in the last 3 decades across different populations in Nigeria also revealed an increasing prevalence of viral hepatitis in the range of 7% to 30%.<sup>[28,29]</sup> In light of these expositions, viral hepatitis infection is considered a major health crisis in the country. The risk of viral hepatitis infection in Nigeria is very high due to the incidence of flood, large population, congestion, ignorance, and low vaccination rates.<sup>[23,30,31]</sup> Most of the healthcare centers lack appropriate and adequate workforce, equipment, and reagents for virologic diagnosis.<sup>[9]</sup> The daily exposure of Nigerians to viral hepatitis necessitated the need to examine the awareness level of people about the disease, and the media coverage thereof. This study's objective was, therefore, to determine the media coverage and awareness of viral hepatitis among residents in Southeast Nigerian states.

### 1.3. Theoretical review

This study is based on the Health Belief Model which was developed by Hochbaum et al<sup>[32]</sup> as a psychological model that explains and predicts health behavior to be a consequence of individual belief. The primary principle of the model is that health behavior is determined by personal perceptions or understanding of any health crisis or an emergency such as an outbreak of disease. Consequently, people's actions towards viral hepatitis could largely depend on the information and opinion available to them. Creating more media awareness and providing people with programs that will educate them about the nature and consequences of hepatitis could determine how they are able to react and contain the breakout of this disease. Thus, the media can serve as a pertinent vehicle and instrument for altering people's health behavior to engage in practices that prevent and curb the growing incidences of the disease.

## 2. Materials and method

### 2.1. Ethical consideration and study design

The study procedures were in accordance with ethical standards as stated in the WMA Declaration of Helsinki. The Research Ethics Committee approved the study at the researchers' institution. All participants included in this research provided written informed consent. This research is a cross-sectional survey carried out in the 5 states of Southeast Nigeria from September to December 2018.

### 2.2. Study area

The study was carried out in the capital cities of the 5 states of Southeast Nigeria, namely: Awka in Anambra, Abakiliki in Ebonyi, Enugu in Enugu, Owerri in Imo, and Umuahia in Abia states.

### 2.3. Study sample

A sample of 500 adult respondents (comprising of 280 females and 220 males)  $\geq 18$  years of age were selected. The study sample was drawn from churches, mosques, and markets in the study areas. The sample size was found to be sufficient through the use of G\*Power 3.1.9.4 sample size calculation software for Windows XP<sup>[33]</sup> which yielded a statistical power of 0.95 (Effect size  $f=0.25$ , Critical  $F=3.886$ ) for a total sample size of 210. Inclusion criteria were: being present during the fieldwork, aged 18 years or more, and demonstrated a willingness to participate in the research. Exclusion criteria were: being mentally incapacitated, being very busy during the data collection, unable to write or speak, and those who were not willing to participate in the research.

### 2.4. Measurement scale

An 8-item structured questionnaire titled "Communicating Health Risk through Media Campaign against Viral Hepatitis Questionnaire" developed by the researchers was used to collect data for this research. Responses to questions were organized on a 5 Likert options format of Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree. The scoring patterns were as follows: Strongly Agree = 5 points; Agree = 4 points; Undecided = 3 points; Disagree = 2 points; Strongly Disagree = 1 point. Three evaluators comprising of 2 experts who are medical specialists, and 1 expert in mass communication at the University of Nigeria, Nsukka, validated the questionnaire via expert-consensus validation procedure. This validation procedure is used in previous research.<sup>[34]</sup> Test re-test and Cronbach's Alpha were used to determine the reliability of the questionnaire. A total of 20 questionnaires were administered to respondents at Onitsha in Anambra state and Nsukka in Enugu state. After 3 weeks, the questionnaires were re-administered to the same respondents. The 2 sets of responses obtained were correlated using the Pearson Product Moment Correlation ( $r$ ), and reliability value of 0.95 was obtained. Internal consistency reliability of the questionnaire as determined by Cronbach's alpha was 0.83. This shows that the questionnaire was reliable for data collection.

### 2.5. Data analysis procedure

The data generated were analyzed using mean, percentage (%), and analysis of variance tests of between-subjects effects. After screening for missing data and conducting assumption violations, we noticed that there were no missing data and the research data were equally distributed. All statistical procedures were carried out using SPSS, version 20 (SPSS Inc, Chicago, IL). Results were considered significant at  $P \leq .05$ .

## 3. Results

Percentage analysis of the socio-demographic data of the 500 respondents reveals that the male respondents (41.6%) and females (58.4%), have an age bracket of 18 to 27 (32.2%), 28 to 37 (34.3%), 38 to 47 (21.9%), and 48 & above (11.6%), while the levels of respondents' education reveals West African Examination Certificate and National Diploma (19.7%), B.Sc./BA degrees (89.3%), Postgraduate Diploma and Masters (18.0%), and PhD (13.0%). Considering the dominant position in the literary studies which shows a higher percentage of the

**Table 2**  
**Results of SPSS analyses of responses to questions on media awareness campaign and viral hepatitis.**

S/No.	Questions	Grand mean	Standard deviation	Standard error	Significance
1	You are aware of the outbreak of viral hepatitis, its symptoms, mode of transmission and curative measures.	2.30	1.300	0.074	0.000
2	If you are aware of viral hepatitis, you did not learn about the disease through the mass media.	4.21	1.109	0.156	0.003
3	You know the required personal hygienic/health behaviors needed to prevent viral hepatitis infection through a media awareness campaign.	2.58	0.239	0.241	0.000
4	You are a regular listener of channels, TV/radio health programs.	4.14	0.918	0.056	0.262
5	The various media awareness hepatitis campaign programs are bereft of the details of the disease, its symptoms, curative measures, treatment centers, and preventive behaviors pattern.	3.26	0.505	0.123	0.006
6	The media sensitization or campaign made you to change or alter your daily health behaviors	2.09	0.345	0.058	0.000
7	Your efforts to listen to media programs on hepatitis were hindered by inappropriate timing and scanty allocation of schedules for hepatitis media program.	4.44	0.949	0.058	0.423
8	Your efforts to listen to media programs on hepatitis were hindered by poor network coverage, epileptic power supply, and language barrier.	2.31	1.042	0.050	0.611

Source: SPSS analysis of responses to questions.

female population and the general population is increasingly being educated and connected, the sample is an objective 1 for the present study. Table 2 shows the SPSS analyses of responses to questions.

According to Table 2, analysis of responses to questions 1 on people's awareness of viral hepatitis, its symptoms, mode of transmission, and curative measures revealed a grand mean of 2.30 with a standard deviation of 1.300. According to the Tests of Between-Subjects Effects, the mean of the responses show a significant difference ( $P = .000$ ). The grand mean of 2.30 which represent "disagree" in our Likert scale measure was accepted and implied that the majority of the respondents were not aware of viral hepatitis, its symptoms, mode of transmission, and curative measures.

Analysis of responses to question 2 on whether people did not learn about the disease through the mass media revealed a grand mean of 4.21 with a standard deviation of 1.109. According to the Tests of Between-Subjects Effects, the mean of the responses show a significant difference ( $P = .003$ ). The grand mean of 4.21 which represent "agree" in our Likert scale measure were accepted and implied that majority of the respondents did not learn about the disease through the mass media (see Table 2).

Analysis of responses to question 3 on whether respondents know the required personal hygienic/health behaviors needed to prevent viral hepatitis infection through media awareness campaign revealed a grand mean of 2.58 with a standard deviation of 0.239. According to the Tests of Between-Subjects Effects, the mean of the responses show a significant difference ( $P = .000$ ). The grand mean of 2.58 which represent "disagree" in our Likert scale measure was accepted and implied that majority of the respondents did not know the required personal hygienic/health behaviors needed to prevent viral hepatitis infection through media awareness campaign (see Table 2).

Analysis of the responses to question 4 which sought to find out the level of their participation or access to media programs revealed a grand mean of 4.14 with a standard deviation of .918. A Tests of Between-Subjects Effects to find out the level of difference in their responses showed a no significant difference ( $P = .262$ ). The grand mean of 4.14, which represent "agree" in

our Likert scale measure is accepted and implies that majority of the respondents are regular listeners or consumers of media programs (see Table 2).

Analysis of responses to question 5 which sought to assess the nature and appropriateness of media health programs on hepatitis revealed a grand mean of 3.26 with .505 as its standard deviation. According to the Tests of Between-Subjects Effects, the mean differences of the responses show a significant difference ( $P = .006$ ). The grand mean of 3.26, which represent "Undecided" in our Likert scale measure was accepted and implies that majority of the respondents could not say whether the various media awareness campaign programs for hepatitis were bereft of the details of the disease, its symptoms, curative measures, treatment centers, and preventive behaviors pattern or not (see Table 2).

The analysis of responses to question 6 which sought to determine if media sensitization or campaign against hepatitis led to respondents' daily health behaviors change, revealed a grand mean of 2.09 with a standard deviation of 0.345. According to the Tests of Between-Subjects Effects, the mean of the responses shows a significant difference ( $P = .000$ ). The mean of 2.09 which represent "disagree" in our Likert scale measure was not accepted and implied that media hepatitis health campaign did not influence respondents' daily health behaviors change in the study area (see Table 2).

In an attempt to find out whether respondents' efforts to listen to media programs on hepatitis are hindered by inappropriate timing and scanty allocation of schedules for hepatitis media program, analysis of responses to question 7 revealed a grand mean of 4.44 and standard deviation of 0.949. According to the Tests of Between-Subjects Effects, the mean of the responses shows no significant difference ( $P = .423$ ). The acceptance of the 4.44 grand mean which represent "agree" in our Likert scale measure implied that majority of the respondents blamed inappropriate timing and scanty allocation of schedules for hepatitis media program, which makes it difficult or impossible for them to participate. They blame these factors as the major hindrance to their participation, as well as lack of awareness and knowledge.

Analysis of responses to question 8 seeking to establish the negative influence or contributions of poor network coverage, epileptic power supply, and language barrier to people's inability to access media health programs revealed a grand mean of 2.31 with a standard deviation of 1.042. According to the Tests of Between-Subjects Effects, there was no significant difference in their mean responses ( $P=.611$ ). The acceptance of the grand mean of 2.31 which represent "disagree" in our Likert scale measure implied that majority of the respondents uphold the fact that the said factors are no barriers to media campaign against the viral disease (see Table 2).

#### 4. Discussion

This paper investigated the media coverage and the level of awareness of viral hepatitis among Nigerians. Among the findings, the analyses of responses to questions revealed that majority of Nigerians are consumers of media products such as radio, television, cable broadcast, and internet news or program productions. This finding was supported by the findings made earlier by many scholars.<sup>[35,36]</sup> The study equally observes that majority of the respondents were not aware of viral hepatitis, its symptoms, mode of transmission and curative measures in spite of different media campaign. This finding tends to support earlier finding made by scholars, which holds that many Nigerians are not aware of or have a low knowledge of the nature, symptoms, mode of transmission, and curative mechanisms of some viral diseases.<sup>[37-39]</sup> The World Health Organization's report showed that about 290 million people out of 325 million individuals living with viral hepatitis B and C are unaware of their condition, notwithstanding their age, gender, geography, and ethnicity.<sup>[20]</sup> The outcome could be as a result of many intervening variables such as low level of development, none digitalization of the media, language barrier, poor network and area coverage, phobia for media's role as a government propaganda machine, and epileptic power supply among others. For some Nigerian researchers,<sup>[39]</sup> lack of awareness of viral hepatitis, the risk factors, and the consequences are some of the key factors militating against the adoption of preventive behaviors among those groups at high-risk of hepatitis infection. However, it has been observed that during awareness-raising campaigns against the disease, various approaches are required for different populations depending on a country's context and one of such approaches include the use of mass media.<sup>[40]</sup>

Another major finding of this study is that inappropriate timing of and scanty allocation of program schedules for hepatitis campaign in the media is the primary factors that are responsible for their low level of awareness and knowledge of the viral disease, and this can be explained by the nature of socio-economic activities in Nigeria where the majority of the populace work outside their homes and offices only to return to their homes late in the night. There is no opportunity to listen to any of the media outlets. Also, poor network coverage, epileptic power supply, and language barrier are minor factors, and they did not contribute to respondents' lack of knowledge about viral hepatitis. This finding supports earlier findings by other scholars which showed that language is not a major hindrance to the media campaign in the period of hepatitis health crisis.<sup>[41]</sup> In the process of addressing the barriers to hepatitis control and prevention, World Hepatitis Alliance<sup>[40]</sup> stated that a meaningful collaboration with affected communities and civil society organizations could contribute to more awareness campaigns

delivered as well as the fostering of innovative approaches for uncovering undiagnosed persons via peer support systems.

One of the strengths of this research is the ability to gather the needed primary data within a short time from a cross-section of the people for evaluating the effect of the media campaign against viral hepatitis. Our research data can serve as a pointer in the decision for further research actions in this area. Besides these strengths, the present study has some implications for health education and health communication.

The first implication is that health educators and mass communication specialists in the country need to scale up efforts at using the media to reach and inform the people about viral hepatitis, its symptoms, transmission modes, and preventive measures to ensure that the prevalence of the disease decreases. Second, health education and mass communication specialists have to ensure that media-oriented programs on the control and prevention of viral hepatitis were delivered at a convenient time of day which should be determined using an opinion poll. Third, health education experts and mass communication specialists should endeavor to use various forms of the media to reach and educate the people about hepatitis outbreak, its symptoms, transmission modes, and preventive measures in different parts of the country using the people's mother tongues. Fourth, funding support for Nigerian scholars in health education and health communication specialties might be a viable strategy in helping to train more experts who would assist to get messages about viral hepatitis across to more people in all parts of the country. Fifth, while the government is in a better position to provide funding in the form of scholarships and research grants, non-governmental agencies can also sponsor media campaigns which aim to reduce the spread of viral hepatitis in Nigeria. Sixth, policy-makers should harness the voices of individuals affected by viral hepatitis, recognizing them as crucial partners in the drive to combat the disease.<sup>[42]</sup> Seventh, as more individuals living with viral hepatitis become knowledgeable about their diagnosis, these individuals and people in their communities can partner in the effort to prevent the disease by ensuring access to hepatitis-related services (prevention, testing, treatment, and follow-up care services) and by promoting innovations in the healthcare systems that fosters novel and more patient-centered health services.<sup>[42]</sup> Last, it is worth noting that in the absence of a significant scale-up in awareness creation about viral hepatitis in addition to diagnostic services for all infected persons to be tested, the rates of treatment cannot improve and the rates of hepatitis transmission will keep on increasing.<sup>[43]</sup>

Despite the strengths and implications thereof, this research has some weaknesses. The study limitations were derived from the weakness of survey methodology and convenience sampling methodology adopted. Thus, one of the limitations of this study was its cross-sectional survey approach which did not enable the researchers to establish a cause-effect relationship of the study variables investigated and to include other people in other regions of Nigeria. The convenience sampling methodology adopted is often weakened by sampling bias. According to Saunders et al<sup>[44]</sup> convenience sampling methodology is very prone to selection bias and influences beyond the control of the researchers. Thus, it is possible that some category of respondents might have been over-represented or under-represented in our study. Therefore, future studies on this subject are encouraged to take cognizance of these weaknesses and adopt an alternative research approach as a way of overcoming the present study limitations. Given these limitations, there is a need for caution when generalizing our

study findings. Studies are required to investigate the risk perception of viral hepatitis among Nigerian community samples. The Perception of the risk of viral hepatitis seems high in Nigerian university student population.<sup>[45]</sup>

## 5. Conclusion and recommendation

The outbreak and spread of viral Hepatitis in Southeast Nigeria seem endemic with a high fatality rate. Majority of the citizens are ignorant of the disease, its symptoms, mode of transmission and curative mechanisms. However, public enlightenment campaign through media sensitization/education holds the key to its control and subsequent eradication. The media industry in Southeast Nigeria seems to have launched this campaign, but the majority of the people are not aware of such programs. Consequently, they do not participate, access or consume them, and this makes it difficult for the media campaign to influence their daily health behaviors towards the prevention of the disease. Principally, inappropriate timing of the program and poor or scanty allocation of program schedules for the campaign by media organizations were the cause for people's lack of awareness and knowledge about the viral disease and media campaign against it.

The study, therefore, recommends regular media campaign programs against the disease such as compulsory jingles before, during and after every news hour; front and back page advert concerning the hepatitis disease in all dailies; and pop-up messages in internet websites and primary social media tools. Second, media interactive forum with phone-in programs should be scheduled at least every Sunday evening when most Southeast Nigerians are in their homes resting. These recommendations if adopted shall go a long way to neutralize or resolve the current challenges facing media coverage of viral hepatitis in the country. Finally, the study recommends for research in the areas of the nature and roles of funding, sponsorship, ownership, government policy, technology, and the environment in limiting the media campaign against the disease.

## Author contributions

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## References

- Bernhardt JM. Communication at the core of effective public health. *Am J Public Health* 2004;94:2051–2.
- Okorie N, Oyesomi K, Olusola O, et al. Effective use of information sources for breast cancer care: interplay of mass media and interpersonal channels. *JARBT* 2014;1–2.
- Freimuth VS, Huan WL, Polyxeni P. Communicating the threat of emerging infections to the public. *Emerg Infect Dis* 2000;6:337–47.
- Winters M, Jalloh MF, Sengeh P, et al. Risk communication and Ebola-specific knowledge and behaviour during 2014–2015 outbreak, Sierra Leone. *Emerg Infect Dis* 2018;24:336–44.
- Bello S. An analysis of newspaper coverage of HIV/AIDS, Malaria and Polio in Nigeria. *Covenant J Commun* 2014;2:1–21.
- McQueen A, Kreuter MW, Kalesan B, et al. Understanding narrative effects: the impact of breast cancer survivor stories on message processing, attitudes, and beliefs among African American Women. *Health Psychol* 2011;30:674–82.
- Adesina EA, Okorie N, Oyero O, et al. Media reportage and audience perception of Hepatitis disease in Nigeria. *Glob J Health Sci* 2018;9:68–77.
- Olayinka AT, Oyemakinde A, Balogun MS, et al. Sero-prevalence of Hepatitis B infection in Nigeria: a national survey. *Am J Trop Med Hyg* 2016;95:902–7.
- Shamagana YN. An Appraisal of Communication Approaches of Viral Hepatitis Association of Nigeria (VHAN) on Hepatitis Intervention in Kaduna State (Master's Dissertation). Zaria: Ahmadu Bello University; 2016.
- Bello SM. An Newspaper Coverage of Health Issues in Nigeria: The Frequency of Reporting Malaria, HIV/AIDS and Polio and the Effect of Seeking Health Information on the Health Behaviours of Newspaper Readers (Doctoral Thesis). 2015;University of Canterbury.
- Amiweri CE, Nelson EA, Yusuf M, et al. Knowledge, awareness and prevalence of viral hepatitis among health care workers (HCWs) of the Federal Medical Centre Bida, Nigeria. *J Med Res* 2017;3:114–20.
- Nelson O, Salawu A. Effective use of media awareness campaigns for breast cancer care among women: a comparative study. *J Int Women's Stud* 2016;17:160–73.
- Freimuth V, Cole G, Kirby SD. Issues in evaluating mass-media health communication campaigns. *WHO Reg Publ Eur Ser* 2001;475–92.
- Freimuth VS, Quinn SC. The contributions of health communication to eliminating health disparities. *Am J Public Health* 2004;94:2053–5.
- Division of Viral Hepatitis, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. What is Viral Hepatitis? [Last reviewed April 8, 2019]. Available at: <https://www.cdc.gov/hepatitis/abc/index.htm>. [Accessed on April 14, 2019]
- Jacobsen KH. The Global Prevalence of Hepatitis A Virus Infection and Susceptibility: A Systematic Review. Geneva, Switzerland: World Health Organization; 2009.
- World Health Organization. Hepatitis A. [Last updated September 19, 2018]. Available at: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-a>. [Accessed on April 14, 2019]
- Schweitzer A, Horn J, Mikolajczyk RT, et al. Estimations of worldwide prevalence of chronic hepatitis B virus infection: a systematic review of data published between 1965 and 2013. *Lancet* 2015;386:1546–55.
- Jefferies M, Rauff B, Rashid H, et al. Update on global epidemiology of viral hepatitis and preventive strategies. *World J Clin Cases* 2018;6:589–99.

- [20] World Health Organization. Global Hepatitis Report 2017. Geneva: World Health Organization; 2017. Available at: <https://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/>. [Accessed on April 13, 2019]
- [21] Division of Viral Hepatitis, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Hepatitis D [Last reviewed April 18, 2018]. Available at: <https://www.cdc.gov/hepatitis/hdv/index.htm>. [Accessed on April 14, 2019]
- [22] National Centre for Disease Control. Viral Hepatitis: The Silent Disease. Prevention, Control and Treatment Guidelines. New Delhi India: NCDC [June 28, 2016]. Available at: <https://ncdc.gov.in/WriteReadData/1892s/File614.pdf>. [Accessed on April 14, 2019]
- [23] Nigeria Centre for Disease Control. Weekly Epidemiological Report – Responding to an Outbreak of Hepatitis E [Editorial, July 2017]. Available at: <https://ncdc.gov.ng/reports/67/2017-july-week-29>. [Accessed on April 14, 2019]
- [24] World Health Organization. Global Health Sector Strategy on Viral Hepatitis 2016-2021. Annual Projection. Geneva, Switzerland: World Health Organization, 2016.
- [25] Yusuf M. 20m Nigerians Carry Hepatitis Virus. [This Day Newspaper, December 1, 2016]. Available at: <https://www.thisdaylive.com/index.php/2016/12/01/20m-nigerians-carry-hepatitis-virus/>. [Accessed on April 10, 2019]
- [26] The Punch Newspaper. 23 Million Nigerians Live with Hepatitis B — Expert. [The Punch Newspaper, September 17, 2017]. Available at: <https://punchng.com/23-million-nigerians-live-with-hepatitis-b-expert/>. [Accessed on April 10, 2019].
- [27] Olawale G. 26m Nigerians Suffering from Viral Hepatitis. [Vanguard Newspaper, August 6, 2018]. Available at: <https://www.vanguardngr.com/2018/08/26m-nigerians-suffering-from-viral-hepatitis/>. [Accessed on April 10, 2019].
- [28] Ivlustapha SK, Jibrin YB. The prevalence of Hepatitis B surface antigenemia in patients with human immunodeficiency virus infection in Gombe, Nigeria. *Ann Afri Med* 2004;4:10–1.
- [29] Musa BM, Bussell S, Borodo MM, et al. Prevalence of hepatitis B virus infection in Nigeria, 2000-2013: a systematic review and meta-analysis. *Niger J Clin Pract* 2015;18:163–72.
- [30] Emechebe GO, Emodi IJ, Ikefuna AN, et al. Hepatitis B virus infection in Nigeria – a review. *Niger Med J* 2009;50:18–22.
- [31] Danbuzu LAS, Umar MU. A geographic epidemiological review of viral hepatitis B. *IOSR-JDMS* 2015;14:89–93.
- [32] Hochbaum G, Rosenstock I, Kegels S. Health belief model. Washington, DC: U.S. Public Health Service (Original work published 1952); 2016.
- [33] Faul F, Erdfelder E, Lang AG, et al. G\*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods* 2007;39:175–91.
- [34] Eze NM, Njoku HA, Eseadi C, et al. Alcohol consumption and awareness of its effects on health among secondary school students in Nigeria. *Medicine (Baltimore)* 2017;96:e8960.
- [35] Adebimpe WO. Community awareness and perception towards rodent control: implications for prevention and control of Lassa fever in urban slums of South-western Nigeria. *Malta J Health Sci* 2015;3:26–32.
- [36] Picard R, Yeo M. Medical and Health News Information in the UK Media: The Current State of Knowledge. Oxford, UK: Reuters Institute for the Study of Journalism, University of Oxford; 2011.
- [37] Adefisan AK. The level of awareness that rat is a vector of Lassa fever among the rural people in Ijebu-North Local Government, Ogun State, Nigeria. *JEP* 2014;5:166–70.
- [38] Adebimpe WO. From a single case to epidemics: fear and misconceptions mitigating against effective control of Ebola virus disease outbreak in South-Western Nigeria. *Niger J Health Sci* 2015;15:58–9.
- [39] Okonkwo UC, Ngim OE, Osim H, et al. Knowledge of Hepatitis B virus infection among traders. *Niger J Clin Pract* 2017;20:415–20.
- [40] World Health Organization. Guidelines on Hepatitis B and C Testing. WHO: Geneva, 2017. Available at: <http://apps.who.int/iris/bitstream/handle/10665/254621/9789241549981-eng.pdf?sequence=1>. [Accessed on April 7, 2019]
- [41] Giordano C, Druyts EF, Garber G, et al. Evaluation of immigration status, race and language barriers on chronic hepatitis C virus infection management and treatment outcomes. *Eur J Gastroenterol Hepatol* 2009;21:963–8.
- [42] World Hepatitis Alliance. Overcoming the Barriers to Diagnosis of Viral Hepatitis: The Role of Civil Society and the Affected Community in Finding the Missing Millions. White Paper, 2018. Available at: <http://www.worldhepatitisalliance.org/missing-millions/wp-content/uploads/2018/07/Overcoming-the-barriers-to-diagnosis-white-paper-1.pdf>. [Accessed on April 7, 2019]
- [43] European Union HCV Collaborators. Hepatitis C virus prevalence and level of intervention required to achieve the WHO targets for elimination in the European Union by 2030: a modelling study. *Lancet Gastroenterol Hepatol* 2017;2:325–36.
- [44] Saunders M, Lewis P, Thornhill A. *Research Methods for Business Students*. 6th ed. Harlow - Essex - UK: Pearson Education Limited; 2012.
- [45] Chingle MP, Osagie IA, Adams H, et al. Risk perception of hepatitis B infection and uptake of hepatitis B vaccine among students of tertiary institution in Jos. *Ann Afr Med* 2017;16:59–64.

**Appendix: Communicating health risk through media campaign against viral hepatitis questionnaire.**

S/No.	Questions	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	You are aware of the outbreak of viral hepatitis, its symptoms, mode of transmission and curative measures.					
2	If you are aware of viral hepatitis, you did not learn about the disease through the mass media.					
3	You know the required personal hygienic/health behaviors needed to prevent viral hepatitis infection through a media awareness campaign.					
4	You are a regular listener of channels, TV/radio health programs.					
5	The various media awareness hepatitis campaign programs are bereft of the details of the disease, its symptoms, curative measures, treatment centers, and preventive behaviors pattern.					
6	The media sensitization or campaign made you to change or alter your daily health behaviors					
7	Your efforts to listen to media programs on hepatitis were hindered by inappropriate timing and scanty allocation of schedules for hepatitis media program.					
8	Your efforts to listen to media programs on hepatitis were hindered by poor network coverage, epileptic power supply, and language barrier.					