

Assessing the Effectiveness of Community-Focused Information Dissemination in the Nigerian Health Sector during Disease Outbreak

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Abstract

This paper investigates the effectiveness of community-focused information dissemination in the health sector during the viral disease outbreak using Enugu state as a focus. The instruments of data collection were questionnaire and interview guide. A sample of 600 respondents (consisting of primary health care workers and residents) was randomly selected from the state's three senatorial districts. At the same time, data generated were analysed using SPSS version 20.0 tools. Results of the analysis revealed an inadequate and ineffective community health care information dissemination system, insufficient means of communication and lack of synergy between healthcare providers and community leaders as the cause of the ineffectiveness. The researchers recommended prompt integration of modern Information and Communication Technology (ICTs), development of synergy between community leaders and the health sector, and appropriate funding as a panacea to the ineffectiveness.

Keywords: Community, Disease, Enugu State, Healthcare Providers, ICTs, Information Dissemination

Introduction

Nigeria is known as the "Giant of Africa" because of its massive population and economy. Despite Nigeria's important location in Africa, the country's healthcare infrastructure is severely lacking (Muhammad, Abdulkareem & Chowdhury, 2017). Nigerians, particularly those living in local communities, face significant health concerns during disease outbreaks. As a critical issue in any social setting, information dissemination indicates how people in any location, rural or urban, reach out to other parts of their immediate environment and beyond. Information forms the bedrock of the successful execution of any meaningful project as it provides the basis for significant decisions, investments, and appraisals. Thus, Harande (2009) argued that "information is the lifeblood of any society and vital to the activities of both the government and private sectors." It is a message that changes the recipient's knowledge base (Meadow & Yuan, 1997) and equips man to take decisions and actions (Reneken, 1993). It is a basic human and organisational need (Kari, 2007) that enables them to manipulate the factors of production in a manner that generates productive values. Its processes are environmentally bound.

Thus, information dissemination processes in the urban and rural areas may differ in their character, dynamics, limitations and impact. The rural area, which forms the focus of this study, is dominated by people with a challenging standard of living due to poverty, hunger, disease, ignorance, illiteracy, poor or absence of infrastructure and basic social amenities and even ICTs and their skills (Saleh & Lasisi, 2011; Phillips, 2006). These can be traced even across cities or urban areas in Nigeria, although, with reduced temerity (Elumilade & Asaolu, 2006). As a result, their influence on primary health care of increasing access to helpful health information and knowledge, particularly in rural areas during a disease outbreak, is susceptible to varied outcomes and can be restricted in rural areas by environmental factors. The effectiveness of its goal of minimising the fatality associated with disease outbreaks and the socio-economic impact related to these diseases, whether preventable or non-preventable, depends, therefore, on the nature of rural community pro-information dissemination, its rural accessibility, limitations and people's response (Aryee, 2014).

The importance of health information communication to the public health sector, individuals and health care providers are enormous (Rimel & Lapinski, 2009; Kickbusch & Buse, 2001). All stakeholders in knowledge and information generation, dissemination and problem solving, particularly in the health sector, desire accurate, relevant, rapid and impartial health information (Ifukor, 2013; Levi, 2014; Gupta & Sinha, 2010). They tend to rely heavily on the mass media as an essential tool for disseminating such information (Nurmi, 2013). It provides the public with information on the details of diseases, their spread and means of infection, treatments, and prevention are spread through the mass media such as the traditional broadcast media and mass media like Television, cinema, radio, newspaper magazines and the new media such as the internet and its affiliated social media networks. The latter has been widely and preferentially used due to its fast global reach, accessibility and low costs (Olla & Tan, 2008).

In addition to the orthodox and new media channels of disseminating information to the public, institutions, social functions, non-governmental organisations and town criers, among others, are equally employed as channels of information dissemination to the rural people mainly because most of the people living in the rural areas are illiterates (Town Crier Concept, 2007). They are found to be effective, cheap, reliable and straightforward (Adekunle *et al* 2002). Like the internet, most communities adopt this as an appropriate channel of information dissemination, particularly in health-related matters (Ayubu *et al* 2012; Ogwezzy, 2008). It, therefore, holds that information is packaged and communicated in the rural areas mainly with the aid of information and technology (ICTs) through the internet or World Wide Web, mobile telephone and town criers. Except for the latter, these channels of information dissemination orchestrated interactive audience participation in information communication that is characterised by immediate feedback with minimum or no delays. Nevertheless, the literature reveals that these significant information dissemination channels in Nigeria, such as extension institutions, collapse except for

"Town Crier" (Oladeji, 1999; Igboka & Atinmo, 2002). Traditional rulers use a community member familiar with the terrain and the people to disperse any type of information/news. This model, however, has its limitations because most of the information passed might not at all times meet the information needs of the community. Also, the monopoly of data to be passed lies in the hands of the community leader. These leaders give instructions on which message or information to be passed to the community and those that should not be disseminated.

However, the conflict of interests, power struggle, accountability, legitimacy and security crises prevailing in most of the communities in Enugu state since the government introduced remunerations for traditional rulers have undermined the effectiveness of the use of town criers for information dissemination. Generally, rural dwellers face the challenges of having access to public information systems due to how some journalists package information and its dissemination, reduced literacy level, poor infrastructure, lack of information transmission facilities and skills, and other social-economic problems. On this premise, it becomes necessary to investigate the prevailing channel(s) used by public health institutions and government agencies to disseminate information to community people during disease outbreaks in Enugu state,

Objectives of the Study

The objectives of the study were to:

1. Identify the sources of community-focused information systems available to the people in communities and how the Enugu state public sector utilises them to disseminate information during a disease outbreak.
2. Assess the effectiveness of community-focused information dissemination channels during a disease outbreak in Enugu state.
3. Determine the significant constraints of the community-focused information dissemination system in Enugu state during a disease outbreak.

Review of Literature

Information is an integral part of human society. Individuals and groups need it to make informed decisions and take control of their lives. The report consists of facts, data, figures, details, advice, wisdom and even lore transmitted through messages or communication. Atinmo *et al* (1996), Koo, Krass & Aslani (2006), Kutner, Greenberg & Paulsen (2006) and Wagacha (2007) noted that electronic media such as radio and television; print media-newspapers, journals, magazines and other sources of information like bulletins, brochures, flyers and posters are the prominent channels of information dissemination, for rural communities. Shikawa & Yano (2008), Kaniki (1994) and Razavanfer & Mandape (2000) identified other pathways like friends, neighbours, colleagues, family members and relatives. Barton & Beer (1999) identified others like business contacts and personal networks.

Since the beginning of the 21st century, using information communication technology (ICTs) to disseminate information has leveraged all these methods. It has

led to what is popularly known as new media, where ICT facilities like satellite systems, computers, phone services, highway tech, video conferencing and virtual reality, internet emails and online social networks are now the dominant methods of information dissemination. Using Zika virus-related information circulated on Twitter, XinningGui, MA, Yue Wang, MS & Yubo Kou *et al* (2018) observed that social media are essential for risk communication during public health crises. They argue that the effective dissemination of accurate, relevant and up-to-date health information is a necessary tool for raising public awareness, which leads to the development of risk management strategies. Further, they observed possible discrepancies between what the public is interested in or concerned about and what public health authorities provided during the Zika outbreak.

Consequently, information can be disseminated in rural communities through various media. However, but with a focus on the African continent, Okogbe (2002), Patterson and Radtke (2009), Abbasi *et al* (2010) and Allgaier *et al* (2013) raised the questions of sources of this information, mechanisms and institutions for making this information timely, available in appropriate formats, and inaccessible locations. These studies referred to rural African communities with no empirical evidence on "the most effective information transfer methods." Nevertheless, Allgaier *et al* (2013) noted that information dissemination through ICTs and its features are dependable and of immense benefit to the rural population in transforming their lives and providing access to relevant information that enables them to execute their daily activities successfully. Although there has been a rapid increase in the use of the internet in Less Developing Countries (Richardson, 1996a), scholars like Browery (1995), Williamson (1991) and Anie (2007) argue that Less Developing Countries such as Nigeria are yet to embrace the application of ICT in its socio-political and economic lives completely.

Thus, Akpomovie (2010) noted that ICTs drive and traditional media should be jointly used for effective information dissemination and sustainable rural transformation in Africa. The author recommended that governments in Africa should create the enabling environment for the ICTs to be effectively used and synergised with the traditional media in achieving development communication goals at all levels. Mchombu (2010) equally advocated for the complementary use of ICTs and conventional media in disseminating information, particularly in respect of health information, agriculture information, income generation information, and information targeting the expansion of knowledge-based rural communities in Africa. A suitable method or channel facilitates the transfer and acquisition of knowledge (Bechman, 2002; Morale-Gomex & Melesse, 1998) if information consumers can harness messages through such a method. Kularatne (1997) observed that information is a fundamental tool or instrument for development, but even when the necessary information is available, not everybody benefits from it. The availability, accessibility and free flow of information are essential pre-conditions for maintaining a well-informed citizenry. To make this possible, the information must be tailored and targeted for an intended and identified audience and must be relevant, accurate, timely

and straightforward. Accordingly, Pollard & Rood (1989) and Westbrook & Lumbley (1990), among other scholars, noted that effective information dissemination is characterised by the followings:

- a. It is oriented toward the needs of the user, incorporating the types and level of information needed into the forms and language preferred by the user.
- b. A varied dissemination method should be adopted.
- c. It recognises and provides for the "natural flow" of the four levels of dissemination, which are spread, exchange, choice, and implementation.
- d. It draws upon existing resources, relationships and networks to the maximum extent possible while building new resources as needed by users.
- e. It includes an effective quality control mechanism to assure that information to be included in the system is accurate, relevant and representative.
- f. It establishes linkage to resources that may be needed to implement the message.

There is a near consensus in the literature that information providers and experts need to pay attention to the information needs of various groups and the communication process among each group of the user community (Odini, 1995). Thus, Alemna (1999) observed that most ICTs driven online messages are in English. Most rural people whose vernacular or languages were not used find it impossible to access such information. Alemna & Sam (2006) and Akintude (2004) made the same observation and argued that indigenous languages should be integrated into modern techniques and technology to enable them to access information thereof. Similarly, Gyamfi (2005) argued that the content of online news or messages, streaming media, the audio-visual and web-casting formats should take into account the needs of the rural people concerning their low literacy and integrate their languages into their software.

Johnson & Meischke (1991) and Naanyu *et al* (2013) identified interpersonal and mass media as channels of health-related information. The interpersonal sources of health information include doctors, nurses, family and friends, health groups, voluntary organisations and other professions allied to medicine. Spadaro (2003) affirmed that most Europeans use health professionals (Pharmacists, Doctors and Nurses) as their primary sources of health information. These face-to-face information channels are preferred for information dissemination and the teaching of complex skills that need two-way communication between individuals (Parrott, 2004). Studies reveal that women like and use information from a wide range of interpersonal sources (Davies & Bath, 2002). They rely highly on information from general practitioners and knowledge sought in health visits as their primary sources. Ordinary speech, melodies, shows, stories, and talks are also used to convey health messages (Anasi, 2012).

Most people in Iran, Canada, and Bangladesh prefer the use of Television and group discussions in their search for health information (Hossain & Islam, 2012; Gavvani, 2010; Wathen & Harris, 2006). Others visit public libraries and make good use of medical magazines and books, newspaper articles, brochures, and radio and television programs while searching for health information (Catalán-Matamoros, 2011). Mills and Sullivan (2000) and Parrott (2004) noted that mass media usually offer broad coverage, so that communicated messages reach a vast number of the target audience quickly and frequently. Warschauer (2003) and Yusof (2004) argue that

internet access is far from reaching the entire rural population, even in countries with a high rate of internet access. The author recommends using traditional media to supplement any communication programme for the rural population. Generally, access to information in rural communities of Africa is limited by several factors such as lack of basic infrastructures like electricity, telecommunication facilities, utilities, roads and transportation; low level of literacy, lack of good information services, technical skills (Bell, 1999; Okiyi, 2003; Kari, 2005).

It is, therefore, evident from the literature that information communication has multiple channels and that no single track enjoys unlimited reach to the entire population, particularly the rural population, due to limiting factors that are specific to each channel. The literature further reveals the need for complementary adoption of some available media as a panacea to hindrances. However, there is a scanty empirical investigation into the practice of this complementary adoption of communication channels and its effectiveness in the health sector for disease prevention and treatment. This paper explores this using Enugu state in the era of Lassa fever and Ebola disease outbreak as focus.

Theoretical Framework

Health Belief Model (HBM)

HBM is a framework for encouraging people to perform positive health actions by focusing on the desire to avoid a negative health outcome as the primary motive (Glanz, Rimer & Lewis, 2002). HBM is based on four components, according to Glanz, Rimer & Lewis (2002), including perceived susceptibility (one's judgement of the likelihood of developing a health condition) and perceived severity (one's opinion of how serious a health problem and its implications are). Others are perceived advantages (one's perception of a new behaviour's usefulness in reducing the chance of contracting a disease) and perceived barriers (one's opinion of the difficulties in adopting a new behaviour).

According to the data, an additional construct called "cues to action" would trigger that preparedness and stimulate overt behaviour (Glanz, Rimer & Lewis, 2002). Events, people or things that drive people to change their health-risk behaviour are known as cues to action. The construct of 'self-efficacy', or one's belief in one's ability to act successfully, is a recent addition to the HBM. Rosenstock and others introduced the last construct in 1998 to make the HBM better suit the problems of changing habitual health-risk behaviours like smoking, eating an unhealthy diet and not exercising (Glanz, Rimer & Lewis, 2002). This model is vital to this study because community-focused information dissemination helps change personal beliefs or perceptions of disease and the solutions available to reduce its incidence and drive positive health behaviour.

Methodology

This paper employed both descriptive survey and correlation designs wherein the population from the communities in Enugu state were asked questions through interviews and questionnaire concerning channels of communicating health issues and their accessibility during disease outbreaks. After that, analyses of relationships

between components were systematically made, and inferences were drawn. The population of the six communities forms the population of the study and a sample of 300 respondents was randomly selected for the study. The total number of respondents from each community is 50.

Enugu state comprises over two hundred and thirty-five communities, delineated into three Senatorial Districts of Enugu East, Enugu West, and Enugu North. These communities are with government built health centres as the highest medical facilities available to their people. Six communities and their medical health centres were selected from the three Senatorial Districts, i.e. two from each. These communities are Adani and Obollo-Eke in Enugu North senatorial district, Agbogo-Nike and Akegbe-Ugwu in Enugu East senatorial district and Iwollo and Inyi in Enugu West senatorial district. In each of the communities, the traditional ruler, president general of the town union, the medical superintendent and chief nursing officers working in the health centre, leaders of the orthodox religious institutions, principals of secondary schools, head teachers of different primary schools, and others were purposively selected as part of the respondents.

During the inquiry, primary data was generated with a structured questionnaire and interviews, while the secondary data was generated from relevant published and accessible materials in public and private libraries. In the validity and reliability, experts in the Faculty of Arts, University of Nigeria assessed the relevance of the contents of the questionnaire to ensure its validity, objectivity and potency. At the same time, a test-re-test method was carried out within two weeks. The correlation analysis of responses from the two sets of tests showed reliability of more than 0.86. The data collected during the fieldwork were analysed with the aid of descriptive and mediums of central tendency/variance tools in the statistical package for social sciences (SPSS) version 20.0. However, data generated from interviews were analysed using frequency tables and percentages for inference.

Data Analysis and Results

Data presentation and its analysis are presented here; a table of data containing respondents' demographic details and their % interpretations; SPSS variance analysis of the data generated for generalisation purposes.

Table 1: Information Dissemination Channels in Enugu State

S/N	Information Dissemination Channels	Available		Not available		Remarks
		No	%	No	%	
1	Radio	300	100	Nil	0	
2	Television	300	100	Nil	0	
3	Internet and social networks	300	100	Nil	0	
4	Extension workers	Nil	0	300	100	
5	Inter-personal contact	300	100	Nil	0	
6	GSM	300	100	Nil	0	
7	Churches	300	100	Nil	0	
8	Films and videos	Nil	0	300	100	

9	Family members	300	100	Nil	0
10	Village square meetings/Town crier	100	33.3	200	66.7
11	Work place	300	100	Nil	0
12	Library	nil	0	300	100
13	Newspapers and Dailies	300	100	Nil	0

The analysis of the data in table 1 reveals that all the respondents accepted that radio, television, interpersonal contact, GSM, churches, family members, workplace, newspapers and dailies and village square meetings/town crier were all available channels of information dissemination in communities.

Table 2: Information Dissemination Channels and Rural Communities in Enugu State

S/N	Information Dissemination Channels	Frequently used		Scantly used		Not used	
		No	%	No	%	No	%
1	Radio	300	100	Nil	0	Nil	0
2	Television	300	100	Nil	0	Nil	0
3	Internet and social networks	Nil	0	Nil	0	300	100
4	Extension workers	Nil	0	Nil	0	300	100
5	Inter-personal contact	300	100	Nil	0	Nil	0
6	GSM	300	100	Nil	0	Nil	0
7	Churches	300	100	Nil	0	Nil	0
8	Films and videos	Nil	0	Nil	0	300	100
9	Family members	Nil	100	Nil	0	Nil	0
10	Village square meetings/Town crier	Nil	0	100	33.3	200	66.7
11	Work place	300	100	Nil	0	Nil	0
12	Library	Nil	0	Nil	0	300	100
13	Newspapers and dailies	Nil	0	Nil	0	300	100

Table 2 reveals that some of the channels of disseminating information to the rural people were not used in Enugu state during the disease outbreaks. All the respondents representing 100% admitted that the internet and social networks, extension workers, films and videos, newspapers and dailies and the library have never been used or seen to be used to divulge emergency information about health-related issues such as disease outbreaks in their respective communities. However, 100 respondents representing 33.3% admitted that village square meetings/town criers were sparingly used to disseminate such information. All the respondents representing 100% revealed that radio, television, interpersonal contact, GSM, churches, family members and workplaces are veritable channels of information dissemination that have been frequently used to converse and divulge health-related information in rural communities of Enugu state, particularly during a disease outbreak.

Table C: Results of SPSS Analysis of Responses to Questions

S/n	Research questions	Grand Mean	Standard Deviation	Standard Error	Tests of Between-Subjects Effects	Sig.	Pairwise Comparisons
1	You are residing in the village during the period of Ebola, Lassa fever, viral hepatitis outbreak in Nigeria	4.21	1.109	.156	62.673	.000	@ 95% confidence Interval, no adjustments
2	You learnt about the outbreak of the disease through government-controlled mass media like radio, Television etc	2.58	.239	.241	240.296	.003	@ 95% confidence Interval, no adjustment
3	You learnt about the outbreaks of the disease through informal sources like friends, churches, relations, phone calls etc	4.14	.918	.056	226.652	.262 & .000	@ 95% confidence Interval, no adjustments
4	The obtained complete information about the outbreak of the disease, their symptoms, curative measures, treatment centres, and preventive behaviours pattern is detailed	3.26	.505	.123	192.330	.006	@ 95% confidence Interval, no adjustments
5	The information you obtained led you to change or alter your daily health behaviours	2.09	.345	.058	189.002	.000	@ 95% confidence Interval, no adjustments

Source: SPSS analysis of responses to questions

According to table 3, an analysis of responses to question 1 that interrogated whether respondents were residing in the rural areas during the period of Ebola, Lassa fever, and viral hepatitis outbreak in Nigeria reveals a total grand mean of 4.21 with a standard deviation of 1.109 with a standard error of .156. According to the Tests of Between-Subjects Effects, the mean differences of the responses show a significant difference of .000, whereas the mean difference should be significant at .05 levels. Pairwise Comparism carried out to determine the level of adjustment due to .000 level of significances reveals no adjustment. Thus, the ground means of 4.21, which represents 'Agree' in our Likert scale measure, is accepted and implies that most of the respondents were residents in the rural communities of Enugu state during a previous disease outbreak.

Further analysis of the responses to the question that sought to find out if the respondents learnt about the outbreak of the disease through government-controlled mass media like radio, Television etc., reveals a grand mean of 2.58 with a standard deviation of .239 standard error of .241. A Test of Between-Subjects Effects to determine the level of difference in their responses reveals a significant difference of .003, whereas the mean difference should be significant at .05 levels. The Pairwise Comparism carried out to determine the level of adjustment due to .003 levels of significance reveals no adjustment. Thus, the grand means of 2.58, which represents 'Disagree' in our Likert scale measure, is accepted and implies that the majority of the respondents did not receive the information concerning disease outbreaks from the mainstream media.

A similar analysis of the responses to whether the respondents learnt about the disease outbreak through interpersonal sources like friends, churches, relations, phone calls reveals a grand mean of 4.14 with a standard deviation of .918 and standard error of .056. A Test of Between-Subjects Effects to determine the level of difference in their responses reveals a significant difference of .262 and .000, whereas the mean difference should be significant at .05 levels. The Pairwise Comparism carried out to determine the level of adjustment due to .262 and .000 levels of significance reveals no adjustment. Thus, the grand means of 4.14, which represents 'Agree' in our Likert scale measure is accepted and implies that the majority of the respondents received the information concerning disease outbreaks from informal sources.

In addition, an analysis of responses to question 4, which sought to find if the respondents obtained complete information about the outbreak of the disease, their symptoms, curative measures, treatment centres, and preventive behaviours pattern in details reveals a ground means of 3.26 with a standard deviation of .505 whose level of significant differences is .006 with no adjustments required. Thus, the grand means of 3.26, which represents 'No Opinion' in our Likert scale measures are accepted and implies that the majority of the respondents are not confident that they knew everything about the various diseases due to their sources of information.

Analysis of responses to question 5 seeking to establish whether the information obtained by the respondents led to changes in daily health behaviours reveals a grand mean of 2.09 with a standard deviation of .345, whose level of difference is insignificant at .000. The mean of 2.09, which represents 'disagree' in our

Likert scale measure is accepted and implies that the health and safety information received by community residents did not influence or lead to any form of health behaviour modification in Enugu state.

Table 4: Results of SPSS Analyses of Responses to Questions

S/n	Research questions	Grand Mean	Standard Deviation	Standard Error	Tests of Between-Subjects Effects	Sig.	Pairwise Comparisons
6	There is good network coverage, good infrastructure and regular power supply in your area	2.09	.345	.058	189.002	.000	@ 95% confidence Interval, no adjustments
7	Mass media programmes relating to disease outbreaks enjoyed scanty allocation of schedules, inappropriately time when most of the rural population are on farms and markets	4.44	.949	1.011	242.430	.042	@ 95% confidence & Interval, no adjustments
8	There are good health centres and extension workers' sensitisation coverage of rural communities during the outbreak of the disease	2.31	1.042	.050	143.223	.000	@ 95% confidence Interval, no adjustments
9	Medium of communication tends to limit people's access to media campaigns during a disease outbreak	2.31	1.042	.050	143.223	.000	@ 95% confidence Interval, no adjustments

Source: SPSS analysis of responses to questions

In table 4 above, an analysis of responses to question 6 interrogating the availability of good network coverage, good infrastructure and regular power supply in the rural areas

reveals a total grand mean of 2.09 with a standard deviation of .345 and an error of .058. According to the Tests of Between-Subjects Effects, the mean differences of the responses show a significant difference of .000, whereas the mean difference should be significant at .05levels. Thus, the ground means of 2.09, which represents 'Disagree' in our Likert scale measure, is accepted and implies that good network coverage and regular power supply in the rural areas are not available.

Further analysis of the responses to the question, which sought to find out if mass media programmes relating to disease outbreaks enjoyed scanty allocation of time schedules and were inappropriately timed when most of the rural population are on farms and markets, reveals a grand mean of 4.44 with a standard deviation of .949 and error of 1.011. A Test of Between-Subjects Effects to find out the level of difference in their responses a significant difference of .042 and .000, whereas the mean difference should be significant at .05levels. However, the Pairwise Comparism carried out to determine the level of adjustment due to .042 and .000levels of significance reveal no adjustment. Thus, the grand means of 4.44, which represents 'Agree' in our Likert scale measure is accepted and implies that the allocation of time schedules for diseases outbreak programmes in the mass media and their timing are inappropriate for rural dwellers in Enugu state.

In addition, an analysis of responses to question 8, which seeks to assess if there is a good health centre and extension workers' sensitisation coverage of the rural communities during the outbreak of the disease, reveals a total ground mean of 2.31 with a standard deviation of 1.041 and error of .050 respectively. According to the Tests of Between-Subjects Effects, the mean differences of the responses show a significant difference of .000, whereas the mean difference should be significant at .05levels. Thus, the ground means of 2.31, which represents 'Disagree' in our Likert scale measure is accepted and implies that there are no excellent health centres and extension workers' sensitisation coverage of communities in Enugu state during viral diseases outbreaks.

Similarly, an analysis of responses to question 9, which seeks to assess if the available medium of communication tends to limit people's access to media campaigns during disease outbreaks, reveals a total ground mean of 2.31 with a standard deviation of 1.041 and error of .050 respectively. According to the Tests of Between-Subjects Effects, the mean differences of the responses show a significant difference of .000, whereas the mean difference should be significant at .05levels. Thus, the ground means of 2.31, which represents 'Disagree' in our Likert scale measure, is accepted. Therefore, the medium of communication in Enugu state does not limit people's access to media campaigns during a disease outbreak.

Discussion of Findings

The findings revealed that seven out of the 13 channels of information available in the state are being used regularly during a disease outbreak to disseminate information to rural dwellers. Out of these seven, only, radio, television and the internet/World Wide Web are government or formal channels of pro-rural information dissemination available in Enugu state, while others are informal. In the communities, however, most of them, particularly the radio and television programmes, are either not available to

the rural populations during diseases outbreak or are not accessible to them. This indicates a scarcity of government planned and managed health information systems for rural dwellers in the state. This finding is in line with earlier findings made by Adimorah (1986), Mchombu (1991) and Okiy (2003) among others.

The above findings have been attributed to inappropriate timing of such media campaigns, lack of proper network connection, and poor infrastructure-previous research findings of Bell (1999) and Akintunde (2004) are collaborated by this research finding. Thus, the pro-urban and elitist nature of the modern information policies and practices significantly undermine the campaign against viral disease outbreaks and prevention in the state. Consequently, government and the health sector should develop and adopt an integrated rural information dissemination approach where rural activities and provision of social, health and information infrastructure are essential variables or critical factors that structure rural media programmes. Through these media, programmers must consider when the rural population is, primarily farmers, will be at home to listen, the provision of network connectivity and electricity that will enable them to access the programme and the integration of local information content that will allow them to comprehend the messages carried by such programmes.

The study also reveals that informal channels of communication such as friends, churches, relations, phone calls and town criers are the dominant channels for disseminating information among the rural population during diseases outbreak. Further, it reveals that the informal channels are ineffective during diseases outbreak because they do not carry the appropriate details of such diseases, treatment and preventive methods. These findings are collaborated by that Davies & Bath (2002), Anasi (2012) and Naanyu *et al* (2013), among others. Thus, stakeholders in the health and information sector should begin to synergise formally with these local groups through workshops, seminars and empowerment as an extension of their ministries and an essential instrument for tackling rural information needs, health-related crises and viral disease outbreaks. This will guarantee effective control and prevention of such diseases through appropriate and detailed information.

Conclusion

The availability, methods, channels and accessibility of information dissemination in any multicultural, widely and heavily populated rural communities in Africa, such as that of Enugu state, is penultimate to a successful health campaign during viral diseases outbreak. Although, the modern and formal channels and systems of information dissemination are prevalent in the state, they are not accessible to the rural population. This has been attributed to factors like poor timing of the media programme, lack of network connectivity, poor infrastructure, lack of primary health institutions like health centres and community extension workers. Consequently, informal channels of information dissemination such as personal interactions, friends' networks, churches, relations, phone calls and town criers are dominantly used to disseminate information among the rural population during diseases outbreak and other life-threatening issues.

These channels are ineffective because they do not transmit appropriate and detailed information. In most cases, they are filled with propaganda and unverifiable information. Thus, the health and information sector should synergise with these local groups through workshops, seminars, training and empowerment as an extension of their ministries and instrument for combating viral disease outbreak at any time.

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