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RESEARCH PAPER

KNOWLEDGE AND APPLICATION OF INFECTIOUS DISEASE CONTROL MEASURES AMONG PRIMARY CARE WORKERS IN NIGERIA: THE LASSA FEVER EXAMPLE

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ABSTRACT

The objective of this study was to investigate the knowledge and practice of Lassa fever control among primary care health workers. The study was a cross-sectional survey of health workers in 34 primary care centres in Esan West and Esan Central Local Government Areas. The LGAs were selected from Lassa fever-endemic areas in the state and studied with 231 self-administered semi-structured questionnaires. The knowledge of respondents was assessed using a ten-question scoring system. Data was analyzed and presented in tables and figures. All respondents were aware of Lassa fever and 77.9% of them had good knowledge of the control of the disease while 9.1% had poor knowledge. There was no significant association between level of knowledge and designation of the health worker ($\chi^2=8.99$, df =4, p>0.05). Only 13.0% and 16.9% of them regularly practiced barrier-nursing and hand washing, respectively, as means of containing the spread of the infection. The level of general knowledge about Lassa fever was high. However, there was poor compliance with standard preventive practices. Therefore, sustained education and re-training of Health workers at the primary care level is required to curtail nosocomial transmission of the disease.

Key words: *Lassa fever, health worker, infection, disease control.*

INTRODUCTION

Lassa fever, a viral haemorrhagic fever, is extremely virulent and often fatal infectious disease (Federal Ministry of Health, FMOH, Nigeria, 2008; Anyanwu and Nwaopara, 2005). It is caused by the Lassa virus, an arena virus. The disease is characterized by fever, muscle aches, sore throat, nausea, vomiting, chest and abdominal pain and haemorrhage from the body's orifices (CDC, 2004). Although the multimammate rat, *Mastomys natalensis* is widely regarded as the reservoir of infection (Monath et al, 1974), *M. erythroleucus* and *M. hildbrandtii* have also been proposed to be reservoirs (Anyanwu and Nwaopara, 2005; CDC, 2004). It is an epidemic prone disease. The significance of Lassa fever as an epidemic-prone disease is indicated by an alert threshold of a single suspected case and an epidemic threshold of a single confirmed case (FMOH, Nigeria, 2005; 2009).

Worldwide, an estimated 2 million persons are infected every year resulting in 5,000 to 10,000 deaths (McCormick, 1999). It has been estimated that 300,000 to 500,000 cases and 5000 deaths from Lassa fever occur yearly across West Africa (Ogbu et al, 2007), with an endemic and high seroprevalence rates reported in Nigeria, Sierra Leone, Guinea, and Liberia (Kerneis et al, 2009). In Nigeria, while outbreaks of the infection have been reported in Edo,

Ebonyi, Ondo, Taraba, Plateau, Anambra, Nasarawa, Yobe and recently Rivers (Ogbu et al, 2007; Nigerian Centre for Disease Control, NCDC, 2012). Earlier studies have shown that the seroprevalence in Nigeria is about 21% (Tomori et al, 1988). Thus, the disease is present in virtually all the geographical regions of the country. Within the first quarter of 2012, 525 suspected cases of Lassa fever, 96 laboratory-confirmed cases and 54 deaths (CFR 10.3%) were recorded in 16 States as at 9th March, 2012 (NCDC, 2012). A large number of those infected are asymptomatic while a significant proportion of infected individuals only develop mild illness (McCormick, 1987). Recently epidemic instances of the disease have been reported in healthcare workers and within health facilities, often resulting in severe morbidities and mortalities (Institute of Lassa fever Research and Control, ILFRC, 2011)

Specifically, Edo state has had the highest number of both suspected and confirmed cases (NCDC, 2012) which underscores the choice of the area of study. These outbreaks have resulted in panic among affected communities and a strain on manpower in health facilities where these patients are first managed or subsequently referred. Often times, patients with febrile illness report first at a primary care centre where treatment may be commenced for the common febrile illnesses such as malaria, respiratory infections and typhoid fever long before the diagnosis is confirmed. Primary care workers in both public and private clinics are often the first set of personnel to handle suspected cases of Lassa fever. When these workers are not adequately equipped with requisite knowledge and materials to handle such cases, transmission of the infection is favoured with avoidable consequences. Also, health workers who work in rural facilities without the supervision of experienced physicians, without laboratories and who are far from referral centres may wrongly manage suspected Lassa fever cases till irreversible complications develop. This is also highlighted against the general background that health care workers are faced with the daunting task of attending to sick individuals even when they are at great risk of being infected themselves.

In fact, in some facilities, more than one regimen may be completed before more investigations are ordered and other professional opinions sought to determine the cause of a persisting illness. By this time, a lot of contacts between the patient and their relatives, other patients and healthcare workers have occurred with epidemiological consequences particularly if it is a viral haemorrhagic fever like Lassa fever. The currently available drug for the treatment of Lassa fever, ribavirin is known to be most effective when treatment is commenced within 6 days of illness (McCormick et al, 1986; VHFC, 2012)

Nosocomial transmission of Lassa fever is not uncommon. It has resulted in the painful loss of manpower across many cadres in the health workforce (Fisher-Hoch et al, 1995). In fact, the importance of Lassa fever came to the fore after the infection and death of two nurses in 1969. They got infected while treating locals in the village of Lassa (now in Borno State) of symptoms suggestive of what later became known as Lassa fever (Viral Haemorrhagic Fevers Consortium, VHFC, 2012). The contributing factors to hospital-acquired Lassa infection include poor knowledge of the disease and infection control techniques on the part of the personnel, structural challenges like lack of isolation wards in hospitals, inadequate provision of personal protective equipment (PPE) and lack of screening and confirmatory tests among others. Efforts to curtail nosocomial spread of Lassa fever include wearing protective clothing such as gloves, gowns and face masks; using infection control measures such as complete sterilization of equipment; and isolating infected patients from contact with unprotected persons until the disease has run its course.

Therefore, the key issues here are having a high index of suspicion and the ability to decide on quick referral. These two elements are hinged on knowledge and experience. The objective of this study was to assess the knowledge and investigate the practices of primary care health workers involved in Lassa fever control in endemic Local Government Areas of Edo State (Esan West and Esan Central)

MATERIALS AND METHODS

Area of Study: This study was conducted as a cross-sectional survey among health workers working in primary care facilities (primary health centres and private hospitals) in Esan West and Central Local Government Areas of Edo State, between June and October, 2011. These Local Government Areas (LGAs) were selected from a list of thirteen local Government areas in Edo state, Nigeria, where lassa fever is known to be endemic (Asogun, et al 2012). The area consist of two main towns (Ekpoma and Irrua) and some villages. Records at the Institute of Lassa Fever Research and Control, Irrua, Edo state indicate that they have the highest number of cases reported each year in the five years prior to this study (Institute of Lassa Fever Research and Control, ILFRC, 2011).

Ethical considerations: Ethical clearance for this study was provided by the Department of Community Health, Ambrose Alli University, Ekpoma. Permission to conduct the study was obtained from the Health Departments of both Local Government Councils and from the proprietors of the private hospitals. Individual consent was also obtained from each of the participants and confidentiality maintained. Workers who were on leave or still absent after two visits to the facility were subsequently excluded.

Subjects: All the Primary care centres in the selected LGAs, consisting of 18 Primary Health Centres and 16 private hospitals (Esan Central Local Government Council, 2011; Esan West Local Government Council, 2011) were visited and questionnaires distributed to all the workers who accepted to be part of the study. The study population consisted of nurses, midwives, Community Health Extension Workers (CHEWs), and Community Health Officers (CHOs), which were selected by proportionate stratified simple random sampling based on the population size of each profession that were working in the health facilities as at the time of survey in the ratio 10:8:1. Thus, 122 nurses/midwives, 95 CHEWs and 14 CHOs were enrolled in this survey. Doctors were excluded from this study as they were to be surveyed using different study instruments.

Sample size and its determination: Using the Kish (1965) formula: $n = (z^2pq/d^2)$ for determining adequate sample size and further correcting for population less than 10,000 using $nf = n/1+(n/N)$ (Araoye, 2003), 240 respondents were enrolled for this survey of which 231 questions were correctly filled and returned.

Data collection method, instrument and analysis: Self-administered semi-structured questionnaires were used for data collection. The questionnaires captured information on sociodemographic variables, knowledge and practices regarding Lassa fever. Knowledge of Lassa fever control was assessed using a 10-question scoring system on basic information about the epidemiology and control of the disease. Each question carried a score of 2 and total available score was 20. A score of less than 10 was assessed as poor knowledge; 10-14 was assessed as fair knowledge while a score of ≥ 15 was assessed as good knowledge (Box 1).

Statistical analysis: Data from this survey were entered into the SPSS version 17.0 data sheet and then analysed. Statistical tests using the Chi square were done at a confidence level of 95%.

Box 1: Assessment of knowledge of Lassa fever

SN	QUESTION	MAXIMUM SCORE
1.	What agent causes Lassa fever?	2
2.	What vector transmits Lassa fever?	2
3.	In what communities in Nigeria is the disease common?	2
4.	In what ways can Lassa fever be transmitted?	2
5.	What groups of people are at risk of contracting the infection?	2
6.	What are the factors that encourage the spread of Lassa fever?	2
7.	What are the common symptoms of Lassa fever?	2
8.	What common complications can result from Lassa fever infection?	2
9.	What is the drug treatment for Lassa fever?	2
10.	What special care is required for Lassa fever patients?	2
TOTAL		20

RESULTS

Health workers from primary health centres constituted the greater part (74.0%) of the respondents while others were from private clinics and hospitals; majority of them were females (76.2%) and nurses/midwives made up 52.8% of the study population (Table 1). The mean age of respondents was 31.2 ± 7.5 years.

There was 100% awareness of Lassa fever. The most common source of information about Lassa fever was from the mass media- television, radio and print media (58.8%); this was followed by continuing professional education (22.5%) while the least source (10.4%) was from colleagues (Table 2). Majority of health workers interviewed in this survey had a good knowledge about Lassa fever infection (77.9%) while a small proportion (9.1%) of them had poor knowledge (Table 2).

Nurses/midwives (80.3%) had slightly higher knowledge than CHEWs (75.9%) and CHOs (71.4%) while CHOs had poor knowledge (28.6%) than the others, with nurses/midwives having the least knowledge (1.3%) followed by the CHEWs (9.5%). This is not statistically significant, $p > 0.05$ (Table 3). More respondents in private hospital (90%) had good knowledge about Lassa fever control than their colleagues in primary health centres (PHC) (73.7%) while more respondents in the PHCs had poor knowledge (11.1%) than their counterparts in the private hospitals (3.3%). This difference is statistically significant ($X^2 = 6.97$, $df = 2$, $p = 0.03$); (Table 4).

The commonest control measures practiced by health workers in this survey were single use of syringes and needles (77.7%) and sterilization of equipment (57.6%) while the least mentioned were barrier-nursing (13.0%) and hand washing (16.9%); (Table 5). About half of respondents (49.4%) claimed to have participated in a health campaign on Lassa fever in one way or the other.

Table 1: Sociodemographic variables

Variable	Frequency	Percentage
Age (Years)		
15-24	68	29.4
25-34	79	34.2
35-44	72	31.2
45-54	12	5.2
Local Govt. Area		
Esan West	130	56.3
Esan Central	101	43.7
Sex		
Female	176	76.2
Male	55	23.8
Type Of Facility		
PHC	171	74.0
Private Hosp./Clinic	60	23.8
Designation		
Nurse/Midwife	122	52.8
CHEW	95	41.1
CHO	14	6.1
N = 231; Mean age = 31.2±7.5 years.		

Table 2: Knowledge about Lassa fever

Variable	Frequency	Percentage
Level of knowledge about Lassa fever		
Poor knowledge	21	9.1
Fair knowledge	30	13.0
Good knowledge	180	77.9

Table 3: Association between knowledge of Lassa fever and designation of health workers

Level of Knowledge	Designation						TOTAL		Statistics
	CHEW n=95		CHO n=14		Nurse/Midwife n=122		Freq	%	
	Freq	%	Freq	%	Freq	%			
Good	72	75.9	10	71.4	98	80.3	180	77.9	$\chi^2 = 8.986$ $p = 0.059$
Fair	14	14.7	0	0.0	16	13.1	30	13.0	
Poor	9	9.5	4	28.6	8	1.3	21	9.1	
TOTAL	95	100.0	14	100.0	122	100.0	231	100.0	

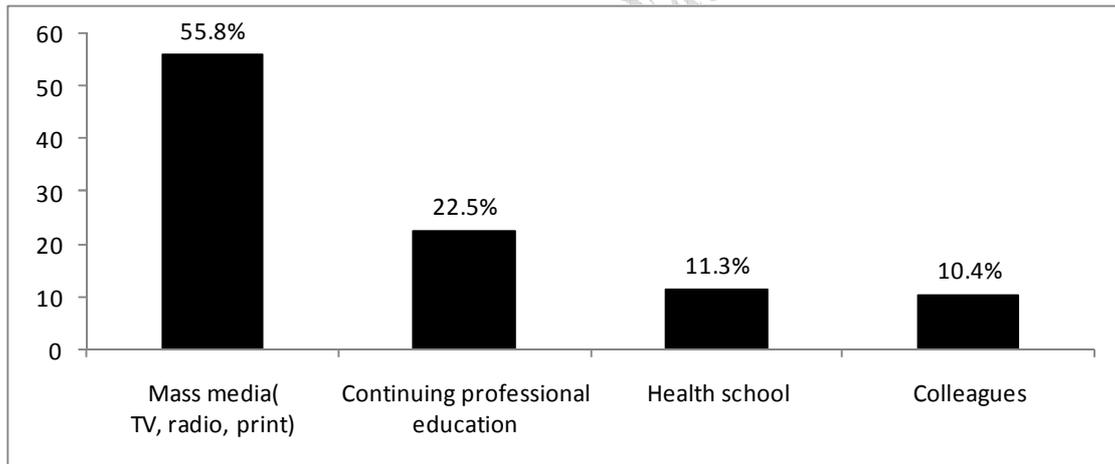


Figure 1: Sources of information on Lassa fever

Table 4: Association between knowledge of Lassa fever and type of health facility

Level of Knowledge	Type of facility				TOTAL		Statistics
	PHC n=171		Private Hospital/ Clinic n=60		N= 231		
	Freq	%	Freq	%	Freq	%	
Good	126	73.7	54	90.0	180	77.9	Df=2 $\chi^2=6.97$ p=0.03
Fair	26	15.2	4	6.7	30	13.0	
Poor	19	11.1	2	3.3	21	9.1	
TOTAL	171	100.0	60	100.0	231	100.0	

Table 5: Identification of control measures relevant to the nosocomial transmission of Lassa fever

Control measures	N = 231	
	Frequency	%
Single use of syringes	180	77.7
Sterilization of equipment	133	57.6
Use of hand gloves	48	20.8
Hand washing	39	16.9
Barrier nursing	30	13.0

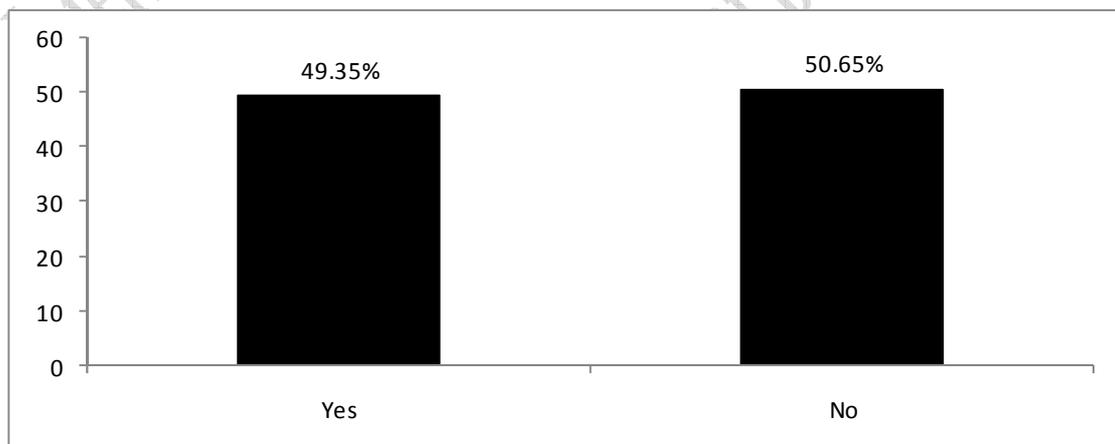


Figure 2: Participation in a health campaign on Lassa fever.

DISCUSSION

The results indicate that majority (74%) of the participants are in the primary health centre and that majority are females (76.2%) (Table 1). Usually, government facilities employ more personnel than privately-owned facilities and over 70% of health workers are nurse/midwives, while over 80% of these are females (Africa Health Workforce Observatory, 2008) as reflected in this study.

Also, about 77.9% of participants had good knowledge about Lassa fever (Table 2), this finding is different from that in a study done in Kenema, Sierra Leone in which there was a less than average level of knowledge (Richmond and Bagloe, 2003). However, it is to be noted that the Kenema study was done in the lay community while this survey was done among health workers who invariably possess better knowledge about health issues. The high level of knowledge among health workers is commendable and efforts should be made to reinforce knowledge about communicable diseases among health personnel. This high level of knowledge did not translate into good practices such as barrier nursing and hand washing (Table 5). The Kenema study (Richmond and Bagloe, 2003) identified similar gaps. Lack of enabling environment such as the availability of isolation wards or bays, personal protective equipment and hand washing materials are largely responsible for this disparity between knowledge and practice. It is important for health care workers to be grounded in the basics of Lassa fever control and for them to be provided with the enabling environment, necessary equipments and materials to mitigate the often avoidable nosocomial transmission of the disease.

Indeed, the observed role of the media suggests that the media remains a veritable means of disseminating information about health and health-related events although bias of perception may result (Young et al., 2008; Wilson et al, 2004). Television, radio, newspapers and magazines have been very useful in disseminating information about many diseases of public health importance such as tuberculosis, HIV/AIDS, avian influenza and malaria over the years. This serves lay persons and the public well. But for an epidemic- prone disease like Lassa fever, it is not enough for health workers to rely on the media for awareness and basic knowledge relevant to its control. This underscores the need for continuous and consistent training and retraining of health care personnel on emerging and reemerging diseases of public health importance. It is also notable that poor manpower development and distribution has been identified severally as one of the most significant challenges of healthcare in developing countries (Anyangwe and Mtonga, 2007). There are, however, some significant efforts at various levels to stem the tide (Heller et al., 2007).

Our attention is also drawn to the observation that many Primary Health Care Centres, especially in the rural areas are headed by nurses, midwives, community health officers and community health extension workers, and that these centres are usually without functional laboratories. In endemic zones for Lassa fever, a high index of suspicion is important in the management of febrile illnesses. At present in Nigeria, only few centres have confirmatory diagnostic tools for Lassa fever. For example, the availability of Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) machine in the Institute of Lassa Fever Research and Control in Irrua Specialist Teaching Hospital, in Edo State has resulted in samples of suspected Lassa fever patients being sent from as far away as Taraba, Gombe, and Benue States (ILFRC, 2011).

However, there was no significant association between level of knowledge and the designation of the health workers, though nurses/midwives had the highest proportion of those with good knowledge while the community health officers had the highest proportion of those with poor knowledge (Table 3). Nurses and midwives are exposed to more advanced curriculum both in school and in in-service trainings. On the other hand, there was a statistically significant association between the type of health facility and level of knowledge about Lassa fever; the respondents in private hospitals or clinic had the higher proportion of good knowledge (Table 4). This may be due to the fact that the private hospitals had mostly nurses and midwives, and not necessarily because of the type of facility.

Furthermore, this study found that only 13.0% and 16.9% of respondents identified and practiced barrier-nursing and hand washing respectively as measures to prevent nosocomial transmission of Lassa fever (Table 5). Isolation of cases (suspected or confirmed) is critical to the management of Lassa fever. It is standard practice to isolate VHF patients whether they are suspected or confirmed, and to take extra care in ensuring universal precautions of using PPE and regular hand washing (CDC, 2003). A very low proportion of respondents practiced these control measures, an observation that is rather worrisome.

Generally, health campaigns and awareness programmes are important means of communicating health information, reminding and thus reinforcing existing knowledge. Health education activities encourage behaviour change (Eggar

et al, 2005) and are particularly important in the control of infectious diseases. Though these are usually targeted at the lay audience, they may also be useful to health workers. This study found that almost 50% of respondents claimed to have participated in Lassa fever campaigns (Figure 2), a practice which is expected to have reinforced their knowledge about the disease. However, the low proportion of those that practice important control measures (Table 5) indicate that more specific efforts at enhancing control practices among health workers will be required to make the desired impact.

Conclusively, our findings distinctively showed that there was a high level of awareness and knowledge of Lassa fever control among health workers, although the practice of simple control measures was poor. We therefore recommend that health authorities such as the National Primary Health Care Development Agency and State Ministries of Health should, on a regular basis, organise practice-oriented training programmes for health workers on infectious disease control.

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REFERENCES

- Africa Health Workforce Observatory AHWO, (2008): Human resources for health country profile, Nigeria.
- Anyangwe, S.C. and Mtonga, C. (2007): Inequities in the global health workforce: the greatest impediment to health in sub-Saharan Africa. *Int. J. Environ. Res. Public Health*; 4(2): 93 - 100.
- Anyanwu, L.C. and Nwaopara, A.O. (2005): The deadly Lassa fever. Benin: Ochodo Nigerian Ventures.
- Araoye, M.O. (2003): Research methodology with statistics for health and social sciences. Ilorin: Nathadex Publishers.
- Asogun, D.A., Adomeh, D.I., Ehimuan, J., Odia, I., Hass, M., Gabbriel, M., Olschlager, S., Becker-Ziaja, B., Folarin, O., Phelan, E., Ehiane, P.E., Ifeh, V.E., Uyigwe, E.A., Oladapo Y.T., Muobonam E.B., Osunde, O., Dongo, A., Okokhere, P.O., Okogbenin, S.A., Momoh, M., Alikah, S.O., Akhuemokhan, O.C., Imomeh, P., Odike, M.A., Gire, S., Andersen, K., Sabeti, P.C., Happi, C.T., Akpede, G.O. Gunther, S. (2012). Molecular Diagnostics for Lassa Fever at Irrua Specialist Teaching Hospital, Nigeria: Lessons Learnt from Two Years of Laboratory Operation. *PLoS Negl. Trop. Dis.*; 6(9): e1839.
- Center for Disease Control and Prevention, CDC (2003): Infection Control for Viral Haemorrhagic Fevers In the African Health Care Setting. Available online at www.cdc.gov Accessed 7th May, 2012.
- Centre for Disease Control and Prevention, CDC (2004): Imported Lassa fever. *Morbidity and Mortality Weekly Report*; 53(38): 894-7.
- Department of Primary Health Care, Esan Central Local Government Council (2011): Health facilities in Esan Central LGA.
- Department of Health, Esan West Local Government Council (2011): Primary health centres in Esan West LGA.
- Egger, G., Spark, R. and Donovan, R. (2005): Health promotion: strategies and methods. 2nd ed. Sydney: McGraw Hill.
- Federal Ministry of Health (FMOH), Nigeria (2005): National policy on integrated disease surveillance and response(IDSR). Abuja: FMOH.
- Federal Ministry of Health, Nigeria (2008): What you need to know about Lassa fever pp.4, 9.

Federal Ministry of Health (FMOH), Nigeria (2009): National technical guidelines for integrated disease surveillance and response (IDSR). Abuja: FMOH.

Fisher-Hoch, S.P., Perez-Oronoz, G., Tomori, O., Nasidi, A., Perez-Oronoz, G.I., Fakile, Y., Hutwagner, L. and McCormick, J.B. (1995): Review of cases of nosocomial Lassa fever in Nigeria: the high price of poor medical practice. *BMJ*; 311: 857

Heller, F.R., Chongsuvivatwong, V., Hailegeorgios, S., Dada, J., Torun, P., Madhok, R. and Sandars, J. (2007): Capacity-building for public health. *Bulletin of the World Health Organization*; 85 (12): 901-980.

Institute of Lassa Fever Research and Control (ILFRC), Irrua Specialist Teaching Hospital, Irrua (2011): Surveillance data.

Kernéis, S., Koivogui, L., Magassouba, N., Koulemou, K., Lewis, R., Aplogan, A., Grais, R.F., Guerin, P.J. and Fichet-Calvet, E. (2009). Prevalence and risk factors of Lassa seropositivity in inhabitants of the forest region of Guinea: a cross-sectional study. *PLoS Negl Trop Dis.*; 3(11): e548.

Kish, L. (1965): Survey sampling. New York: John Wiley and Sons, Inc.

McCormick, J.B., King, I.J., Webb, P.A., Scribner, C.L., Craven, R.B., Johnson, K.M., Elliott, L.H. and Belmont-Williams, R. (1986). Lassa fever: effective therapy with ribavirin. *N Engl J Med.*; 2;314(1):20-6

McCormick, J.B. (1987). Epidemiology and control of Lassa fever. *Curr. Top. Microbiol. Immunol.*; 134: 69 -78.

McCormick, J.B. (1999). Lassa fever. In: Saluzzo JF, Dodet B. Editors. Emergence and control of rodent-borne viral diseases. Elsevier; 177–195.

Monath, T.P., Newhouse, V.F., Kemp, G.E., Setzer, H.W. and Cacciapuoti, A. (1974). Lassa virus isolation from *Mastomys natalensis* rodents during an epidemic in Sierra Leone. *Science*; 185: 263 -5.

Nigeria Center for Disease Control, NCDC (2012): Weekly epidemiological report, WER-Nigeria; 3 (Vol. 2: No.9)

Ogbu, O., Ajuluchukwu, E. and Uneke, C.J. (2007): Lassa fever in West Africa sub region: an overview. *J. Vect. Borne Dis.*; 44 (March) 1-11.

Richmond, K. and Bagloe, D.J. (2003). Lassa fever: epidemiology, clinical features, and social consequences. *BMJ*; 327:1271.

Tomori, O., Fabiyi, A., Sorungbe, A., Smith, A. and McCormick, J.B. (1988). Viral hemorrhagic fever antibodies in Nigerian populations. *Am. J. Trop. Med. Hyg.*; 38: 407–10.

Viral Hemorrhagic Fevers Consortium, VHFC (2012). Lassa fever. Available online at www.vhfc.org. Accessed 13th March, 2012.

Wilson, K., Code, C., Dornan, C., Ahmad, N. and Hébert, P. (2004). The reporting of theoretical health risks by the media: Canadian newspaper reporting of potential blood transmission of Creutzfeldt-Jakob disease. *BMC Publ Health*. 15: 4(1): 1471-24.

Young, E.M., Norman, R.G. and Humphreys, R.K. (2008). Medicine in the Popular Press: The Influence of the Media on Perceptions of Disease. *PLoS ONE*; 3(10): e3552.

AUTHOR(S) CONTRIBUTION

Aigbiremolen AO, Abejegah C and Asogun AD designed the study. Aigbiremolen AO and Eguavoen OL participated in the data collection and editing. Aigbiremolen AO, Abah SO, Awunor NS and Duru CB worked on the analysis and the initial draft copy. Abejegah C, Asogun AD, Abah SO and Aigbiremolen AO wrote the final copy.