Original Article

Awareness of Lassa Fever in a Rural Community in South West Nigeria

Olayinka Stephen Ilesanmi[*1, 2], Bridget Omotoso[2], Faith Osaretin Alele[1], Peter Adewuyi[2]

[1] Department of Community Health, Federal Medical Centre, Owo, Ondo State, Nigeria

[2] Nigeria Field Epidemiology and Laboratory Training Programme, Abuja Nigeria

Received: 2015/2/6 **Accepted:** 2015/6/14

Abstract

Background: Lassa fever is an acute, virulent viral haemorrhagic illness with high morbidity and mortality rates. Its awareness remain low in sub urban or rural community. This study was carried out to assess the awareness of Lassa fever of a rural community in the south western part of Nigeria.

Materials and Methods: A descriptive cross sectional study of 122 respondents prior to a sensitization seminar on Lassa fever was carried out at Ijebu– Owo, Owo in Ondo State. Interviewer guided questionnaire was used to collect information and analysed with SPSS version 21. Descriptive statistics were done and frequencies and proportions were used to summarize variables of interest. Association between socio-demographic characteristics and awareness were explored using chi square. Level of significance was set at 5%.

Results: The mean age of the respondents was 54.5±19.2years. Of the 122 respondents, 50.8% were males, three out of four (73.8%) were married, and 87.7% had secondary education and below. Those who had previously heard about Lassa fever were 17.2%. In all 7(46.7%) who had tertiary education had previously heard about Lassa fever compared to 14(13.1%) respondents who had secondary education and below (p=0.001)

Conclusion: The study showed that there was poor awareness of Lassa fever among members of the community. Thus efforts should be made to increase the awareness of the populace through health campaigns, and to reduce the spread of both the vector and the virus.

Keywords: Lassa fever, Mortality, Environmental hygiene, Health campaign, Awareness

[*] **Corresponding Author; Te**l: +2348032121868, **Email:** ileolasteve@yahoo.co.uk

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

Introduction

Lassa fever is an acute viral haemorrhagic illness caused by Lassa virus, a bisegmented ambisense single-stranded RNA virus that belongs to the family old world *Arenaviridisae spp* [1]. It is an endemic disease in the West African sub-region (Nigeria, Sierra Leone, Guinea, and Liberia) where about 3-5 million individuals are infected yearly [2]. There have been reports of outbreaks in Ghana and Ivory Coast, however, several imported cases with hazardous outcomes have been reported in countries where it is not endemic [3, 4]. The first case was reported in 1969 where two missionary nurses along with some other hospital workers were infected and lost their lives in the process at Lassa Village, Nigeria [5,6].

Multimammate rats (*Mastomys natalensis*) are the natural hosts for the virus, commonly found in rural environment where over 70% of the population resides [7,8], they breed frequently and are widely distributed throughout central, west and east Africa [9]. These rats shed the virus in their excreta and humans are infected by contact with the excreta of the rats or by eating them (they are considered as a delicacy in some areas of the endemic region) or food stuff that has been contaminated with the urine of the rodent [10]. The virus has the capacity of person to person spread or Secondary human spread through contact with body fluids especially if the body fluid contains blood. This occurs during care of sick relatives or among health care personnel in health care setting [11]. The morbidity and mortality associated with the disease can be reduced by careful management of infected persons, proper and timely control measures and in some cases, administration of prophylactic therapy to relatives and health care workers after exposure [12].

Lassa fever presents initially with symptoms and signs that are common with other viral and bacterial infections and indistinguishable from those of febrile illnesses such as typhoid, malaria and other viral haemorrhagic diseases such as Ebola [13]. All age groups are susceptible and it has an incubation period of 6-21days, it is difficult to diagnose clinically but should be suspected in patients who present with fever (>38ºC) that does not respond to antimalarial and antibiotic drugs, sore throat, retrosternal pain, conjunctivitis, bleeding from orifices, petechial haemorrhages, abdominal pains, vomiting and diarrhoea [14]. Multiple organ damage and sensorineural hearing loss are part of the complications associated with Lassa fever [15].

Lassa fever is a highly contagious disease which can result in death. Therefore it is important to report and diagnose any suspected case of Lassa fever through establishment of diagnostic facilities in the disease-endemic zones/regions of the world that can provide rapid molecular testing. This will facilitate early detection of the disease and management of cases as well as contacts that have been exposed to the disease [16, 17]. There have been reported cases of suspected Lassa

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

fever in Nasarawa, Edo, Ondo, Gombe, Taraba, Bauchi, Ebonyi and Plateau States of Nigeria. Edo state reported the highest number of both suspected and confirmed cases. This year alone 350 suspected cases of Lassa fever, 46 lab confirmed 19 deaths (CFR= 5.45%) have been reported in 9 states in Nigeria as at 4th of April 2014 [18]. The creation of awareness about Lassa fever cannot be over-emphasised and it should be considered in every severe febrile illness in these regions of Nigeria [19]. This study therefore set out to assess the level of awareness of Lassa fever among members of a community in a Local Government Area (LGA) in Ondo State. It was also used to plan for Health Education on Lassa fever in the community.

Materials & Methods

The study area is Ijebu- Owo community in Owo, Ondo State, Nigeria. Ijebu-owo is a community located in Owo local government area of Ondo state in south western Nigeria. Teenagers and adult residents who have resided in the area for at least one year were included in the study population. Owo is located at the intersection of roads from Akure, kabba and Benin City. The Local Government Area (LGA) is next to Ose LGA where Lassa fever is endemic in Ondo State. Study population were members of the community. This was a descriptive cross sectional survey conducted among 122 consenting respondents who participated in a free sensitization seminar on Lassa fever and other diseases of public health importance conducted at the Palace of the king of Ijebu-Owo.

Data collection

Data was collected using a semi-structured interviewer administered questionnaire. Section A of the questionnaire contained socio-demographic characteristics of the respondents' their age, sex, marital status and religion. Section B contained knowledge of Lassa fever with questions on methods of Prevention, Symptoms of Lassa fever and Risk factors of Lassa fever.

Data analysis

Information collected from the respondents were entered and analyzed with Statistical Package for Social Sciences version (SPSS) 15 software. Descriptive statistics were done and frequencies and proportions were used to summarize variables of interest. Association between socio-demographic variables and 'ever hearing of Lassa fever?' were explored using chi square. Level of significance was set at 5%.

Ethical consideration

Informed consent was obtained from the respondents. They were made to understand that participation is voluntary and there was no consequence for non-participation. All information obtained was kept confidential.

Results

Figure 1 shows the socio-demographic characteristics of the respondents. The mean age of the respondents was 54.5±19.2 years,

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

about three out of four 90(73.8%). In all, 62(50.8%) were males and 107(87.7%) had secondary education and below. Two-fifth of the respondents were farmers. Other socio-demographic characteristics are as shown in table 1.

Table 1: Socio-demographic Characteristics of Respondents Who attended Sensitization on Lassa fever at Ijebu Owo, Ondo State, June 2014.

Variable	N=122	%
Age Group in Years		
< 45	33	27.0
45-64	50	41.0
65 and above	39	32.0
Sex		
Male	60	49.2
Female	62	50.8
Marital Status		
Married	90	73.8
Others	32	26.2
Highest Level of Education		
Secondary and below	107	87.7
Tertiary	15	12.3
Occupation		
Civil Servant	5	4.1
Farming	32	26.2
Trading	50	41.0
Artisan	15	12.3
Student/Unemployed	20	16.4
Religion		
Christian	92	75.4
Islam	30	24.6

Figure1 shows respondents response to the question ever heard about Lassa fever. Out of the 122 respondents only 21(17.2%) had previously heard of Lassa fever. These respondents were further asked a set of 22 questions regarding the disease

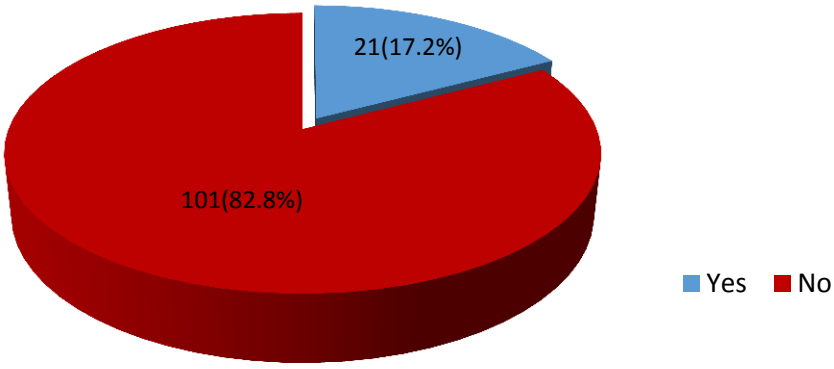


Figure 1: Proportion of respondents who ever heard about Lassa Fever at Ijebu Owo, Ondo State, June 2014

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

Figure 2 shows the source of information among respondents; Mass media were the source of information on Lassa fever for the majority, 12 (57.1%). Other sources included health workers 2 (9.5%), friends 1 (4.8%) and other sources 1 (4.8%). The respondents who could not remember where they heard about Lassa fever were 5(23.8%).

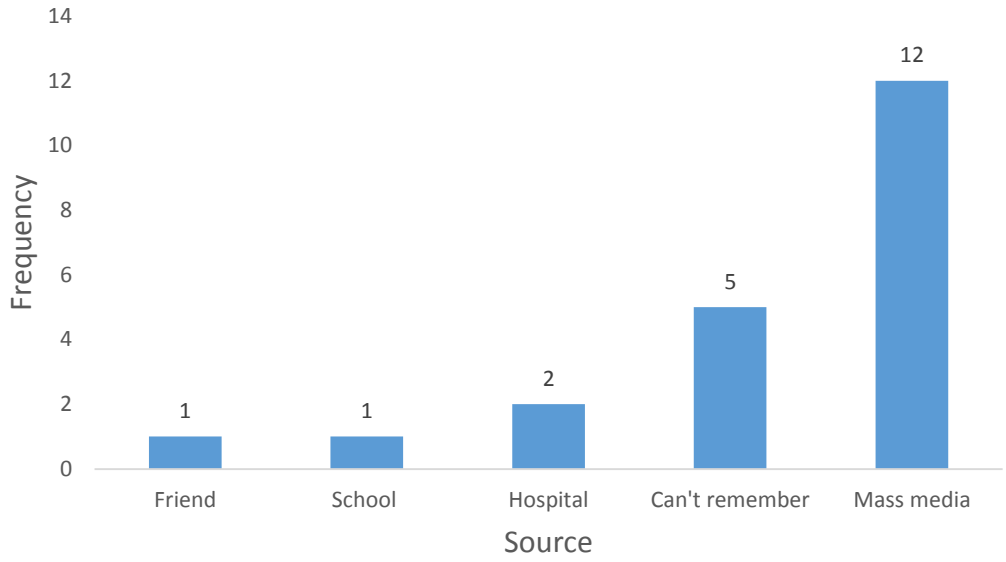


Figure 2: Source where respondents heard about Lassa fever at Ijebu Owo, Ondo State, June, 2014

Table 2 shows the Lassa fever knowledge of the respondents: commonly recognised methods of prevention were proper storage of food by 20(95.2%), clean environment 20(95.2%) and good housing standard 18(85.7%). The least mentioned was avoidance of rodent consumption by 10 (47.6%). Most common symptoms associated with Lassa fever known by respondents was Headache by 18 (85.7%) respondents, body weakness by 17(81.0%) respondents and fever that is unresponsive to antimalarial and antibiotics by 16 (76.2%) respondents, no respondents mentioned spontaneous abortion as a symptom. Common risk factors for the disease recognised by the respondents includes: uncovered stored food by 16 (76.2%) respondents and spreading of food items on the ground 15(71.4%). Fourteen (66.7%) correctly recognised that eating rodents and improper refuse disposal and dirty environment were also risk factors for the spread of the disease.

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

Table 2: Knowledge of community prevention symptoms and risk factors of Lassa fever at Ijebu Owo, Ondo State, June 2014

Knowledge Variables	Yes (%)
Methods of Prevention	
Proper Storage of food	20 (95.2)
Clean Environment	20(95.2)
Good Housing Standard	18 (85.7)
Avoiding Rat Consumption	10(47.6)
Symptoms of Lassa Fever	
Fever that is unresponsive to antimalarial and antibiotics	16(76.2)
Headache	18(85.7)
Sore-throat	4(19.0)
Diarrhoea	4(19.0)
Vomiting	10(47.6)
Bleeding from orifices	3(14.3)
Body weakness	17(81.0)
Cough	9(42.9)
Chest Pain	9(42.9)
Abortions in pregnant women	0(0.0)
Facial swelling	2(9.5)
Risk Factors	
All Age groups	13(61.9)
Living in rural environment (villages)	6(28.6)
Close contacts with sick persons	1(4.8)
Uncovered stored food	16(76.2)
Eating rodents	14(66.7)
Improper refuse disposal and dirty environment	14(66.7)
Spreading of food items on the ground	15(71.4)

Table 3 shows the association between Socio-demographic characteristics and ever heard about Lassa fever at Ijebu Owo, Ondo State, June 2014**.** In all 7 (46.7%) of respondents who had tertiary education had heard of Lassa fever compared to 14(13.1%) of respondents who had secondary level of education and below (p=0.001).

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

Table 3: Association between Socio-demographic characteristics and Ever heard about Lassa fever at Ijebu Owo, Ondo State, June 2014

Variables	Ever Heard of Lassa Fever		Chi Square	P value
	Yes (%)	No (%)		
Age in Years				
< 45	7(21.2%)	26(78.8%)	3.655	0.161
45-64	11(22.0%)	39(78.0%)		
65 and above	3(7.7%)	36(92.3%)		
Sex				
Male	14(23.3%)	46(76.7%)	3.103	0.078
Female	7(11.3%)	55(88.7%)		
Marital Status				
Married	18(20.0%)	72(80.0%)	1.870	0.171
Others	3(9.4%)	29(90.6%)		
Highest Level of Education				
Secondary and below	14 (13.1%)	93 (86.9%)	10.412	0.001
Tertiary	7(46.7%)	8(53.3%)		
Occupation				
Civil Servant	2(40.0%)	3(60.0%)	7.382	0.117
Farming	4(12.5%)	28(87.5%)		
Trading	5(10.0%)	45(90.0)		
Artisan	4(26.7%)	11(73.3)		
Student/Unemployed	6(30.0%)	14(70.0%)		
Religion				
Christian	15 (16.3%)	77 (83.7%)	0.217	0.641
Islam	6(20.0%)	24(80.0%)		

Discussion

The high virulence, significant mortality and morbidity and non-specific mode of presentation of Lassa fever has made it to become a disease of public health significance not just at the community level but also at the international/global level. It is therefore important that campaigns and counselling should be carried out to create awareness about the disease [20, 21].

In the studied population, the majority (82.2%) of the respondents had not previously heard of Lassa fever. This study was not done among health care workers previous study showed that health care workers had very high level of awareness. In Edo State 95% of studied health workers were aware of Lassa fever [20]. Most of the respondents who were aware of Lassa fever correctly identified that headache, fever that is unresponsive to antimalarial and antibiotics and body weakness as symptoms but failed to recognise spontaneous abortion in pregnant women as a symptom as well. The study conducted among health workers in semi-urban community in Edo state yielded similar results where only few of the workers recognised spontaneous abortion as a symptom of Lassa fever [20].

Good housing standard and clean environment were recognised as part of the methods of preventing and controlling the spread of Lassa fever; this is an effective method to control the vector. Similar studies conducted in Sierra Leone have shown that there is a significant relationship between poor housing quality and

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

external hygiene and rodent burrows [22, 23]. Uncovered stored food and spreading of food items on the ground which can be contaminated either with the feaces or urine of the Multimammate rats (*Mastomys natalensis*) were recognised by most of the respondents in the studied population as risk factors for transmission of Lassa fever. Although rodent consumption which is quite common in these endemic regions as a form of delicacy was recognised as a risk factor for the transmission of Lassa fever however avoidance of its consumption was least mentioned as a method of prevention. It is possible that though the respondents were aware that it is a vector for the transmission of Lassa fever they might find it difficult to stop the consumption because it is considered as a cheap source of meat. A study in Republic of Guinea have shown that rodent infestation was much higher, food was more often stored uncovered and most strikingly, peridomestic rodents were hunted as a protein source by 91.5% of the population [24]. Awareness of Lassa fever was more evident among those who had tertiary level of education in the studied population and the most common source of information among the respondents was the mass media. This is similar to a study conducted in a rural community in Edo state where there was a significant relationship between the level of education of respondents' awareness and knowledge of Lassa fever [25].

Conclusion

The findings of this study shows that there is a low level of awareness and knowledge of Lassa fever among the studied population and there is a need for further health education campaigns to improved environmental hygiene and a modification of practices that promote the spread of Lassa fever.

References

1. Buchmeier MJ, de la Torre JC, Peters CJ. Arenaviridae: The viruses and their replication. Fields Virology, eds Knipe DM, Howley PM (Lippincott Williams & Wilkins, Philadelphia), 5th Ed, 2007:1791-1827.
2. Bowen MD, Rollin PE, Ksiazek TG, et al. Genetic diversity among Lassa virus strains. Journal of Virology. 2000;74:6992–7004.
3. Richmond, JK, Baglole DJ. Lassa fever: epidemiology, clinical features and social consequences. BMJ.2003;327:1271-1275
4. Gunther S, Emmerich P, Laue T, et al. Imported Lassa fever in Germany: molecular characterization of a new Lassa virus strain. Emerging Infectious Disease journal. 2000; 6:466–476.
5. McCormick JB, Webb PA, Krebs JW, et al. A prospective study of the epidemiology and ecology of Lassa fever. The Journal of Infectious Disease. 1987;155(3):437-44.
6. Frame JD, Baldwin JMJ, Gocke DJ, et al. Lassa fever, a new virus disease of man from West Africa. I. Clinical description and pathological findings. The American Journal of Tropical Medicine and Hygiene. 1970;19(4):670-6.

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

7. McCormick JB, Webb PA, Krebs JW, et al. A prospective study of the epidemiology and ecology of Lassa fever. The Journal of Infectious Disease.1987;155:437-44.
8. Kelly JD, Barrie MB, Ross RA, et al. Housing equity for health equity: a rights based approach to the control of Lassa fever in post war Sierra Leone. BMC International Health and Human Rights.2003; 13:2 doi:10.1186/1472- 698X-13-2
9. Healing T, Gopal R. Report on an assessment visit to Sierra Leone, April 12th-30th 2001. London: Merlin, 2001.
10. Keenlyside RA, McCormick JB, Webb PA, et al. Case-control study of Mastomys natalensis and humans in Lassa virus-infected households in Sierra Leone. The American Journal of Tropical Medicine and Hygiene .1983;32: 829-37
11. Fisher-Hoch SP. Lessons from nosocomial viral hemorrhagic fever outbreaks. British Medical Bulletin. 2005;73-74(1):123-137.
12. Weber DJ, Rutala WA. Risks and prevention of nosocomial transmission of rare zoonotic diseases [review]. Clinical Infectious Disease. 2001; 32:446-56.
13. McCormick JB, King IJ, Webb PA, et al. A case-control study of the clinical diagnosis and course of Lassa fever.The Journal of Infectious Disease. 1987; 155: 445-55.
14. Bausch DG, Demby AH, Coulibaly M, et al. Lassa fever in Guinea: I. Epidemiology of human disease and clinical observations. Vector Borne and Zoonotic Disease. 2001;1(4):269-281.
15. Ibekwe TS, Okokhere PO, Asogun D, et al. Early-onset sensorineural hearing loss in Lassa fever. European Archives of otorhinolaryngology. 2011; 268(2):197-201.
16. Inegbenebor U, Okosun J, Inegbenebor J. Prevention of Lassa fever in Nigeria. Transaction of Royal Society of Tropical Medicine and Hygiene. 2010;104(1):51-54.
17. Hadi CM, Goba A, Khan SH, et al. Ribavirin for Lassa fever postexposure prophylaxis. Emergency Infectious Disease. 2010;16(12):2009–2010.
18. Nigeria center for disease control, NCDC 2014: Weekly Epidemiology Report, WER-Nigeria, 4th. 2014;4(13).
19. Bonner PC, Schmidt WP, Belmain SR, et al. Poor housing quality increases risk of rodent infestation and Lassa fever in refugee camps of Sierra Leone. The American Journal of Tropical Medicine and Hygiene. 2007;**77**(1)**:**169–175.
20. Tobin EA, Asogun DA, Isah EC,et al. Assessment of knowledge and attitude towards Lassa fever among Primary care providers in an endemic suburban community of Edo state: implications for control. Journal of Medicine and Medical Sciences. 2013;4(8):311-318.
21. Titus I. Lassa fever: the challenges of curtailing a deadly disease. The Pan African Medical Journal. 2012;11(55) PMCID: PMC3343683
22. Moses L, Kargbo K, Koninga J, et al. Household predictors of abundance of the Lassa virus reservoir, Mastomys natalensis, in the Eastern Province of Sierra Leone. Abstract, 58th annual meeting of the American Society of Tropical Medicine and Hygiene. Washington: DC; 2009.
23. Kelly JD, Barrie MB, Ross RA, et al. Housing equity for health equity: a rights-based approach to the control of Lassa fever in post-war Sierra Leone. BMC International Health and Human Rights. 2013,13:2 doi:10.1186/1472-698X-13-2

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]

24. Ter Meulen J, Lukashevich I, Sidibe K, et al. Hunting of peridomestic rodents and consumption of their meat as possible risk factors for rodent-to-human transmission of Lassa virus in the Republic of Guinea. The American Journal of Tropical Medicine and Hygiene. 1996;55(6):661-66
25. Asogun D, Okokhere P, Okogbenin S, et al. Lassa fever awareness and practices in a Nigerian rural community. International Journal of Infectious Diseases March. 2010;14(1):e191-e335

[Downloaded from jhr.ssu.ac.ir on 2026-11-24]