

Knowledge, attitude and preventive measures towards Lassa fever amongst students living in the hostel in a tertiary institution in South South Nigeria

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Abstract

Background: Lassa fever is an acute, viral virulent hemorrhagic fever with high morbidity and mortality rates. It is common in slum communities in Africa where poverty prevails and standard of living is low, overcrowding subsists and rodents often move from house to house, spreading the virus. The purpose of this study was to determine the knowledge, attitude and preventive measures against Lassa fever by students living in the hostel within the current epicenter of the viral infection in Nigeria.

Methods: A descriptive cross-sectional design was utilized for this study and participants were selected using cluster sampling technique with proportional allocation to sample size. Data on knowledge, attitude and preventive measures against Lassa fever by students living in the hostel within the current epicenter of the viral infection in Nigeria were collected with interviewer-administered questionnaire. Chi square test was used to compare categorical data as appropriate and level of significance set at $p < 0.05$

Results: Out of the 242 respondents interviewed, about half of them (55.8%) had good knowledge of Lassa fever. Few of them (2.48%) had good attitude towards Lassa fever while a small proportion (5.79%) had good practice of preventive measure against Lassa fever.

Conclusion: While majority of the students had good knowledge of Lassa fever, most of them had poor attitude and poor practice of prevention of the disease

Keywords: Knowledge, attitude, practice of preventive measures, Lassa fever.

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Introduction

Lassa fever is an acute, viral virulent hemorrhagic fever with high morbidity and mortality rates that was first described in 1969 in the town of Lassa in the North-East of Nigeria [1]. It is caused by a single stranded DNA virus of the family arenaviridae. This virus is transmitted to humans by rats of the specie called *Mastomys natalensis* (the many breasted rat). This *Mastomys natalensis*; the multimammate rat, is the natural reservoir of the virus [2]. It is an endemic disease in the West African sub region (Nigeria, Sierra Leone, Guinea and Liberia) where about 3-5 million people are affected yearly [3]. There have been reports of outbreaks in Ghana and Ivory Coast, however, several imported cases have been reported in countries where it is not endemic [4]. Lassa fever, a

viral haemorrhagic fever is an extremely virulent and often fatal infectious disease [5].

Three-disease endemic zones exist within Nigeria: the north-eastern region around Lassa, the central region around Jos and the southern region around Onitsha [6]. This rat sheds the virus in its urine and faeces which when dried, can be aerosolized as dust or directly contaminating human food with its saliva and or excreta [7]. The infection could be airborne when sweeping the droppings of the rodents; the particles of such droppings could be inhaled thereby leading to infection [8]. In slum communities where poverty prevails and standards of living are low, overcrowding subsists and rodents often move from house to house, spreading the virus. Many studies have reported poor community awareness and knowledge of Lassa fever [2]. The reason for this lack of knowledge is mainly

illiteracy and the failure of the health and government agencies to properly educate the public on the disease. Health workers, health institutions, and the government have to do more in educating the public [9]. Lassa fever infection has an incubation period of 14 to 21 days. The disease can present like malaria continuing to compound the number of morbidities and mortalities. This can be prevented if students are educated to always report to a health facility on notice of any minor or major symptom of the disease, while doctors are encouraged to have a high index of suspicion of the disease especially, in endemic areas and when there is an outbreak of the disease. This high index of suspicion helps to begin treatment early and to also quickly consider contacts for tracing, while simultaneously reducing the number of contacts. Person to person transmission especially infection of medical personnel can be minimized if standard precaution is practiced at all times. To protect other patients in the wards, Lassa fever patients should be managed in isolation until they are no longer infectious. In the epidemics of 2016, 19 states out of the 36 states were affected, including the federal capital territory (Abuja) of the country with available figures as at the 8th of February 2016, showing that 175 people have been affected by Lassa fever with 101 people dead [10].

The objective of this study therefore was to determine the knowledge, attitude and preventive measures against Lassa fever by students living in the hostel within the current epicenter of the viral infection in Nigeria.

Methods

A descriptive cross-sectional design was utilized for this study which was conducted among students residing at the hostels in Ambrose Alli University Ekpoma which is in the region with highest burden of Lassa fever in the country. The Cochran formula for descriptive cross-sectional study was used to determine the minimum required sample of 242 [11]. All students who reside in the hostel were eligible for this study and a cluster sampling method with proportional allocation to size was used to select the participants. Each hostel served as cluster and participants were recruited from each hostel using proportional allocation to size by dividing the total number of students in all the hostels by the total number of students in each of the hostel multiplied by the sample size. Having obtained the required number of students in each hostel, each respondent was selected by simple random sampling using table of random numbers. Data were collected with an interviewer-administered questionnaire which was validated by a group of experts in the Department of Community Medicine in Irrua Specialist Teaching Hospital. The questionnaire was in four sections. Section one was on socio-demographic characteristics such as age, sex, Ethnicity and religion. Section two

was on knowledge of Lassa fever such as 'what is the vector that transmit Lassa fever virus. Section three was on attitude towards Lassa fever using Likert scale such as Lassa fever is not different from malaria fever and should not be given special attention. Strongly agree, agree, disagree, strongly disagree. Section four on measures to prevent Lassa fever such as 'food to be eaten raw such as garri and fried groundnut should be placed in covered containers free of rat access and all possible entrances of rats into the house should be covered'. Analysis was done with the aid of IBM-SPSS version 21.0 software. Results were presented in tables, frequencies and charts. Test for statistical association was done using chi-square at 95% significance level. Each correct question on knowledge, attitude and practice of preventive measures against Lassa fever were scored one point while each wrong question was scored zero. Aggregate score of 0-49.9% were regarded as poor knowledge and poor attitude while aggregate score of 50-100% was regarded as good knowledge and good attitude respectively. With regards to practice of preventive measures against Lassa fever, aggregate score of 0-49.9%, 50-74.9% and 75-100% were regarded as poor practice, fair practice and good practice of preventive measures against Lassa fever.

Results

More (55.8%) of the respondents were with the age group 20 – 25 years with their ages range from 19 – 34 years, with a mean age of 24.50 and a standard deviation of 3.21. About two third were males. Majority of the respondents were Christians. More of the respondents were in their second year (200Level) of study, followed by 300level and 400level respectively. (Table 1).

A few of the respondents (1.7%) got all the questions on knowledge of Lassa fever correctly. Eighty seven percent of them got at least 75% of the questions correctly while 67.4% of them got between 50 and 74.9% of the questions correctly (Table 2).

More (41.3%) of the respondents first heard of Lassa fever from the mass media (television, radio etc.). Thirty one percent of them (31.0%) heard it from Health Care Workers and 15.3% of them heard it from friends/relatives (Table 3).

A little above half (54.13%) of the respondents had good knowledge of Lassa fever and majority (97.52%) had poor attitude towards Lassa fever prevention. Only a few (5.79%) have good practice of Lassa fever preventive measures.

There was no statistically significant association between knowledge, practice of Lassa fever preventive measures and Socio-demographic characteristics of respondents (Table 4 and Table 5). Also, there was no statistically significant association

between knowledge of respondents and practice of Lassa fever preventive measures (Table 6)

Table 1: Socio-demographic characteristics of respondents

| Variables | Frequency (n=242) | Percent |
|------------------------------|-------------------|---------|
| Age Group* | | |
| < 20 years | 9 | 3.7 |
| 20 – 25 years | 135 | 55.8 |
| 26 – 30 years | 91 | 37.6 |
| > 30 years | 7 | 2.9 |
| Sex | | |
| Male | 150 | 62.0 |
| Female | 92 | 38.0 |
| Ethnicity | | |
| Esan | 100 | 41.3 |
| Bini | 74 | 30.6 |
| Etsako | 43 | 17.8 |
| Owan | 21 | 8.7 |
| Others* | 4 | 1.7 |
| Religion | | |
| Christianity | 221 | 91.3 |
| Islam | 20 | 8.3 |
| ATR** | 1 | 0.4 |
| Year of study (Level) | | |
| 100 Level | 17 | 7.0 |
| 200 Level | 97 | 40.1 |
| 300 Level | 81 | 33.5 |
| 400 Level | 46 | 19.0 |
| 500 Level | 1 | 0.4 |
| Faculty | | |
| Management Sciences | 89 | 36.8 |
| Social Sciences | 20 | 8.3 |
| Environmental Sciences | 18 | 7.4 |
| Natural Sciences | 26 | 10.7 |
| Engineering | 37 | 15.3 |
| Arts | 19 | 7.9 |
| Law | 28 | 11.6 |
| Others*** | 5 | 2.0 |

*Yoruba: 1(0.41%); Efik: 2(0.83%); Urobo: 1(0.41%) **ATR: African Traditional Religion ***Agric:1(0.35%); Education:4 (1.65%)

Discussion

Findings from this study showed that about half of the respondents 135 (55.8%) were within the age group of 20-25 years of age. This is a youthful age with energy, zeal and productivity. Most people in this age group are usually influential in the homes and society and play a major role in the building of the society. In the event that they are ignorant and involve in social vices, then the community is doomed. More respondents in this study were from the management sciences and in the second year in the University. The reason for this could be that there were more population of students in the management sciences as compared to other faculties. Almost all of the respondents in this study have previously heard about Lassa fever. Also, about half of the respondents had good knowledge of Lassa fever. This is in keeping with a previous study carried out in Lafia where 87% of the respondents were aware

of Lassa fever disease [12]. In a related study, participants' knowledge of the epidemiology, causes, transmission as well as prevention and control of Lassa fever were poor knowledge related to each

Table 2: Respondents' knowledge of Lassa fever

| Questions | Correct response (%) n = 242 |
|---|---------------------------------|
| 1. Have you heard of Lassa fever before | 239 (98.8) |
| 2. If yes, what causes Lassa fever? | 50 (20.7) |
| 3. Do you know how Lassa fever spread? | 240 (99.2) |
| 4. What is the vector that transmit the disease | 120 (49.6) |
| 5. Lassa fever is transmitted through what means? | 164 (67.8) |
| Food/water contaminated with urine/faeces of the vector | 11 (4.5) |
| Respiratory droplets from infected persons | 28 (11.6) |
| Urine of infected persons | 23 (9.5) |
| Faeces/semen/vaginal fluid/sweat and other secretions of infected persons | 19 (7.9) |
| Vomitus of infected persons. | 46 (19.0) |
| 6. What is the incubation period of Lassa fever? | 15 (6.2) |
| 7. The following are symptoms/Signs of Lassa fever? | 4 (1.7) |
| Fever | 4 (1.7) |
| Headache | 8 (3.3) |
| Sore throat | 183 (75.6) |
| Body weakness | 35 (14.5) |
| Vomiting/Diarrhea | 162 (66.9) |
| Bleeding | 34 (14.0) |
| 8. The following are true of Lassa fever? | 69 (28.5) |
| Fatal/deadly illness | 8 (3.3) |
| Acute illness | 180 (74.4) |
| Highly communicable/infectious disease | |
| Chronic debilitating illness | |
| 9. Who are those commonly affected? | |

component (80.6% for occurrence, 89.5% for causes, 83.0% for disease transmission, and 86.1% for prevention and control) [13]. This is however at variant with another study done in Nigeria where the knowledge of Lassa fever among respondents were very poor [14].

However, despite the fact that about half of the respondents had good knowledge of Lassa fever, most of them (97.52%) had poor attitude towards Lassa

Table 3: Source of information of respondents

| Source of information | Frequency (n=242) | Percent (%) |
|---------------------------------------|-------------------|-------------|
| Health care worker | 75 | 31.0 |
| Mass media | 100 | 41.3 |
| Friends/Relatives | 37 | 15.3 |
| School Orientation programs | 22 | 9.1 |
| Medical students orientation programs | 8 | 3.3 |

Table 4: Knowledge and socio-demographic characteristics of respondents

| Demographic variables | Knowledge of respondents | | |
|---------------------------------------|--------------------------|------------|-----------|
| | Good (%) | Poor (%) | Total (%) |
| Age Group | | | |
| < 20 years | 5 (55.6) | 4 (44.4) | 9 (100) |
| 20 – 25 years | 79 (58.5) | 56 (41.5) | 135 (100) |
| 26 – 30 years | 44 (48.4) | 47 (51.6) | 91 (100) |
| > 30 years | 3 (42.9) | 4 (57.1) | 7 (100) |
| Total | 111 (45.9) | 131 (54.1) | 242 (100) |
| Fisher exact: 2.737; P=0.441 | | | |
| Sex | | | |
| Male | 87 (58.0) | 63 (42.0) | 150 (100) |
| Female | 44 (47.8) | 48 (51.2) | 92 (100) |
| Total | 131 (54.1) | 111 (45.9) | 242 (100) |
| Chi-Square: 2.377; P=0.123 | | | |
| Year of study (Level) | | | |
| 100Level | 6 (35.3) | 11 (64.7) | 17 (100) |
| 200Level | 55 (56.7) | 42 (43.3) | 97 (100) |
| 300Level | 46 (56.8) | 35 (43.2) | 81 (100) |
| 400Level | 24 (52.2) | 22 (47.8) | 46 (100) |
| Total | 131 (54.1) | 111 (45.9) | 242 (100) |
| Chi-Square: 4.169; P=0.384 | | | |
| Faculty | | | |
| Management Sciences | 53 (59.6) | 36 (40.4) | 89 (100) |
| Natural Sciences | 15 (57.7) | 11 (42.3) | 26 (100) |
| Engineering | 20 (54.1) | 17 (45.9) | 37 (100) |
| Law | 14 (50.0) | 14 (50.0) | 28 (100) |
| Environmental Sciences | 10 (95.6) | 8 (44.4) | 18 (100) |
| Arts | 10 (52.6) | 9 (47.4) | 19 (100) |
| Agric | 1 (33.3) | 2 (66.7) | 3 (100) |
| Social Sciences | 6 (30.0) | 14 (70.0) | 20 (100) |
| Education | 2 (100) | 0 (0.0) | 2 (100) |
| Total | 131 (54.1) | 111 (45.9) | 242 (100) |
| Fisher's exact: 8.025; P=0.424 | | | |

Table 5: Practice of Lassa fever preventive measures and socio-demographic characteristics of respondents

| Age Group | Practice of Lassa fever preventive measures | | | |
|--|---|------------|----------|-----------|
| | Good (%) | Fair (%) | Poor (%) | Total (%) |
| < 20 years | 2 (22.2) | 7 (77.8) | 0 (0.0) | 9 (100) |
| 20 – 25 years | 6 (4.4) | 125 (92.6) | 4 (3.0) | 135 (100) |
| 26 – 30 years | 6 (6.6) | 84 (92.3) | 1 (1.1) | 91 (100) |
| > 30 years | 0 (0.0) | 7 (100) | 0 (0.0) | 7 (100) |
| Total | 14 (5.8) | 223 (92.1) | 5 (2.1) | 242 (100) |
| Fisher's exact: 5.841; P=0.387 | | | | |
| Sex | | | | |
| Males | 9 (6.0) | 137 (91.3) | 4 (2.7) | 150 (100) |
| Females | 5 (5.4) | 86 (93.5) | 1 (1.1) | 92 (100) |
| Total | 14 (5.8) | 223 (92.1) | 5 (2.1) | 242 (100) |
| Fisher's exact: 0.620; P=0.853 | | | | |
| Year of Study | | | | |
| 100level | 0 (0.0) | 17 (100) | 0 (0.0) | 17 (100) |
| 200level | 3 (3.1) | 93 (95.9) | 1 (1.0) | 97 (100) |
| 300level | 8 (9.9) | 72 (88.9) | 1 (1.2) | 81 (100) |
| 400level | 3 (6.5) | 40 (87.0) | 3 (6.5) | 46 (100) |
| 500level | 0 (0.0) | 1 (100) | 0 (0.0) | 1 (100) |
| Total | 14 (5.8) | 223 (92.1) | 5 (2.1) | 242 (100) |
| Fisher's exact: 11.474; P=0.209 | | | | |

Table 5: Practice of Lassa fever preventive measures and socio-demographic characteristics of respondents (continued)

| Faculty | Practice of Lassa fever preventive measures. | | | |
|--|--|------------|---------|-----------|
| | | | | |
| Management Sciences | 9 (10.1) | 78 (87.6) | 2 (2.2) | 89 (100) |
| Natural Sciences | 2 (7.7) | 24 (92.3) | 0 (0.0) | 26 (100) |
| Engineering | 0 (0.0) | 36 (97.3) | 1 (2.7) | 37 (100) |
| Law | 2 (7.1) | 25 (89.3) | 1 (3.6) | 28 (100) |
| Environmental Sciences | 1 (5.6) | 16 (88.9) | 1 (5.6) | 18 (100) |
| Arts | 0 (0.0) | 19 (100) | 0 (0.0) | 19 (100) |
| Agric | 0 (0.0) | 3 (100) | 0 (0.0) | 3 (100) |
| Social Sciences | 0 (0.0) | 20 (0.0) | 0 (0.0) | 20 (100) |
| Education | 0 (0.0) | 2 (100) | 0 (0.0) | 2 (100) |
| Total | 14 (5.8) | 223 (92.1) | 5 (2.1) | 242 (100) |
| Fisher's exact: 13.513; P=0.631 | | | | |

Table 6: Knowledge and practice of Lassa fever preventive measures by respondents

| Knowledge of respondents | Practice of Lassa Fever Preventive Measures | | | |
|--------------------------|---|-------------------|-------------------|-----------|
| | Good practice (%) | Fair practice (%) | Poor practice (%) | Total (%) |
| Good knowledge | 8 (6.1) | 122 (93.1) | 1 (0.8) | 131 (100) |
| Poor knowledge | 6 (5.4) | 101 (91.0) | 4 (3.6%) | 111 (100) |
| Total | 14 (5.8) | 223 (92.1) | 5 (2.1) | 242 (100) |
| Chi-Square: | 2.427; df=2; P=0.297 | | | |

fever. This will expose the students to infection. If the students, do not have a good attitude towards the prevention of Lassa fever such as properly keeping foods, good hand hygiene and closing all crevices and openings into the house, infection to Lassa fever in the highly endemic community where the study was carried out, transmission is inevitable.

In addition, very few of the respondents had good practice of preventive measure towards Lassa fever. Since the attitude and practice of preventive measure is poor in this study, the participants are at a high risk of Lassa fever transmission. This could also explain why the incidence of the disease is on the increase among the student population in the highly endemic communities in the study area.

Conclusion

Though about half of the respondents in this study had good knowledge of Lassa fever, very few of them had positive attitude and their preventive measures were also very poor. Based on the findings from this study, it is recommended that intervention of health education and mobilization be carried out among the student population and the management of the institution must do the needful by ensuring that all crevices and holes leading into the hostel rooms and classes of these students are sealed with immediate effect.

List of abbreviations

None

Declarations

Ethics approval and consent to participate

Not provided

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

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Contribution of Authors

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References

1. Thairu Y and Egenti N. Understanding Lassa Fever virus and diversification of the rodent vector in the tropics. *International Journal of Current Medical Research*. 2015; 4(6): 372-378
2. Kay RJ, Bagloe DJ. Lassa fever; epidemiology, clinical features and social consequences. *BMJ*. 2003; 327(7426): 1271-1275
3. Uchechi HO, Lopwz-Inunoz F, Poverdano-Montero FJ. Bibliometric analysis of global Lassa fever research (1970-2017): a 47year study. *BMC Infect. Dis*. 2018; 18(639). Doi: 10.1186/s12879-018-3526-6
4. Kyei NN, Abilba MM, Kwawu FK, Agbenohevi PG. Imported Lassa fever: a report of 2 cases in Ghana. *BMC Infectious Dis*. 2015; 217(15): <https://doi.org/10.1186/s12879-015-0956-2>
5. Yessinou RE, Waladjo ARK, Ignau D, Adinsi J, Sangnidjo E, Osse R, Adehan S and Faraugou S. Lassa fever infection from West Africa, dynamic and epidemiology of the virus on the population 1969-2019: a systematic review and meta analysis. *Research Square*. 2019;1-23
6. Ehichoya DU, Hass M, Olschlayer S, Becker-Ziaja B, Chukwu CO, Coker J. Lassa fever, Nigeria. 2005-2008. *Emerging Infect. Dis*. 2016;16(6):1040-1041. Doi:10.3201/eid1606.100080.
7. Solomon T, Thomson G. *Viral haemorrhagic fevers*. Saunders Elsevier, 2009; 763-785.
8. Kabiru AA. The level of awareness that rat is a vector of Lassa fever among rural people in Ijebu-North local government, Ogun State, Nigeria. *Journal of Education and Practice*. 2014; 5(37):166-170.
9. Wogu JO. Mass media awareness campaign and the prevention of the spread of Lassa fever in the rural communities of Ebonyi State, Nigeria: Impact evaluation. *J Public Health Afr*. 2018; 9(3): 882. Doi: 10.4081/jphia.2018.882.
10. Wogu JO, Chukwu CO, Nwafor KA, Anikpe EA, Ugwuoke JC, Ugwulor-Onyinyechi CC and Eseadi C. Mass media reportage of Lassa fever in Nigeria: a viewpoint. *Journal of Interantional medical research*. 2019;48(1):1-7
11. Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons. 1977
12. Rine CR and Gyar SD. Knowledge, attitude and practice of Lassa fever in and around Lafia, central Nigeria. *IJPHER*. 2016; 2(1): 14-19
13. Olalekan AW. Community awareness and perception towards rodent control: implications for prevention and control of Lassa fever in urban slums of Western Nigeria. *Malta Journal of health sciences*. 2015;2(1): 26-32
14. Fisher-Hoch SP, Tomori O, Nasidi A, Perez-Oronoz GI, Fakile Y, Hutwagner L and McCormick JB. Review of cases of nosocomial Lassa fever in Nigeria: the high price of poor medical practice. *BMJ*. 1995; 311(7009):857-859.