

Assessment of Knowledge of Lassa Fever Prevention among Undergraduate Students of University of Nigeria, Nsukka, Enugu State, Nigeria

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Abstract

Lassa fever (LF) is an animal-borne or zoonotic, acute viral illness, which is endemic in some parts of West Africa, and was first discovered in Lassa Town in Borno State, Nigeria. The spread of Lassa fever in Nigeria has necessitated the need to assess the level of knowledge of her population concerning its prevention. This study assessed the knowledge of Lassa fever prevention among Undergraduates in University of Nigeria, Nsukka Campus. A cross-sectional study was conducted using a self-structured questionnaire to collect data from 400 participants selected using multi-stage sampling technique. Data analysis was done using frequency, percentages and chi-square test at 0.05 level of significance. Findings revealed that of the respondents has high knowledge of LF prevention (96.2%). Further the study shows that the knowledge on avoiding consumption of rats was highest (94.6%) compared to other items. Undergraduates within the age range of 16-20years had higher knowledge of LF prevention (98.5%) than students aged 21-25years (95.0%) and students aged 26years and above respectively. Male undergraduates had higher knowledge of LF prevention (98.4%) than female undergraduates (94.0%). Undergraduates in other years had higher knowledge of LF prevention (97.8%) than undergraduates in other years (97.8%) and final years (93.8%) respectively. Gender (include the chi-square value and p-value here) was significantly associated with knowledge of Lassa fever prevention among undergraduate students, except for age and year of study. General knowledge of LF prevention was good. However, health education campaigns and awareness programmes should be important means of educating and communicating health information on Lassa fever prevention and control and bridging gaps in its knowledge.

Keywords: Knowledge, Lassa fever, Prevention, Undergraduate students

Introduction

Lassa fever is an animal-borne or zoonotic, acute viral illness, which is endemic in the West African countries of Benin, Ghana, Mali, Sierra Leone, Liberia, Guinea and Nigeria and is likely to be present in other West African countries as well (World Health Organization, WHO, 2017). Gonzales (2020) reported that there are 100,000-300,000 cases of Lassa fever each year in the world, 5,000 deaths and about (10-16%) of admissions to hospitals annually. The WHO (2020) revealed that about 80 per cent of people become infected with Lassa fever virus and have no symptoms and one in five infections result in severe disease, where the virus affects several organs, such as the liver, spleen and kidneys. There have been reported cases of suspected Lassa fever in Niger, Nasarawa, Taraba, Kano, Rivers, Edo, Plateau, Gombe, Oyo, Ondo, Ebonyi, Enugu, Bauchi and Benue States of Nigeria (Federal Ministry of Health [FMH], 2016; WHO, 2019). Outbreaks of Lassa fever in Nigeria are common in rural communities and in hospital settings, triggered by socio-cultural practices, poor environmental, food and personal hygiene and poor practice of its preventive and control measures (Ogoina, 2013). Despite much global effort, advances in research and updated clinical management guidelines, LF seems to contribute to mortality and morbidity in humans worldwide. Nigeria suffers from recurrent

outbreaks of Lassa fever epidemic, this coupled with paucity of studies and scientific literature on the knowledge of LF in Nigeria (Federal Ministry of Health [FMH], 2016).

Lassa fever is described as an acute viral haemorrhagic illness of 2-21 days duration that occurs predominantly in West Africa. Also, the virus is transmitted to humans by means of contact with food or household items contaminated with rodent urine or faeces. Lassa fever involves person-to-person infections and laboratory transmission, particularly in hospitals lacking adequate infection prevention and control measures (Centers for Disease Control and Prevention, [CDC], 2019).

Lassa fever presents at its early stage with mild symptoms which include flu-like illness such as fever, malaise, generalized weakness, severe headache, chest pain (especially behind the breastbone), back pain, ringing ears, nausea, vomiting, abdominal pain, and diarrhoea (Gompf, 2020). Lassa fever may progress to more serious symptoms which include facial swelling, fluid in the lung cavity, bleeding from the mouth, nose, vagina or gastrointestinal tract and low blood pressure may develop, shock, seizures, tremor, disorientation, and coma may be seen in the later stages (WHO, 2020).

The researcher carried out the study in this area because undergraduate students are exposed to a polluted environment, poor drainage systems, tall grasses around their hostels, waste (debris) disposed close to student residence and these conditions can attract rodents into their environment. This study hopefully added to the ever growing body of knowledge, and provided evidence-based information on the knowledge of Nigerians towards Lassa fever. Also, the study would provide relevant information to stakeholders for community health knowledge and campaigns on Lassa fever, and could serve as a baseline for future research. Therefore this study was carried out to assess the knowledge of Lassa fever prevention among Undergraduate Students of University of Nigeria, Nsukka. Knowledge in this study refers to the familiarity, awareness, or understanding the concept of Lassa fever by undergraduate students which is acquired or obtained in the course of experience or education by perceiving, discovering, or learning. Its prevention is necessary.

Prevention refers to those interventions undertaken to avoid, delay the implications and reduce further spread of Lassa fever among Undergraduate students in University of Nigeria, Nsukka. An undergraduate is a student of the University of Nigeria, Nsukka who has not been awarded a degree.

Methods

Study Design: The cross-sectional survey design was adopted for the study. A cross-sectional survey is one that produces a snap shot of a population at a particular point in time. Instead of following a group of subjects over a period of time, cross-section of the subjects of varying ages and other socio-demographic factors are sampled and studied at the same time, and data are obtained at one time from groups or at different stages of development (Cohen, Manion, & Morrison, 2011). This design was successfully utilized by Awosanya (2018) to carry out a similar study on post-epidemic awareness and knowledge of Lassa fever among residents in affected community in Ibadan, Oyo State, Nigeria. Therefore, the researcher considered it appropriate for use in the present study.

Study Area: University of Nigeria, Nsukka, located about 70km North of Enugu town. It has an area of 505km² and it is located in Enugu state in South-Eastern part of Nigeria. The researcher carried out the study in this area because undergraduate students are exposed to a polluted environment, poor drainage systems, tall grasses around their hostels, waste (debris) disposed close to student residence and these conditions can attract rodents into their environment.

Study Population: The population of the study consisted of regular undergraduate students of the University of Nigeria, Nsukka (UNN) campus. There are 10 faculties and 67 academic

departments in UNN campus with a total population of 44,201 students as at 2019/2020 session (Information Communication Technology UNN, 2021).

Sample and Sampling Technique: The sample size was 400 undergraduate students. This was in line with the guideline of Cohen, Manion, and Morrison (2011), that when a population size is 40,000 and above at 95 per cent confidence level (5% interval), the sample size should be 381 and above. The multistage sampling technique was used to draw the study sample. Stage one involved using simple random sampling technique of balloting without replacement to select five faculties from the 10 faculties in the UNN campus. Stage two involved the use of simple random sampling technique of balloting without replacement to select 10 departments from the five drawn faculties in stage one. Stage three involved the use of simple random sampling technique of balloting without replacement to select 40 undergraduate students from the 10 departments selected in stage two. This gave a total of 400 undergraduate students used for the study.

Instrument Used for Data Collection: Self-structured questionnaire titled “Knowledge of Lassa Fever Prevention Questionnaire (KLFPQ)” was used to obtain data from the respondents. The questionnaire was divided into two sections: A & B. Section A contained three socio-demographic variables of the respondents, such as: age, gender, and year of study, while section B contained 10 items on the Knowledge of Lassa Fever Prevention. Section B was assigned response options of Yes and No.

The face validity of the instrument ‘KLFPQ’ was established by three experts. Two came from the Department of Human Kinetics and Health Education, and one from the Department of Science Education (Measurement and Evaluation), all from University of Nigeria, Nsukka. The validated questionnaire was used to improve the final draft used for the study.

The reliability of the instrument was established by carrying out a trial-test on 20 undergraduate students in the University of Nigeria, Enugu Campus (UNEC). This is because students in UNEC have the same characteristics with the study population. However, these respondents were not included in the present study. The split-half method (Spearman-Brown Correlation Coefficient) was used to determine the internal consistency of the instrument. Reliability index of .69 was obtained, and deemed reliable for use in this study.

Data Collection Procedure: In order to gain access to the respondents, a letter of introduction was obtained from the Head, Department of Human Kinetics and Health Education, University of Nigeria, Nsukka seeking permission and cooperation to conduct a study. Four hundred (400) copies of the KLFPQ were administered to undergraduate students of the University of Nigeria, Nsukka with the help of four assistants who were detailed on the modalities of the data collection. The questionnaires administered were collected on the spot by the researcher when the undergraduate students have supplied all the necessary information required. 396 copies were returned (return rate: 99%). However, after sorting and cleaning the questionnaire for completeness of responses, only 392 were found suitable for analysis.

Data Analysis: The returned questionnaires were sorted and cleaned for completeness of responses. The duly filled out copies were coded into Statistical Package for Social Sciences (SPSS) version 21, and analyzed using frequency, percentage, and chi-square test. Chi-square statistics was used to test the association between socio-demographic factors (age, gender and year of study) and knowledge of Lassa fever prevention among undergraduate students. The probability value (p -value) was set at $p < 0.05$.

Results

Table 1: Responses on Knowledge of Lassa Fever Prevention among Undergraduate Students of University of Nigeria, Nsukka (n= 392)

S/n	Item Statements	Yes f (%)	No f (%)
1.	Avoiding consumption of rats helps to prevent Lassa fever	371 (94.6)	21 (5.4)
2.	Proper food storage (rat-resistant containers) prevents Lassa fever	363 (92.6)	29 (7.4)
3.	Keeping premises clean and clearing bushes around residence helps to prevent rats from entering houses	339 (86.5)	53 (13.5)
4.	Avoiding direct contact with rats helps to prevent Lassa fever	316 (80.6)	76 (19.4)
5.	Frequent hand washing with soap and water helps to prevent Lassa fever	331 (84.4)	61 (15.6)
6.	Avoiding contacts with persons infected with Lassa fever helps to prevent its spread	348 (88.8)	44 (11.2)
7.	Avoiding contacts with dead bodies of Lassa fever patients helps to prevent its spread	346 (88.3)	46 (11.7)
8.	Washing hands properly with soap or ash if you come in contact with rats helps to prevent Lassa fever	338 (86.2)	54 (13.8)
9.	Sharing food, cup, or spoon with someone who has got Lassa fever or who is recovering from the disease will lead to its spread	271 (69.1)	121 (30.9)
10.	Avoiding contacts with the blood, vomit, stool, urine, or semen of Lassa fever patients helps to prevent its spread	352 (89.8)	40 (10.2)
Overall		96.2	3.8

Key: Less than 20% = Very low knowledge; 20-39% = Low knowledge; 40-59% = Average/Moderate knowledge; 60-79% =High knowledge; 80% = Very high knowledge

Table 2: Responses on Knowledge of Lassa Fever Prevention among Undergraduate Students of University of Nigeria, Nsukka based on Age (n= 392)

S/n	Socio-demographic Variable Age	Overall f (%)
1.	16-20years	137(98.5%)
2.	21-25 years	170(95.0%)
3.	26 years and above	73(94.8%)

Table 3: Responses on Knowledge of Lassa Fever Prevention among Undergraduate Students of University of Nigeria, Nsukka based on Gender (n= 392)

S/n	Socio-demographic Variable Gender	Overall f (%)
1.	Male	188(98.4%)
2.	Female	189(94.0%)

Table 4: Responses on Knowledge of Lassa Fever Prevention among Undergraduate Students of University of Nigeria, Nsukka based on Year of Study (n= 392)

S/n	Socio-demographic Variable Year of Study	Overall f (%)
1.	First year	95(96.0%)
2.	Other years	177(97.8%)
3.	Final year	105(93.8%)

Table 5: Chi-Square Test of Knowledge of Lassa Fever Prevention Based on Age (n= 392)

S/n	Age	Yes O(E)	No O(E)	χ^2 value	df	p-value	Decision
1.	16-20 years	134(130.8)	2(5.2)	3.145	2	.208	Not Rejected
2.	21-25 years	170(172.2)	9(6.8)				
3.	26years & above	73(74.1)	4(2.9)				

O(E) = Observed frequency(Expected frequency)

Table 6: Chi-Square Test of Knowledge of Lassa Fever Prevention Based on Gender (n= 392)

S/n	Gender	Yes O(E)	No O(E)	χ^2 value	df	p-value	Decision
1.	Male	188(183.7)	3(7.3)	5.151*	1	.023	Rejected
2.	Female	189(193.3)	12(7.7)				

Table 7: Chi-Square Test of Knowledge of Lassa Fever Prevention Based on Year of Study (n= 392)

S/n	Year of Study	Yes O(E)	No O(E)	χ^2 value	df	p-value	Decision
1.	First year	95(95.2)	4(3.8)	3.085	2	.214	Not Rejected
2.	Other years	177(174.1)	4(6.9)				
3.	Final year	105(107.7)	7(4.3)				

Table 1 shows that the overall, undergraduate students of University of Nigeria, Nsukka had very high (96.2%) knowledge of Lassa fever prevention. Further the table shows that avoiding the consumption of rats helps to prevent Lassa fever (94.6%) and proper food storage (rat-resistant containers) (92.6%) were the highest responses compared to other items while sharing food, cup, or spoon with someone who has got Lassa fever or who is recovering from the disease (69.1%) was the lowest.

Table 2 shows that overall, undergraduate students aged 16-2-years (98.5%) had higher knowledge of Lassa fever prevention than those aged 21-25 years (95.0%) and 26years and above (94.8%) respectively.

Table 3 shows that overall males (98.4%) had higher knowledge of Lassa fever prevention than the females (94.0%).

Table 4 shows that overall, undergraduate students in other years (97.8%) had higher knowledge of Lassa fever prevention than those in first year (96.0%), and final year (93.8%) respectively.

Table 5 shows no significant association between knowledge of Lassa fever prevention and age of undergraduate students of University of Nigeria, Nsukka ($\chi^2 = 3.145$, $p = .208 > 0.05$).

Table 6 shows a significant association between knowledge of Lassa fever prevention and gender of undergraduate students of University of Nigeria, Nsukka ($\chi^2 = 5.151$, $p = .023 < 0.05$).

Table 7 shows no significant association between knowledge of Lassa fever prevention and year of study of undergraduate students of University of Nigeria, Nsukka ($\chi^2 = 3.085$, $p = .214 > 0.05$).

Discussion

The finding of the study in Table 1 showed that overall level of knowledge of Lassa fever prevention was very high among the undergraduate students of the University of Nigeria, Nsukka. This finding was expected and not surprising. This is because undergraduate students acquire appropriate information about infectious diseases either through formal means of education in their classrooms or through internet access and this study was conducted in a university environment where there is high level of education. The finding was consistent with the findings of Egenti, Adelaiye, Sani, and Adogu (2019) who reported that 96 per cent of the respondents were aware of Lassa fever, 81.4 per cent had good knowledge and 89.5 per cent practised good preventive measures. The finding is in line with the findings of Fatiregun, Isere, Dosumu, Agunbiade, and Onyibe (2019) who indicated that 84.8 per cent of respondents were aware of Lassa fever and 71.1 per cent knew that washing hands regularly could prevent the disease which is a good knowledge of Lassa fever prevention. The finding was consistent with the findings of Umoke et al. (2021) who reported that the majority of the students had good knowledge of Lassa fever description 60.75 per cent and preventive measures 76.13 per cent. Also, the finding was in line with the findings of Ekanem et al. (2018) who ascertained that 90.8 per cent of the respondents claimed to have heard of Lassa fever and also most knew that a clean environment 95.2 per cent, proper covering of food 93.4 per cent, no holes in homes and not eating rats prevents Lassa fever. Awosanya (2018) stated that the overall level of knowledge of Lassa fever was 74.6 per cent which is also in line with this study. In contrast, Abdulkadir and Mohammed (2019), Akinwumi et al. (2016), Akunne et al. (2018), Awosanya (2018), Ilesanmi et al. (2015), Ighedosa et al. (2016), Nwonwu et al. (2018), Olowookere et al. (2017), and Usifoh et al. (2018) reported poor knowledge among respondents in their studies, while Tobin et al. (2013) reported overall fair knowledge.

The findings of the study in Table 2 indicated that students within the age range of 16-20 years possessed higher level of knowledge of Lassa fever prevention than their counterparts. This finding was surprising and therefore not expected. The researchers expected higher knowledge from older students because they are more exposed and engaged with the happenings in the environment that is, they often take up responsibilities such as clearing grasses, keeping the environment clean, and organizing or teaching the younger students on how to keep a hygienic surrounding. This finding agrees with the findings of Akunne, Isah, Anene-Okeke, and Oguejiofor (2018) who reported that students between 16-20 years had the highest proportion of those with excellent knowledge of Lassa fever while those above 20 years had the highest proportion of those with poor knowledge. This finding contradicts the findings of Umoke et al. (2021) who reported that based on age, older students 26 years and above had more knowledge of Lassa fever.

Findings in Table 3 revealed that males had higher knowledge of Lassa fever prevention than females. This finding was expected and therefore not surprising because males in the south-eastern part of Nigeria are better educated than females mainly due to the male-child education

preference by parents which has lingered for years. Male students are probably more likely to listen to radios than females and therefore, males get more information than their female counterpart. This study corresponds with the study carried out by Nwonwu et al. (2018) who explained that majority of the males had more knowledge on Lassa fever. The finding was in line with Abdulkadir and Mohammed (2019), who reported that majority of those who had higher knowledge about Lassa fever were males. Also, the finding was also consistent with the study conducted by Umoke et al. (2021) who found that males had more knowledge than the female respondents. Although the finding contradicts the findings of Tobin, Asogun, Isah, Ugege, and Ebhodaghe (2013) who reported that females had more knowledge than the males.

The findings in Table 4 showed that undergraduate students in other years had higher knowledge of Lassa fever prevention than students in first year and final year. This finding was expected and therefore not unanticipated because in this study other years include second year, third year. The finding was consistent with the findings of Umoke et al. (2021) who stated that students who were in 300 level were more knowledgeable on Lassa fever.

The findings in Table 5 revealed that there was no significant association between knowledge of Lassa fever prevention and age of undergraduate students of University of Nigeria, Nsukka. This result was unexpected and therefore surprising as one would expect that age should be significant with the level of knowledge of anything. This finding disagrees with the finding of Egenti et al. (2019) who reported that age is significant. The finding corresponds with the study by Umoke et al. (2021) who reported that age is not significant with the knowledge and source of information on Lassa fever among undergraduates of Ebonyi State University ($p = .424$). This finding is also in line with Oladejo et al. (2018) who reported that age was not significant with Lassa fever prevention practice in the community among health workers during an outbreak in Plateau State. ($p = 0.68$) and Tobin et al. (2013) who reported that knowledge was not significant with age.

Findings in Table 6 indicated that there was a significant association between in the level of knowledge of Lassa fever prevention and gender of undergraduate students of University of Nigeria, Nsukka based on gender. This is consistent with the findings of Nwonwu et al. (2018), Akunne et al. (2018) and Abdulkadir and Mohammed (2019) who reported that gender was strongly associated with Lassa fever knowledge. Also, the finding is in conformity with the findings of Adesoji et al. (2016) and Oladeinde et al. (2014) who reported that gender was strongly associated with Lassa fever knowledge. This finding differed from the findings of Umoke et al. (2021) who reported that there is no significant association between knowledge of Lassa fever and gender.

Findings in Table 7 showed that there was no significant association between knowledge of Lassa fever prevention and year of study of undergraduate students of University of Nigeria, Nsukka. This result was unexpected and therefore surprising as one would expect that year of study should be significant with the level of knowledge of anything. The study corresponds with the study of Umoke et al. (2021) who reported that year of study was not significant with the knowledge and source of information on Lassa fever among undergraduates of Ebonyi State University ($p = .553$). Also, the finding contradicts the findings of Abdulkadir and Mohammed(2019), Adesoji et al. (2016), Akunne et al. (2018), Ighedosa et al. (2016), Ilesanmi et al. (2015), Nwonwu et al. (2018), and Olowookere et al. (2014), who stated that year of study was strongly associated with Lassa fever.

Conclusions

The findings have shown that undergraduate students of University of Nigeria, Nsukka had very high knowledge of Lassa fever prevention. However there are some lapses in the overall knowledge at various levels. Age and year of study are not important factors considered in assessing knowledge of Lassa fever prevention among undergraduate students of University of Nigeria, Nsukka, while gender is an important factor considered. It is important to state that

students living in a polluted environment are the one most likely to come in contact with rodents that transmit such infection. It is therefore essential that they are adequately informed about the disease, its presentation and prevention, so that they can not only protect themselves, but prevent spread within the university.

Therefore a need to improve the knowledge of Lassa fever prevention through the provision of education campaigns consisting of seminars, pamphlets and workshops that would pay added attention to bridging gaps in knowledge. Health education should be a compulsory course as a general study (GST) in the university in order to improve the general knowledge of Lassa fever prevention and promote wellbeing. It is therefore essential that the students of all age groups are adequately informed about the disease, its presentation and prevention, so that they can not only protect themselves, but prevent the spread by enlightening family members, friends and the community at large. Practice safe food preparation by cooking food thoroughly, especially meat, and avoid consuming raw and undercooked foods. For a successful teacher-centered enlightenment campaign against Lassa fever, lectures on the disease should be included in the curriculum of Universities for all departments and levels of study. In healthcare settings, the education and communication messages should include: staff should always apply standard infection prevention and control precautions when caring for patients, regardless of their presumed diagnosis. These include basic hand hygiene, respiratory hygiene, use of personal protective equipment (to block splashes or other contact with infected materials), safe injection practices and safe burial practices. The education of Lassa fever should be promoted through the internet, campus campaign, social media, seminars, pamphlets, workshops and churches in order to educate and sensitize both the male and female students on Lassa fever and bridging gaps in knowledge. The prevention of Lassa fever relies on promoting good environmental hygiene to put off rodents from entering students residence. Therefore regular health information should be directed at the undergraduate students at all levels on effective methods of storing grain and other foodstuffs in rodent-proof containers, maintaining hygienic household and keeping cats and disposing of rubbish far from the residence, This is because rodents are so abundant in endemic areas and it is almost impossible to entirely eliminate them from the environment.

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