



## Clinical students' knowledge and perception of Lassa fever at the University of Benin, Nigeria

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### Abstract

Lassa fever is an acute virulent viral hemorrhagic illness with high morbidity and mortality rates. It is a disease of global concern and adequate knowledge relating to this disease is vital in the hospitals, rural or urban setting. The purpose of this study was to assess the knowledge and perception of Lassa fever among the University of Benin, Benin City, Nigeria. This was a cross-sectional descriptive study. Self-administered questionnaires were used. Data obtained were analyzed with SPSS version 21, descriptive statistics were done and frequencies and proportions were used to summarize variables of interest. Ethical considerations were observed. Of the 260 respondents, 42.7% were females. Mean age was  $23.5 \pm 1.2$  years. Most of the respondents, 98.8% had a good knowledge of what Lassa fever is, its symptoms, causes, risk factors, control and prevention of Lassa fever epidemic, but a few of them; 24.6% knew the drug used for treatment of Lassa fever. Also, 98.5% of the respondents demonstrated a positive perception towards reporting any suspected case of Lassa fever on campus or in the hospital setting where their clinical clerkship is done. These students reported that social media was the main source of information about the disease (78.1%) followed by their lecturers and study materials (38.5%). Clinical students of UNIBEN demonstrated a good knowledge and positive perception of Lassa fever. Awareness campaigns and public health education are important means of communicating health information to the clinical students, healthcare providers and the general public.

**Keywords:** Lassa fever; Clinical students; Ribavirin; Knowledge; Perception

### INTRODUCTION

Lassa fever is a rodent-transmitted viral hemorrhagic disease of global health concern caused by Lassa virus, a member of the *arenavirus* family. The disease is endemic in West Africa while sporadic cases of disease occurred in Europe, Asia and America [1,2]. Recent recurrent outbreaks of Lassa fever have been recorded in different parts of Nigeria, the largest outbreak occurred between August 2015 and May 2017 [3,4].

Lassa fever outbreaks have become common in Nigeria, WHO record for Nigeria from 2016 till date has gone up to 501 suspected cases under surveillance including 104 confirmed deaths from 23 states including Lagos, Rivers, Kogi, Nassarawa, Edo, Ondo, Taraba, and Gombe [4]. Healthcare providers are most vulnerable to Lassa fever epidemic with reports of several cases of hospital staff infected with the virus and under surveillance; Nigeria Centre for Disease Control confirmed the death of a staff

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of Federal Medical Centre, Abeokuta in December 2016 [3]. Lassa fever is a notifiable disease requiring active surveillance and rapid response to avert epidemics. It spreads to humans through contact with food, water and other household items contaminated with urine or faeces of the vector, multimammate rat (*Mastomys natalensis*). Other means of transmission include; laboratory transmission and contact with Lassa fever patients. Primary prevention of Lassa involves avoidance of contact with infectious secretions of rodents as well as with body fluids or excreta of infected humans. In Nigeria, the federal ministry of health and some state governments have established Lassa fever rapid response committees, responsible for coordinating a rapid response to Lassa fever outbreaks through sensitization of hospital workers and the general public, screening and laboratory investigations, active surveillance of suspected persons and case management. Health workers, clinical students and patient's relatives are expected to comply with strict infection control guidelines including use of personal protective outfits (overall, gloves, masks, eye goggles and covered footwear) when in contact with patients or with their body fluids /waste products[5]. The only specific effective treatment of Lassa fever is the antiviral drug named Ribavirin; this drug is life-saving if given within six days of onset of symptoms, reducing mortality by as much as 90% [6]. Non-specific supportive treatment may include symptomatic treatment of dehydration with fluid replacement because many patients arrive in a moderately dehydrated state with elevated packed cell volume (PCV) and use of antibiotics for secondary infections. Oral ribavirin is the preferable option for Lassa fever post-exposure prophylaxis, especially among health workers and family members who might have been exposed to Lassa fever patients or infected substances .Therefore,

universal precautions should be maintained by medical personnel including clinical students who go for clerkship or clinical postings in the hospitals. A proper knowledge and detailed understanding of the prevention, mode of transmission, pathogenesis and treatment of Lassa fever are very vital in curtailing outbreak of this disease. While numerous studies have been carried out in Slums, Villages and closely related hospitals to endemic areas, no study on the level of Knowledge and perception of Lassa fever disease among undergraduate clinical students has been reported. These students are expected to be the major players in educating the wider student population of the University on possible preventive measures and signs to aid early detection of the disease and the right actions to take if Lassa fever is being suspected.

The main objective of this study was to assess the knowledge and perception of Lassa fever among full-time undergraduate clinical students of the University of Benin. The specific objectives were to assess the knowledge of Lassa fever disease among undergraduate clinical students. This will include the cause, modes of transmission, control, prevention and treatment options available to Lassa fever patients; to ascertain the perception of clinical students towards Lassa fever disease outbreak if any and to determine the level of care and preventive measures by clinical students to prevent any outbreak of the disease in the University community.

## METHODS

**Setting.** This study was done in one of the foremost Federal government owned Universities in South-South geo-political region of Nigeria, the University of Benin, Benin City. It has two Campuses: Ugbowo and Ekehuan. The University of Benin has eleven faculties; Agriculture, Arts, Education, Engineering, Law, Life sciences,

Management sciences, Pharmacy, Physical sciences, Social sciences, Environmental science. Also, there are: Centre for Entrepreneurship Study; Centre for distant learning; Centre for Gender Studies; and College of Medical Sciences (which consists of Schools of Medicine, Basic Medical Science, School of Dentistry). This research was carried out at the Ugbowo main campus where clinical students are based.

**Study design.** This study was a descriptive cross sectional study on the knowledge and perception of Lassa fever disease among full-time undergraduate clinical students of the University of Benin. This study was carried out between January & July 2016.

**Study population and sample.** The study population includes full time undergraduate clinical students from the faculty of Pharmacy, department of Optometry, school of Medicine, Surgery and Dentistry across levels undergoing clinical clerkship. The course duration for the above named faculties is a minimum of six years to obtain a degree. Clinical students from Faculty of Pharmacy and department of Optometry start clinical posting from their fifth year up to their final year while clinical students from the School of Medicine, Surgery and Dentistry commence clinical posting from the fourth year to their final year. These clinical students are posted to primary healthcare centres in the community, state government owned secondary health facilities and the federal government owned tertiary hospitals where they are rotated round the various clinics and departments including the accident and emergency unit.

Those included were male and female full time students within the clinical clerkship levels from College of Medical Sciences, Faculty of Pharmacy and Department Of Optometry. Conversion undergraduate and postgraduate students were excluded. A list of the different levels of clinical students (2015/2016) session was obtained from the

University authority of which the total estimated number of full time undergraduate clinical students from the various disciplines listed above was eight hundred (800). The sample size was then calculated using the Kish formula [7] and two hundred and sixty (260) was obtained.

**Instrument used.** A self structured questionnaire which was validated with a pilot study with non clinical students of the University was used to collect data and it comprised of the following sections:

*Section A-*Demographic characteristics, which includes age, sex, Faculty academic level and religion.

*Section B-* Knowledge of Lassa fever, which includes the cause, modes of transmission, prevention, symptoms, treatment and control of the spread of an epidemic of the disease as well as the source of knowledge.

Perception of Lassa fever, which includes the attitude towards the prevention of Lassa fever, the treatment options available and vaccination against Lassa fever.

Good knowledge and positive perception was set at 50% and above.

**Data collection.** Data was collected using a self-administered validated questionnaire. A total number of 265 questionnaires were distributed to eligible students who gave their informed consent to participate in this study. The completed questionnaires were collected and organised for analysis.

**Data analysis.** Data collected were fed into Microsoft excel sheet and cross-checked. Statistical analysis using SPSS (statistical package for social sciences) version 21 was done, descriptive statistics was carried out on all variables, and the results were presented as frequency of responses and the proportion (in percentage) of the overall population. Pearson's Chi-square was used to test if there was any association between the knowledge of Lassa fever and the demographic characteristics. Similarly, the perception of

clinical students towards the prevention, treatments, and vaccination against Lassa virus were correlated with selected demographic characteristics using Pearson's Chi-square. Level of significance was set at  $p < 0.05$ .

**Ethical considerations.** Approval was obtained from the appropriate authorities of the University and informed consent was obtained from the respondents. Data obtained were for academic purpose and kept confidential.

## RESULTS

**Socio-demographics of respondents.** Two hundred and sixty five (265) respondents were recruited and 98.1% (260) response rate was achieved. Out of the 260 valid questionnaires 149 (57.3%) were males and the mean age of the respondents was  $23.5 \pm 1.2$  years. Majority of the respondents were within the age group of 18-25 years, 204(78.5%). From the various Clinical faculties/ School, Pharmacy had 108(41.5%) respondents, Medicine had 52(20.0%) respondents, Optometry had 50(19.2%) respondents and Dentistry had 50(19.2%) respondents also. A total of 122(46.9%) respondents were final year clinical students from the four disciplines. The details of their sociodemographic characteristics is given in Table 1.

**Knowledge and perception of Lassa fever.** A high level of knowledge about Lassa fever was displayed by Clinical students as 257(98.8%) respondents agreed to have heard of the disease condition, 148(99.3%) males have heard of Lassa fever while 109(98.2%) females have heard of the disease condition. Knowledge relating to the source of information for Lassa fever was best obtained from Social media 203(78.1%). Lecturers 100(38.5%) were second to social media as a source of information. Other sources of

information are shown in the bar chart (Fig. 1).

The different ways in preventing Lassa fever outbreak in the University community as identified by the respondents were; maintaining proper personal/ environmental hygiene 221(85.0%), properly covering of food 108(41.5%), thoroughly cooking of food before eating 171(65.8%), periodic fumigation to eliminate household rodents 200(76.9%), public health education 78(30.0%), proper washing of hands 50(19.2%). There were other suggestions regarding the prevention and control of Lassa fever such as the use of personnel protective equipment in the Hospital environment by Clinical students and good hand washing techniques with soap and water or with alcohol-based Sanitizers

## DISCUSSION

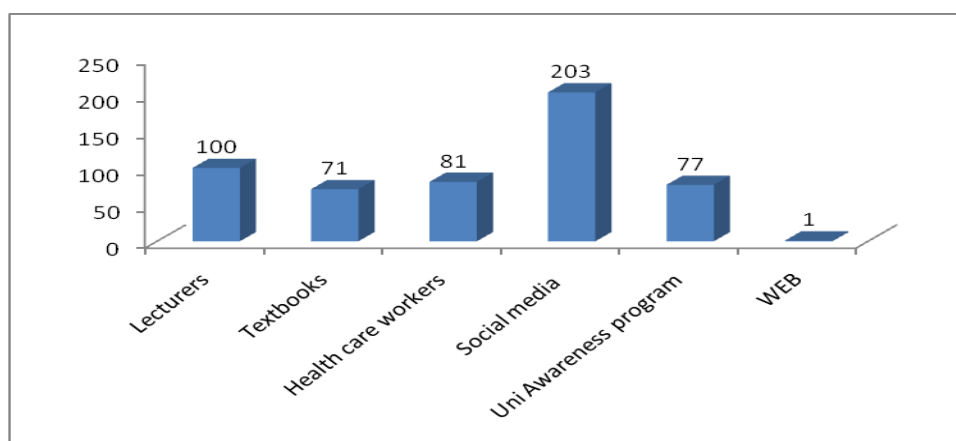
Lassa fever is not known for its high morbidity and mortality in the rural areas alone, it has a high potential in unleashing terror in urban communities such as a University Campus environment especially if there is a poor knowledge of the disease condition. Therefore, a significant level of awareness about this deadly disease in the University environment is of vast importance. The age distribution in this study represents the young youth population in the University environment, they have represented both gender, mainly single undergraduate clinical students from Faculty of Pharmacy, Department of Optometry, College of Medicine and Dentistry of diverse culture and religion. In contrast to this study, most studies on Lassa fever often address the knowledge of the health professionals about the disease but this study assessed the knowledge and perception of Lassa fever among Clinical students, which was high.

**Table 1:** Socio-demographic characteristics of respondents

CHARACTERISTICS	FREQUENCY(N = 260)	PERCENTAGE (%)
Age (years)	< 18	-
	18-25	204
	26-35	53
	36 & Above	3
Gender	Male	149
	Female	111
Faculty/ School	Pharmacy	108
	Medicine	52
	Optometry	50
	Dentistry	50
Level	400	60
	500	78
	600	122
Religion	Christianity	249
	Islam	8
	Others	3

**Table 2:** Perception of clinical students towards Lassa fever

Questions	Faculty/College	Agree	Disagree	Total
1. Will you advertise or communicate the availability of a vaccine?	Pharmacy	93(86.1%)	15(13.9%)	108(100.0%)
	Medicine	41(78.8%)	11(21.2%)	52(100.0%)
	Dentistry	40(80.0%)	10(20.0%)	50(100.0%)
	Optometry	42(84.0%)	8(16.0%)	50(100.0%)
	TOTAL	216(83.1%)	44(16.9%)	260(100.0%)
2. Will you conduct enlightenment campaign distributing flyers on preventive measures for the spread of the disease?	Pharmacy	95(88.0%)	13(12.0%)	108(100.0%)
	Medicine	50(96.2%)	2(3.8%)	52(100.0%)
	Dentistry	43(86.0%)	7(14.0%)	50(100.0%)
	Optometry	36(72.0%)	14(28.0%)	50(100.0%)
	TOTAL	224(86.2%)	36(13.8%)	260(100.0%)
3. Will you report to health professionals on Campus of any suspected case(s) presenting with symptoms of Lassa fever?	Pharmacy	107(99.1%)	1(0.9%)	108(100.0%)
	Medicine	52(100.0%)	0(0.0%)	52(100.0%)
	Dentistry	49(98.0%)	1(2.0%)	50(100.0%)
	Optometry	48(96.0%)	2(4.0%)	50(100.0%)
	TOTAL	256(98.5%)	4(1.5%)	260(100.0%)

**Figure I:** Sources of information on Lassa fever

This finding is however contrary that obtained by Izegbu *et al.* [8] where a low level of knowledge (21%) was reported among healthcare workers. In this study, knowledge relating to the source of information for Lassa fever was best obtained from Social media; this might be as a result of increased enlightenment programs using the media from series of outbreaks which occurred previously [3,9,10]. Lecturers were second to social media as a source of information and this is expected because it is a University setting and Clinical students are expected to be taught about Lassa fever. The sources of information on Lassa fever identified in this study agreed with findings from another study reported by Aigberemolen *et al.* [11].

The high level of knowledge is also similar to a study conducted by Adebayo *et al.*, [12] among healthcare workers in two teaching Hospitals in Nigeria.

The results showing that all of the surveyed respondents knew that Lassa fever could be transmitted by a rat are similar to those in a previous study by Guinean researchers that emphasized that health workers' believe that Lassa fever can kill if not reported in good time [13]. Most of the surveyed respondents had good knowledge of the common signs and symptoms of Lassa fever; these results are similar to those from other studies involving health workers [14]. Findings by Olayinka *et al.* [15], stated that good housing standard and clean environment are recognized as part of the methods of preventing and controlling the spread of Lassa fever as this is similar to the findings observed in this study because respondents believe that maintaining proper personal and environmental hygiene can help control the vector; this is an effective method to control the Vector. Although the study population had a good knowledge of Lassa fever, there is a general, limited knowledge to the availability

of a drug for the treatment of Lassa fever. This is again contrary to the research carried out by [12] among health workers were almost all (90.1%) of the surveyed respondents knew that Ribavirin is used to treat Lassa fever; this is significant because Ribavirin is currently the only treatment available. Respondents were generally ignorant of the nonexistence of a vaccine for the disease as noted in a study by [16]. The absence of a vaccine calls for higher attention to prevention of infection particularly among vulnerable individuals in the study area and other endemic regions. A positive perception ( $P < 0.05$ ) towards conducting enlightenment campaign on campus and reporting any suspected case of Lassa fever was demonstrated by the respondents.

**Conclusion.** This study has shown a high knowledge and positive perception of Clinical students in the University of Benin towards Lassa fever. It is essential that clinical students are adequately informed about this disease, as they will be a source of information to the wider population of the University community and also prevent epidemic of Lassa. There was a high knowledge of the absence of a vaccine and a low knowledge of the antiviral drug Ribavirin for Lassa fever management. Therefore, there is an urgent need to increase knowledge of drug treatment among clinical students regarding Lassa fever. It is therefore important that the curriculum of clinical students should be robust in possible epidemics that have occurred in Nigeria, campaigns and counselling should also continue on the media to improve awareness in the University community.

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***Conflict of interest statement***

There are no potential conflicts of interest or any financial or personal relationships with

other people or organizations that could inappropriately bias conduct and findings of this study.

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