Knowledge and Perception of Lassa Fever and Case Detection Among Community Health Influencers in Selected Local Government Areas in Ondo State, Nigeria

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Abstract

Lassa fever (LF), a viral hemorrhagic fever endemic to West Africa, poses significant public health challenges due to its non-specific symptoms, often mimicking other febrile illnesses. This diagnostic ambiguity hinders early detection and prompt medical intervention, increasing the risk of severe complications and mortality. Community health influencers (CHIs) are crucial for effective LF management, especially in resource-limited settings where they serve as the primary link between healthcare systems and vulnerable populations. Their roles encompass early case identification, community education, and facilitating access to treatment, making their understanding of LF paramount. This study aimed to assess the baseline knowledge and perceptions regarding LF among CHIs in selected high-risk Local Government Areas (LGAs) of Ondo State, Nigeria, a region with a historically high LF burden. Employing a quasi-experimental design, the research involved 60 CHIs recruited through multi-stage sampling, ensuring representation from diverse communities within the endemic LGAs. Data collection utilized validated questionnaires, demonstrating robust reliability with a coefficient of 0.70–0.72, to capture demographic characteristics, knowledge levels, and perceptions related to LF susceptibility, severity, and preventive measures. Descriptive and inferential statistical analyses, conducted at a significance level of p < 0.05, revealed moderate knowledge levels among CHIs, with an average score of 5.67 \pm 1.63. However, significant variations in perceptions were observed, with misconceptions regarding LF susceptibility and severity being prevalent. Limited understanding of LF transmission dynamics and difficulty recognizing early symptoms emerged as key barriers to effective case detection. These findings underscore the critical need for targeted educational interventions tailored to address knowledge gaps and rectify misconceptions among CHIs, ultimately contributing to improved LF control and outbreak mitigation in endemic regions.

Keywords: Community Health Influencers, Knowledge, Lassa Fever, Ondo State, Perception.

Introduction

Lassa fever (LF), a viral hemorrhagic fever endemic to West Africa, presents a significant public health challenge in Nigeria. The disease is characterized by non-specific symptoms, often mimicking common febrile illnesses like malaria, which include fever, weakness, headaches, vomiting, and muscle pains [1]. This diagnostic ambiguity hinders early detection and prompt treatment, leading to increased risk of severe complications, such as encephalitis and bleeding, and a higher mortality rate [2]. While the overall mortality rate is approximately 1%, it can surge to 24-33% during sporadic outbreaks [3]. Pregnant women are particularly vulnerable, with LF contributing to a significant proportion of maternal fatalities in affected regions [4]. The absence of an approved vaccine further underscores the urgency of effective prevention and control measures.

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The primary reservoir of the Lassa virus (LASV) is the multimammate rat (Mastomys natalensis), which sheds the virus in its excreta and urine [5, 6]. Human infection occurs through direct contact with infected rodents or their contaminated environment, ingestion of contaminated food, or contact with infected [7. 8]. Human-to-human bodily fluids transmission is also possible, particularly in healthcare settings with inadequate infection control measures. Although Nigeria, Sierra Leone, Guinea, and Liberia are considered endemic countries, serological evidence suggests a wider presence of LASV in West Africa [9, 10, 11]. With over a million estimated cases and 5,000 fatalities annually across the region, LF poses a substantial burden on healthcare systems and communities [12].

Several factors contribute to the persistent challenge of LF control in Nigeria. The nonspecific nature of early symptoms leads to frequent misdiagnosis or delayed reporting, hindering timely intervention [13]. Limited healthcare resources, including inadequate diagnostic capacity and trained personnel, further exacerbate the situation. Furthermore, gaps in community awareness and knowledge about LF transmission and prevention contribute to the ongoing spread of the disease. Addressing these challenges requires a multifaceted approach that strengthens healthcare infrastructure, enhances community engagement, empowers healthcare and workers with the necessary skills and knowledge for effective LF management.

Community Health Influencers (CHIs), as part of the Community Health Influencers, Promoters, and Services (CHIPS) program, play a vital role in bridging the gap between healthcare systems and communities, particularly in underserved areas [14]. They are trained to provide basic healthcare services, health education, and referrals, making them ideally positioned to contribute to LF prevention and control. However, the current CHIPS program does not include specific training on LF surveillance and case detection. Integrating LF-focused training into the CHIPS program can significantly enhance the capacity of CHIs to identify and report suspected cases, promote community awareness, and facilitate early access to treatment.

Knowledge, awareness, and perception are fundamental to improving case detection skills [15]. Comprehensive training programs for CHIs should prioritize the dissemination of accurate information about LF symptoms, transmission routes, and prevention strategies. By enhancing their knowledge and awareness, CHIs can become more effective in identifying potential cases, educating communities, and promoting preventive behaviors. This proactive approach is crucial for early detection, timely reporting, and ultimately, reducing the burden of LF in endemic regions.

Lassa fever remains a persistent public health threat in Nigeria, demanding concerted efforts to strengthen prevention and control measures. Empowering Community Health Influencers through targeted training and integration into LF surveillance activities can significantly enhance early case detection and community engagement. By investing in the knowledge and skills of CHIs, Nigeria can make significant strides towards mitigating the impact of Lassa fever and improving public health outcomes in endemic regions.

This study aimed to assess the baseline knowledge and perception of LF among community health influencers in Ondo State, providing insights into existing gaps and opportunities for targeted interventions. By understanding their level of awareness and attitudes toward LF, this research seeks to inform strategies for strengthening community health systems in endemic areas.

Materials and Methods

Study Design and Area

This study adopted a cross-sectional design including 60 CHIs selected from two endemic LGAs in Ondo State, Nigeria.

Sampling Technique

Multistage sampling was used to select participants for this study. The first stage used retrospective data from NCDC was used to identify 7 LGAs that have reported cases of Lassa fever in the last 3 years. They include Owo, Akure South, Akure North, Ose, Akoko South-West, Akoko South-East, and Idanre LGAs. Purposive sampling was used to select 2 LGAs. Majority of curative services are provided by specialists and general hospitals in the state, yet they are woefully understaffed. Although the government recruited a few health workers, the primary healthcare system has not yet benefited from the recruitment process, leaving it severely lacking in human resources needed to provide high quality healthcare, especially in low population areas. Hence, endemic LGAs with the lowest populations; Idanre and Akoko South-East, were selected to participate in the study. Stage two included Three (3) community influencers were selected from primary health care facilities that serve as the primary points for community health influencers in the 10 wards from each local government using random sampling technique.

Study Variables

The study variables were knowledge and perception. Section B used dichotomous (yes/no) and Likert-scale questions, with scoring based on question construction: positive answers scored higher, and negative answers scored lower. Sections C used a Likert scale of strongly agree to strongly disagree, with correct answers assigned the highest scores.

Instrumentation

A 32-item structured questionnaire, with construct reliability ranging from 0.708–0.726, assessed CHIs' knowledge and perception. Adapted from the Health Belief Model, it comprised five sections: socio-demographics (Section A), knowledge (10 multiple-choice questions, Section B), perception (16 Likertscale questions on susceptibility, severity, barriers, and benefits, Section C).

Data Analysis

Data was analyzed using SPSS software. Descriptive statistics were used to summarize the data. Inferential statistics, including t-tests were used to compare the changes in knowledge, perception, and skills between the experimental and control groups.

Ethical Considerations

Ethical approval was obtained from Babcock University Health Research Ethics Committee (BUHREC). Informed consent was also given through verbal communication and written consent forms were signed. The information provided by respondents was kept confidential and there was no penalty for not filling in the form or withdrawing at any time

Results

Demographics Characteristics of Participants

All 60 participants had an average age of 44.39 years, with a standard deviation of 6.92 years. This suggests that most of the study population was middle-aged. Religious affiliations were distributed almost evenly, with Muslims making up 48.3% and Christians making up 28.3%. This equilibrium implied that religious background might not have a major impact on the study's findings. 93.34% of the population has completed post-primary education. A usually well-educated participant pool is indicated by this high degree of educational attainment. Most participants 71.67% were married. Accordingly, marital status might be considered while analysing the study's results. Overall, 56.67% of the participants were employed. This information

provides valuable context for interpreting the study's results, as employment status can influence individuals' perspectives and experiences.

Variables	Respondents N=60			
Age				
Mean age	44.39 ± 6.92			
Religion				
Islam	29 (48.30)			
Christianity	17 (28.30)			
Traditional	14(23.30)			
Level of education				
Primary	4 (0.67)			
Secondary	40 (66.67)			
Tertiary	16 (26.67)			
Marital status				
Single	5 (8.30)			
Married	43 (71.67)			
Widowed	12(20.00)			
Occupation				
Employed	34 (56.67)			
Self-employed	26 (43.33)			
Total	60(100)			

Table 1. Socio-demographic Characteristics of Participants

* p<0.05

Knowledge of Lassa Fever

The results of this survey indicate a mixed understanding of Lassa fever among the respondents. While there is strong awareness of the link between rodents and the disease and a general understanding of its preventability, there knowledge are gaps regarding transmission routes, side effects, incubation period, and the full range of symptoms. As shown in table 2. These findings emphasize the critical need for targeted educational interventions to improve knowledge and awareness of Lassa fever, particularly among groups who may play a role in early case

education. detection and community Participants demonstrated moderate knowledge of LF, with a mean score of 5.67 \pm 1.63 out of a maximum of 10 points. While many respondents (66.67%) correctly identified Lassa fever as being caused by a virus, a significant portion (23.33%)incorrectly attributed it to bacteria, and 10% believed it was caused by fungi. This indicates a need for improved education regarding the viral nature of Lassa fever. There was some confusion regarding transmission routes. Although 46.67% correctly identified that Lassa fever cannot be transmitted through breastmilk, 30% incorrectly believed touch was not a transmission route, and 23.33% were unaware of the risk of transmission through contaminated food. Furthermore, while 61.67% understood that the disease can spread from object to person, a substantial 31.67% believed it could spread from person to person, which is less common. These findings highlight the need for clearer communication about how Lassa fever is and is not spread. majority The vast (83.33%) correctly recognized that Lassa fever is a preventable disease. This suggests a good foundation for promoting preventive measures. Almost half of the respondents (48.33%) correctly identified deafness as a potential side effect of Lassa fever. However, 30% incorrectly believed blindness was a side effect, and thought stroke was a possible 21.67% consequence. This points to a need for more accurate information about the potential complications of Lassa fever. An overwhelming majority (96.67%) accurately identified rat excreta and urine as a source of contamination for Lassa fever. This demonstrates strong awareness of the link between rodents and the disease. Most respondents (63.33%) correctly stated the incubation period for Lassa fever as 2-21 days. However, 31.67% incorrectly believed it was

1-7 days, and 5% thought it was 4 weeks. This discrepancy underscores the importance of providing clear and consistent information about the disease's timeline. Over half of the respondents (55%) correctly understood that bleeding in the final phase of Lassa fever infection can occur from any part of the body. However, 28.33% specifically associated bleeding with the nose, and 16.67% with the eyes. This indicates a partial understanding of for widespread the potential bleeding complications. A large majority (83.33%) correctly identified blood donation as a practice that does not prevent the spread of Lassa fever. However, 16.67% incorrectly believed rodent control was not a preventive measure, and 1.67% thought environmental sanitation was ineffective. This suggests a need to emphasize the importance of a comprehensive approach to prevention, including environmental hygiene and rodent control. Almost all respondents (93.33%) correctly identified high fever as a symptom of Lassa fever. However, only 5% recognized difficulty in breathing as a potential symptom, and only 1.67% identified jaundice. This highlights the need to raise awareness of the broader range of possible Lassa fever symptoms.

Table 2. Knowledge of Lassa Fever

Variables	Respondents N=60	
Lassa fever is caused by		
Bacterium	14(23.33)	
Virus	40(66.67)	
Fungi	6(10.00)	
Lassa fever cannot be transmitted th	hrough	
Touch	18(30.00)	
Ingestion of contaminated food	14(23.33)	
Breastmilk	28(46.67)	
Lassa fever can spread from		
Person to person	19(31.67)	
Object to person	37(61.67)	
Person to object	4(6.67)	
Lassa fever is not a preventable dise	ease	-

Yes	9(15.00)		
No	50(83.33)		
None of the above	1(1.67)		
One of the following is side effect of Lassa fever			
Blindness	18(30)		
Deafness	29(48.33)		
Stroke	13(21.67)		
Lassa fever can be contracted through food items contaminated			
Bat urine	2(3.33)		
Dog excreta	0(0.00)		
Rat excreta and urine	58(96.67)		
Lassa fever incubation period is			
4 weeks	3(5.00)		
2-21 days	38(63.33)		
1-7 days	19(31.67)		
Final phase of Lassa fever infection can result in bleeding from			
Any part of the body	33(55.00)		
Nose	17(28.33)		
Eyes	10(16.67)		
The following measures do not prevent spread of Lassa fever			
Environmental sanitation	1(1.67)		
Blood donation	50(83.33)		
Rodent control	10(16.67)		
The following are symptoms of Lassa fever			
Difficulty in breathing	3(5.00)		
Jaundice	1(1.67)		
High fever	56(93.33)		
Total	60		

Perception of Lassa Fever and case detection

The average perception score across all participants was 18.37 ± 4.99, indicating (55%) of the respondents had positive perception overall as shown in table 3. Analysing the sub-constructs of perception provided further insights. With an average score of 7.66 \pm 2.44 on a 12-point scale, participants demonstrated moderate а perception of their susceptibility to Lassa fever. This suggests that while they were aware of the risk, there may be some underestimation of their personal vulnerability. Participants scored an average of 7.96 ± 2.30

on a 12-point scale for perceived severity, indicating a moderate to high recognition of the potential seriousness of Lassa fever infection. The average score for perceived benefits of Lassa fever case detection was 5.97 \pm 1.40 on a 9-point scale. This suggested a moderate understanding of the positive outcomes associated with early identification and reporting of cases. Participants scored an average of 10.94 \pm 3.34 on a 15-point scale for perceived barriers, indicating a moderate perception of obstacles hindering Lassa fever case detection. This highlights the need to address these perceived barriers to facilitate more effective reporting and control efforts.

Table 3. Perception of Lassa fever and case detection

Variables	Rating scale	Respondents N=60	<i>p</i> -value
Negative (0-24)	48	27(45)	0.3267
Positive (28-48)		33 (55)	
Total		60(100)	

Discussion

This baseline assessment highlights significant gaps in the knowledge and perception of LF and case detection among community health influencers. Although participants demonstrated awareness of some key aspects, such as the role of rodents in LF transmission. critical knowledge areas including human-to-human transmission, symptom recognition, and preventive practices remain inadequate. These deficiencies may hinder timely case detection and reporting, exacerbating the public health burden of LF in endemic regions. Similar findings have been reported in previous studies, such as [16,17], which identified limited knowledge among health workers in LF-endemic areas.

Participants' perceptions of LF severity and susceptibility were inconsistent, potentially influencing their engagement in case detection activities. The low perceived risk of infection, despite working in endemic areas, reflects a in risk communication strategies. gap Furthermore, the identified barriers including diagnostic access and limited stigma underscore the need for systemic and community-level interventions to address structural and cultural challenges. Research by [18] similarly emphasizes the impact of perception on health behaviors, highlighting the importance of tailored educational programs to reshape attitudes and beliefs.

The findings underscore the critical role of knowledge and perception in shaping health behaviors and outcomes. Addressing these gaps through targeted training and community engagement is essential to strengthening LF surveillance and control. Furthermore, integrating LF-specific modules into existing community health programs, such as CHIPS, offers a sustainable pathway for enhancing capacity at the grassroots level.

Conclusion

The baseline knowledge and perceptions regarding Lassa fever among community health influencers in Ondo State, Nigeria, are crucially revealed by this study. The results validate the significance of this study since misconceptions and modest levels of knowledge can impede efficient case detection and disease control initiatives. This study emphasizes the need for focused educational interventions catered to community needs by highlighting knowledge gaps and opportunities for development. Community health influencers can be better equipped to identify, report, and handle Lassa fever cases if they get targeted training. These initiatives ought to focus on dispelling myths regarding symptoms, transmission, and prevention to promote more truthful and proactive health habits. A scalable and long-term strategy for bolstering community-based disease surveillance systems is also provided by incorporating these interventions into alreadyexisting community health frameworks, such the CHIPS program. These results demonstrate the wider value of improving health knowledge and attitudes to enhance the management of various infectious diseases in settings with low resources, in addition to combating Lassa fever. Future studies should examine how well these treatments work over the long run and how adaptable they are to other cultural and geographic contexts. By doing this, our study adds to the increasing amount of data demonstrating the vital role community health workers play in international public health campaigns.

Conflict of Interest

There is no conflict of interest.

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