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Evaluation of Knowledge, Attitudes, and Awareness Regarding Lassa fever among Healthcare Professionals in the Irewole Local Government Areas of Osun State

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Abstract

This study investigates the knowledge, attitudes, and awareness of healthcare professionals regarding Lassa fever in the Irewole Local Government Areas of Osun State. Healthcare facilities serve as crucial points of contact for individuals seeking medical assistance, making it imperative to assess the preparedness of healthcare professionals in addressing Lassa fever outbreaks.

A preliminary analysis reveals a substantial knowledge gap among healthcare professionals, with only 27.3% demonstrating awareness of recent Lassa fever outbreaks. This emphasizes the necessity for targeted educational interventions to enhance their understanding of the disease. Additionally, a lack of awareness is observed among respondents regarding the signs and symptoms of Lassa fever, indicating potential challenges in timely recognition and diagnosis.

Further examination indicates that only 37.4% of healthcare professionals recognize the importance of laboratory examination for confirming Lassa fever cases. Reinforcing the significance of accurate and timely diagnosis is crucial for effective disease management and prevention of its spread.

While many healthcare professionals acknowledge the necessity of using gloves when handling suspected Lassa fever cases, a notable number are unaware of the need for additional protective measures. Moreover, a considerable portion lacks awareness that Lassa fever may not exhibit readily observable symptoms, posing potential risks to healthcare workers, their families, and the wider community. This study highlights critical gaps in the knowledge, attitudes, and awareness of healthcare professionals in Irewole Local Government regarding Lassa fever. The findings underscore the urgent need for targeted training programs and awareness campaigns to address these knowledge gaps. Enhancing the preparedness and knowledge of healthcare professionals is essential not only for their safety but also for preventing the secondary transmission of Lassa fever within communities. Empowering frontline healthcare professionals with accurate information remains crucial in the ongoing battle against emerging infectious diseases. The recommendations arising from this study aim to contribute to the development of robust interventions that enhance the overall resilience of healthcare systems in responding to Lassa fever outbreaks.

Keywords: Lassa Fever, Healthcare Professionals, Knowledge Gap, Awareness, Preparedness

Introduction

Lassa fever, a viral hemorrhagic fever, was first discovered in 1969 in the town of Lassa in Borno State, Nigeria (WHO, 2005, 2016) [8, 10]. It is an acute viral hemorrhagic illness caused by the Lassa virus and is endemic in the West African sub-region, affecting approximately 3-5 million individuals yearly (WHO, 2016) [10]. This fever has a significant historical context as its identification followed the infection and tragic loss of lives, including two missionary nurses, in Lassa village, Nigeria, in 1969 (WHO, 2005) [8].

The Lassa virus is primarily hosted by multimammate rats (*Mastomys natalensis*), which are commonly found in rural environments where over 70% of the population resides. These rats breed frequently and are widely distributed throughout central, West, and East Africa (Ogbu, 2007) [3]. The virus is transmitted to humans through contact with the rats' excreta or by

consuming them, a practice considered a delicacy in some endemic regions. The complex interaction between the environment, animal reservoirs, and human health is crucial in understanding the transmission dynamics of Lassa fever.

In addition to the zoonotic transmission, the Lassa virus has the capacity for person-to-person and secondary human spread, particularly through contact with body fluids containing blood (Ogbu, 2007) [3]. This characteristic increases the risks, especially within healthcare settings, necessitating a thorough understanding of the disease's transmission pathways. The dynamic nature of Lassa fever is further emphasized by its recent emergence in outbreaks in Ghana, Ivory Coast, and Nigeria, extending beyond its traditional West African sub-region (WHO, 2016) [10]. Moreover, several imported cases with hazardous outcomes have been reported in countries where Lassa fever is not endemic, emphasizing its potential global impact.

Clinical manifestation of Lassa fever includes symptoms common to other viral and bacterial infections, rendering clinical diagnosis challenging. It is indistinguishable from other feverish illnesses, such as typhoid, malaria, and other viral hemorrhagic diseases like Ebola. All age groups are susceptible, and the incubation period ranges from 6 to 21 days, making early detection challenging (WHO, 2016) [10]. Clinical suspicion is crucial, particularly in patients presenting with fever (>38°C) unresponsive to anti-malarial and antibiotic drugs, along with sore throat, conjunctivitis, bleeding from orifices, haemorrhages, abdominal pains, vomiting, and diarrhea. The complications associated with Lassa fever, including multiple organ damage and sensorineural hearing loss, contribute to its high morbidity and mortality rates, underscoring the severity of the disease (WHO, 2016) [10].

The highly contagious nature of Lassa fever, coupled with its potential to result in death, highlights the importance of careful management, timely control measures, and, in some cases, prophylactic therapy for exposed individuals (WHO, 2016) [10]. Early detection of the disease is crucial for effective management, reducing morbidity and mortality rates. The establishment of diagnostic facilities in endemic zones capable of providing rapid molecular testing is imperative for accurate and timely diagnosis, ensuring appropriate management of cases and contacts exposed to the disease (WHO, 2016) [10].

The prevalence of Lassa fever is evident in reported cases in various Nigerian states, including Nasarawa, Edo, Ondo, Gombe, Taraba, Bauchi, Ebonyi, and Plateau. Edo state, in particular, reported the highest number of both suspected and confirmed cases, with alarming figures indicating 350 suspected cases, 46 laboratories confirmed, and 19 deaths in a single year (Richmond and Baglole, 2005; Olayinka *et al.*, 2015) [5, 4]. This highlights the urgency and gravity of the situation, necessitating a comprehensive understanding of the disease and its impact on public health.

The recurrence of Lassa fever outbreaks in Nigeria in 2015 and May 2016 further calls attention to the need for sustained efforts in disease surveillance, prevention, and control (Richmond and Baglole, 2005; Olayinka *et al.*, 2015) [5, 4]. The potential for global spread and the impact on both endemic and non-endemic regions necessitate heightened awareness and preparedness to effectively mitigate the disease's impact on public health.

Creating awareness about Lassa fever is crucial, especially in severe febrile illnesses within the Nigerian population.

Transmission pathways, both within the community and healthcare settings, underscore the potential risks, particularly when medical equipment is contaminated (Günther *et al.*, 2007; Tobin *et al.*, 2013) [2, 6]. The transformation of healthcare facilities from caring centers to potential death centers highlights the urgency of addressing the knowledge, attitude, and awareness of Lassa fever among health workers.

Lassa fever's complex dynamics, including its historical context, transmission pathways, clinical challenges, and the potential for global impact, necessitate comprehensive efforts in understanding and addressing the disease. The high prevalence and recurrence of outbreaks in Nigeria underscore the urgent need for awareness, preparedness, and education, particularly among healthcare professionals. Sustained efforts in research, diagnostics, and public health interventions are essential for effectively managing and preventing the spread of Lassa fever.

Lassa Fever, a viral hemorrhagic fever, has posed a significant public health challenge in Nigeria, as evidenced by the escalating cases reported to the World Health Organization (WHO). Between August 2015 and May 17, 2016, Nigeria reported 273 cases of Lassa Fever, resulting in 149 deaths. Out of these, 165 cases and 89 deaths were confirmed through laboratory tests, spanning 23 states. Notably, this outbreak affected healthcare workers, with ten reported infections and two fatalities. As of May 2016, eight states continue to report suspected, probable, and confirmed cases following a 21-day incubation period (FMOH, 2016) [1].

The situation has worsened in recent years, with a staggering increase in suspected cases. In 2023, Nigeria experienced a large outbreak, reporting 4702 suspected cases, including 877 confirmed cases and five probable cases, between epidemiological weeks 1 and 15 (ending on April 16). The confirmed cases led to 152 deaths, reflecting a case fatality rate (CFR) of 17%. This marked a 20% surge in confirmed cases compared to the same period in 2022, emphasizing the escalating severity of the Lassa Fever situation (WHO, 2023) [11].

Understanding the factors responsible for the spread of Lassa Fever among healthcare workers in Nigeria is imperative. Observations reveal that Lassa Fever outbreaks are a recurring annual phenomenon, particularly during the dry season (WHO, 2000) [7]. The high fatality rate during the recent outbreak, affecting multiple states, raises concerns about contributory factors.

One significant factor is the inadequacy of hospital infrastructure and equipment. Past incidents, such as the 2012 outbreak in Abakaliki, Ebonyi State, demonstrate the consequences of insufficient facilities. The index case led to the infection of six health workers during surgery, with the virus detected only post-mortem. The absence of an isolation ward at the hospital and the lack of proximity to a suitable laboratory for Lassa Fever testing further exacerbated the situation. Similarly, the 2014 Ebola outbreak in Enugu revealed a lack of preparedness, as a Lassa Fever patient was transferred over 200 km for treatment due to inadequate diagnostic and isolation facilities (Olayinka *et al.*, 2015; Tobin *et al.*, 2013; WHO, 2005) [4, 6, 8].

Moreover, knowledge gaps among health workers contribute to the spread of Lassa Fever. In the 2014 Enugu case, many health workers failed to use appropriate Personal Protective

Equipment (PPE), either due to its unavailability or a lack of awareness. A study in Lassa Fever endemic communities in Edo State highlighted significant knowledge gaps among primary healthcare providers. While gloves were recognized as necessary when handling suspected cases, awareness of additional protection and the absence of readily observable symptoms of Lassa Fever were lacking. This ignorance poses risks not only to the health workers but also to their families and the wider community (Tobin *et al.*, 2013; WHO, 2005) [6, 8].

Ignorance among the general population has also been a persistent issue. Previous studies revealed a lack of awareness regarding rodents as vectors of Lassa Fever, even in endemic communities. Recent media focus on rodent control and heightened awareness campaigns have shown positive changes, yet challenges persist (Tobin *et al.*, 2005; WHO, 2000; WHO, 2005) [6, 7, 8].

Materials and Methods

Study location

Irewole Local Government Area, located in Osun State, Nigeria, serves as the focal point of our study on the knowledge, attitudes, and awareness of Lassa fever among healthcare professionals. Nestled in the southwestern region of Nigeria, Irewole is characterized by its unique blend of urban and rural communities, contributing to the diverse healthcare landscape within the area.

The local government is home to a significant population, and the healthcare infrastructure plays a vital role in catering to the health needs of its residents. Understanding the dynamics within Irewole is crucial for our study, as it encompasses both urban and rural settings, reflecting the broader healthcare challenges faced in such diverse environments.

In Irewole, healthcare facilities serve as primary points of contact for individuals seeking medical assistance. These facilities range from well-equipped urban hospitals to smaller rural clinics, each playing a crucial role in addressing the health concerns of the community. The availability of healthcare services and the level of awareness among healthcare professionals about diseases like Lassa fever can vary across these settings.

The local government's demographic composition, including factors such as age, occupation, and socio-economic status, contributes to the complexity of healthcare delivery. Understanding these demographic nuances is integral to gauging the preparedness and knowledge of healthcare professionals in managing infectious diseases like Lassa fever effectively.

Moreover, Irewole's geographical and environmental characteristics may influence the prevalence of certain diseases. For instance, the proximity to rural areas may increase the risk of diseases with zoonotic transmission, such as Lassa fever. The prevalence of multimammate rats, the natural hosts of the Lassa virus, in rural environments may have implications for the local epidemiology of the disease.

The cultural and social practices within Irewole also play a role in healthcare-seeking behavior and the transmission of diseases. Practices such as the consumption of certain animals or traditional healing methods may impact the spread of infectious diseases. These cultural aspects are vital considerations in our study, contributing to the comprehensive understanding of the factors influencing

healthcare professionals' knowledge and attitudes towards Lassa fever.

As we delve into our investigation within Irewole Local Government, it is essential to acknowledge the unique challenges and opportunities presented by this diverse setting. The findings from this study will not only contribute to the understanding of Lassa fever within the local context but also offer insights that can inform public health interventions tailored to the specific needs of Irewole and similar regions. By focusing on this specific study location, we aim to generate knowledge that can be translated into targeted strategies for improving awareness, preparedness, and overall healthcare outcomes in the face of infectious diseases.

Research Design

The choice of research design is pivotal in aligning the study objectives with an appropriate methodology. This research, aimed at evaluating the knowledge, attitudes, and awareness of health workers regarding Lassa fever in Irewole Local Government Areas of Osun State, adopts a survey method as the most suitable approach.

Instrumentation

Given the study's focus on assessing the knowledge, attitudes, and awareness of Lassa fever among 100 health workers, questionnaires were selected as the primary instrument for data collection. The questionnaires were personally administered by the researcher, ensuring direct interaction with respondents. This approach minimizes errors and enhances the return rate of completed questionnaires.

Data Analysis

As a survey-based study, 100 questionnaires were distributed among health workers. Descriptive statistics, including cross-tabulation, frequency, and percentages, were employed for data analysis. The results were then presented using histograms, ensuring brevity and clarity in conveying the findings.

Sample Area

To represent the study population comprehensively, ten health facilities were randomly selected from all Primary Health Care (PHC) facilities in Irewole LGA. This strategic sampling approach ensures a representative snapshot of the health worker population in the targeted region.

Sample Size

One hundred questionnaires were allocated for administration across the ten selected PHC facilities. This decision ensures an adequate sample size for robust data collection, with each facility receiving ten questionnaires.

Sampling Technique

A simple random sampling technique was employed in both selecting health facilities and identifying respondents. This method promotes fairness and impartiality, crucial for obtaining a representative sample. Notably, newly employed health workers were excluded from the research to maintain data accuracy, considering their potential lack of experience in providing relevant information.

Results and Discussion

The demographic distribution of respondents provides valuable insights into the characteristics of the study population. The following analysis and interpretation are based on the data presented in Table 1.

Table 1: Demographic Distribution of the Respondents

S. No	Demographic Item	Options	Responses	%
1	Gender	Male	37	37.5
		Female	62	62.5
	Total		99	100
2	Marital Status	Single	26	26.3
		Married	51	51.5
		Divorced	11	11.1
		Widowed	8	8.1
		Separated	3	3.0
	Total		99	100
3	Religion	Christianity	55	55.5
		Muslim	29	29.3
		Traditional Worshipers	16	16.2
	Total		99	100

Gender Distribution:

- The majority of respondents in the study area are female, comprising 62.5% of the total responses.
- Male respondents make up 37.5% of the total, indicating a gender imbalance among health workers in the study.

Marital Status

- The highest proportion of respondents are married, constituting 51.5% of the total.
- Single individuals represent 26.3%, while divorced, widowed, and separated respondents make up smaller percentages (11.1%, 8.1%, and 3.0% respectively).

Religious Affiliation

- The majority of health workers identify as Christians, accounting for 55.5% of the total responses.
- Muslim health workers make up 29.3%, and those following Traditional Worship represent 16.2%.

Table 2: Knowledge about Awareness of Lassa Fever

S. No	Items	Options	Responses	%
1	Are you aware about the recent outbreak of Lassa fever?	Yes	38	38.4
		No	61	61.6
	Total		99	100
2	Do you know that the disease is common in Africa?	Yes	27.3	27.3
		No	72.7	72.7
	Total		99	100
3	Have you treated or admitted any patient of Lassa fever before?	Yes	0	0
		No	99	100
	Total		99	100
4	Do you know that early signs & symptoms of Lassa fever is similar to that of malaria?	Yes	32	32.3
		No	67	67.7
	Total		99	100

From Table 2 above, 38.4% of the respondents are aware of the recent outbreak of Lassa fever in Nigeria while more than half of the respondents are not aware (61.6%). Likewise, only 27.3% of the respondents know that Lassa fever is common in Africa, while 72.7% are not aware of its endemic nature in Africa. None of the respondents claimed to have treated Lassa fever patients ever since they have been working in the health facility. Due to the responses of the respondents, it is clear that the level of awareness among health workers about Lassa fever is low, calling for more enlightenment and awareness for them to have adequate knowledge about Lassa fever. Finally, the table presented respondents' responses about early signs and symptoms of

Lassa fever, with 32.3% claiming to know the signs and symptoms, while 67.7% could not differentiate between Lassa fever and common fever or malaria.

Table 3: Awareness about Signs and Symptoms of Lassa Fever

S. No	Items	Options	Responses	%
1	Do you know that without laboratory investigation, early detection of Lassa fever may be difficult?	Yes	41	41.4
		No	58	58.6
	Total		99	100
2	Are you aware that hemorrhage is associated with the latent stage of Lassa?	Yes	37	37.4
		No	62	62.6
	Total		99	100
3	Do you know that Lassa fever patients must not share anything with other patients?	Yes	60	60.6
		No	39	39.4
	Total		99	100
4	Do you know that you must admit Lassa fever patients in a separate ward?	Yes	71	71.7
		No	28	28.3
	Total		99	100

In Table 3, 41.4% of the respondents believe that Lassa fever can only be confirmed through laboratory investigation, while 58.6% do not see the need for laboratory investigation. A limited percentage of the respondents are aware that hemorrhage is associated with the acute stage of Lassa fever, with 37.4% claiming awareness and 62.6% not aware. About 39.4% of the respondents claim not to know that Lassa fever patients must not share anything with other patients, while 60.6% are fully aware of this. Based on the information from the table, 71.7% of the respondents said they know that patients with Lassa fever must not be admitted to the same ward as other patients, while 28.3% said they don't know.

Table 4: Lassa Fever Patient Handling

S. No	Items	Options	Responses	%
1	Do you know that you need to disinfect & sterilize any article used by Lassa fever patient?	Yes	69	69.7
		No	30	30.3
	Total		99	100
2	Are you aware that the use of personal protective equipment is a must when handling Lassa fever patient?	Yes	82	82.8
		No	17	17.2
	Total		99	100
3	Do you know that Lassa fever patient waste material should be treated specially?	Yes	62	62.6
		No	37	37.4
	Total		99	100
4	Do you know that you must be sure of a patient's nature of disease before treatment, to know how to protect yourself as a health worker?	Yes	41	41.4
		No	58	58.6
	Total		99	100

From the respondents' responses in the table above, 69.7% of the respondents know that they need to disinfect and sterilize any article used by Lassa fever patients to get rid of the microorganisms that might be present in them. However, 30.3% of the respondents do not know that they need to sterilize all the articles used by Lassa fever patients. The table also shows that 82.8% of the respondents are aware of the need to use personal protective equipment when

handling Lassa fever patients, while 17.2% do not see this as an important measure. Based on the information above, 62.6% of the respondents are aware that they need to treat Lassa fever patients specially, while 37.4% of the respondents do not know that it is important to treat them specially. Finally, it is clear that 58.6% of the respondents agreed that Lassa fever patients should not share anything with other patients, while 41.4% said they do not know this.

Conclusion and Recommendations

Conclusion

The study underscores the existing knowledge gaps and awareness issues among health workers regarding Lassa fever in Irewole Local Government Area of Osun State, Nigeria. Findings from the research align with the World Health Organization's observation that Nigerian health workers lack adequate knowledge on preventing nosocomial infections, as evidenced by lapses in using Personal Protective Equipment (PPE) during the handling of the 2014 Lassa fever case in Enugu (WHO, 2015)^[9].

The study conducted by Tobin *et al.* (2013)^[6] revealed notable knowledge gaps among primary health care providers in Lassa fever endemic suburban communities in Nigeria. Despite awareness of the necessity to use gloves when handling suspected Lassa fever cases, a significant number of health workers were unaware of the need for additional protection and the absence of readily observable symptoms in Lassa fever cases, thus putting themselves, their families, and the wider community at risk of secondary infections.

This research, focusing on health workers in Irewole Local Government Area in Osun State, serves to reinforce the concerns raised by WHO regarding the knowledge levels of health workers in Nigeria.

Recommendations

Based on the conclusions drawn from the study, the following recommendations are proposed:

Comprehensive Training for Health Workers

- Ensure that all health workers receive comprehensive information about various diseases, irrespective of their cadres.
- Prioritize sensitization of health workers during outbreaks of infectious diseases to enhance preparedness and response.

Regular Training and Seminars

- Conduct regular training sessions and seminars for health workers to continually update and upgrade their knowledge in the dynamic field of healthcare.

Emphasis on Safety at the Workplace

- Promote a culture of safety in healthcare settings, emphasizing the proper use of Personal Protective Equipment (PPE) to minimize the risk of nosocomial infections.

Government Policies and Support

- The government should implement policies that mandate privately established health facilities to provide adequate training for their staff, recognizing their crucial role in the overall health sector.

Rodent Control Strategies

- Establish a special program focused on rodent control strategies to reduce the risk of Lassa fever transmission, including public awareness campaigns and community-based interventions.

Regular Training and Retraining

- Make training and retraining of health workers a priority, ensuring that they stay informed about the latest developments and protocols in disease management.

By implementing these recommendations, there is the potential to bridge existing knowledge gaps among health workers, enhance their awareness of infectious diseases like Lassa fever, and ultimately contribute to improved public health outcomes in the community.

References

1. Federal Ministry of Health (FMOH). Lassa Fever Outbreak Situation Report. Nigeria, 2016.
2. Günther S, Emmerich P, Laue T, Kühle O, Asper M, Jung A, *et al.* Imported Lassa fever in Germany: Molecular characterization of a new Lassa virus strain. *Emerging Infectious Diseases*. 2007; 13(6):1001-1008. Doi: <https://doi.org/10.3201/eid1306.070292>
3. Ogbu O. Lassa fever in West African sub-region: An overview. *Journal of Vector Borne Diseases*. 2007; 44(1):1-11.
4. Olayinka AT, Dawodu SO, Oyeyemi BF, Ogunleye A. Lassa fever presenting as acute abdomen: A case series. *Virology Journal*. 2015; 12(1):131. Doi: <https://doi.org/10.1186/s12985-015-0351-1>
5. Richmond JK, Baglole DJ. Lassa fever: Epidemiology, clinical features, and social consequences. *BMJ*. 2005; 327(7426):1271-1275. Doi: <https://doi.org/10.1136/bmj.327.7426.1271>
6. Tobin EA, Asogun DA, Isah EC, Ugege OG, Ehbodaghe P, Maikenti JI, *et al.* Knowledge, attitude, and practice of Lassa fever prevention among healthcare workers in a teaching hospital in Edo State, Nigeria. *International Journal of Infection Control*. 2013; 9(4):1-7. Doi: <https://doi.org/10.3396/IJIC.v9i4.020.13>
7. World Health Organization. Lassa Fever Fact Sheet, 2000. Retrieved from <https://www.who.int/en/news-room/fact-sheets/detail/lassa-fever>
8. World Health Organization. Lassa Fever: Guidelines for Surveillance, Prevention and Control, 2005. Retrieved from https://www.who.int/csr/disease/lassafever/lassa_guidelines/en/
9. World Health Organization. Health workers not ready to handle Lassa fever, Ebola – WHO, 2015. <https://www.premiumtimesng.com/news/more-news/175370-health-workers-not-ready-to-handle-lassa-fever-ebola-who.html>
10. World Health Organization. Lassa fever-Nigeria, 2016. <https://www.who.int/csr/don/28-february-2016-lassa-fever-nigeria/en/>
11. World Health Organization. Lassa Fever – Nigeria, 2023. Retrieved from <https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON337>