African Journal of
Medicine, Surgery and Public Health Research

ISSN: 1595-8000

Index: Harvard, Boston, Sydney University, Dimensions, Lens, ResearchGet Scilit, Semantic, Google Scholar, Base etc

https://doi.org/10.58578/AJMSPHR.v2i2.5517

Persistent Threat of Lassa Fever in Nigeria: Epidemiology, Challenges, and Strategies for Effective Management

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Article Info:

Submitted:	Revised:	Accepted:	Published:
Mar 25, 2025	Apr 9, 2025	Apr 21, 2025	Apr 26, 2025

Abstract

Lassa fever is a viral hemorrhagic disease that poses a significant public health threat in Nigeria and West Africa. This review assesses the epidemiological trends, health impacts, and socioeconomic consequences of Lassa fever in Nigeria while proposing strategies for effective management and prevention. The natural reservoir of the Lassa virus, the multimammate rat (Mastomys natalensis), is prevalent in Nigerian households, facilitating transmission through direct contact with the rodents or their excreta, which often contaminates food. Consumption of these rats as a delicacy further exacerbates the risk. Current epidemiological data reveal that Lassa fever is endemic in Nigeria, with seasonal outbreaks primarily occurring in the dry season. The Nigeria Centre for Disease Control and Prevention (NCDC) reported 80 deaths and 413 confirmed cases across 11 states during Epidemiological Week 6 of 2025, with Taraba, Ondo, Bauchi, and Edo states accounting for over 73% of these cases. The Case Fatality Rate (CFR) for Lassa fever has risen to 19.4% in 2025, compared to 17.5% in 2024, likely due to factors such as underreporting and limited healthcare access. Notably, the CFR can range

from 1% to 50%, influenced by healthcare access and early detection. The urgent nature of Lassa fever necessitates enhanced public health interventions, community education, and effective surveillance systems to mitigate its incidence and socioeconomic impact in Nigeria, thereby contributing to the achievement of Sustainable Development Goal target 3.3 to eliminate epidemics of Lassa fever and other neglected tropical diseases by 2030.

Keywords: Lassa Fever, Epidemiology, Public Health Intervention, Case Fatality Rate, Nigeria

INTRODUCTION

Lassa fever, a viral hemorrhagic disease caused by the Lassa virus LASV of the Arenaviridae family, remains endemic in Nigeria and West Africa, presenting a significant public health challenge due to its high mortality rate and socioeconomic consequences. First identified in 1969 in Lassa, Borno State,the disease is transmitted through contact with infected rodents, particularly the multimammate rat (Mastomys natalensis), or contaminated items, and through person-to-person transmission in overcrowded or unhygienic settings (Okoro et al., 2020; Nyiwoh et al 2021).

The disease disproportionately affects rural communities, where poor sanitation and waste management foster the proliferation of Mastomys natalensis, magnifying the risk of infection. Clinical manifestations range from mild flu-like symptoms to severe complications, including bleeding, pulmonary edema, and encephalopathy, with in-hospital mortality rates as high as 69%. Diagnosis relies on techniques such as RT-PCR and ELISA, but access to these is limited, especially in under-served areas. While ribavirin has been used for treatment, its efficacy remains inconclusive, and the absence of a vaccine exacerbates the difficulty in managing outbreaks(Izah et al.,2022; Al-Mustapha et al., 2024).

Lassa fever has profound socioeconomic impacts. Outbreaks strain healthcare systems, disrupt local economies, and create social stigmatization for survivors. Epidemiological data from 2022 to 2025 underscore the rising case fatality rates and the seasonal nature of outbreaks, emphasizing the need for comprehensive public health responses. Efforts by the Nigeria Centre for Disease Control (NCDC) and global organizations, such as enhanced surveillance systems and public sensitization campaigns, have shown progress but remain insufficient to prevent recurring outbreaks(Izah et al., 2022; NCDC,2024)

Addressing the persistent challenges of Lassa fever in Nigeria requires a multifaceted approach. Improved disease surveillance, enhanced healthcare infrastructure, community education, and effective rodent control measures are essential. Additionally, fostering government and community partnerships will be critical in reducing the disease burden and mitigating its socioeconomic consequences (Amakiri et al., 2020; Usuwa et al., 2020).

Search strategy

A comprehensive literature search was conducted using reputable databases, including PubMed,Google Scholar,Science Direct, NCDC websites and the Cochrane Library, to gather relevant information on Lassa fever. The search strategy utilized keywords such as "Viral hemorrhagic disease," "Lassa fever," "Public health, "Nigeria," and "West Africa" to ensure a focused data collection (WHO, 2023; NCDC, 2025).

Aim and Objectives of the Study

Aim: To analyze the epidemiological trends, health impacts, and socioeconomic consequences of Lassa fever in Nigeria to recommend effective strategies for its management and prevention.

Objectives:

1. To investigate the epidemiological patterns of Lassa fever outbreaks in Nigeria from 2020 to 2025.

2. To assess the socioeconomic impact of Lassa fever on affected communities and the nation as a whole.

3. To evaluate the effectiveness of existing public health interventions, including disease surveillance, early detection, and response mechanisms.

4. To recommend evidence-based strategies for improving community education, healthcare systems, and disease prevention efforts.

Epidemiology

Lassa fever, first identified in 1969 in the town of Lassa, Nigeria, has evolved into a persistent public health challenge in West Africa and now greatly gaining global attention. The Lassa virus has undergone significant genetic mutations, resulting in seven phylogeographic lineages (I–VII) distributed across the globe. Of these, three lineages (I–III) are prevalent in Nigeria, affecting its northeastern, southern, and north-central areas.

Lineages IV and V are endemic to Guinea, Sierra Leone, Liberia, Southern Mali, and the Ivory Coast, while the newly identified VI and VII lineages have been isolated in Nigeria and Togo(Dalhat et al., 2022; Adesola et al., 2024).

Annually, Lassa fever accounts for an estimated 100,000–300,000 cases and approximately 5,000 deaths in West Africa. Outbreaks predominantly occur during the dry season, spanning December to April. In Nigeria, the incidence of reported cases and fatalities has steadily increased since 2016. For instance, 2016 had 109 laboratory-confirmed cases and 119 deaths across 29 states. By 2017, confirmed cases rose to 322, with 70% concentrated in Edo, Ondo, and Taraba states. The years 2018–2019 witnessed a surge in cases and fatalities, with a case fatality rate (CFR) of 20%–30%, and over 80% of cases originating from Edo, Ondo, Ebonyi, and Taraba states (Balogun et al., 2020; Adesola et al., 2024; NCDC, 2025).

In 2020 as in figure 2 above, amidst the COVID-19 pandemic, cases escalated to 1,189 laboratory-confirmed cases and 244 deaths, predominantly affecting individuals aged 20–30 years. A decline in cases was observed in 2021, with 510 confirmed cases and 102 deaths across 17 states, resulting in a CFR of 20%. This reduction may be attributed to the prioritization of COVID-19 control measures, which masked the diagnosis and reporting of Lassa fever cases due to overlapping symptoms. However, the 2022 outbreak saw a resurgence, with 923 confirmed cases and 171 fatalities across 27 states, yielding a CFR of 18.5% (Izah et al., 2022; Gulumbe et al., 2023; NCDC, 2024). Ondo, Edo, Taraba and Bauchi (TOBE) states accounted for 72% of the annual cases. As of March 2023, the upward trend continues, with 784 confirmed cases and 142 deaths reported. As of the same March in 2024, 151 died from 817 of Lassa fever confirmed cases while in 2025, 127 deaths occurred from 674 confirmed cases in the first quarter across 18 states, (Adesola et al., 2024; NCDC, 2025).

Several challenges aggravates and are responsible for the persistent occurrence and spread of Lassa fever in Nigeria. The multimammate rat (Mastomys natalensis) which is the primary reservoir of the virus thrives in agricultural and living habitats of man thereby facilitating human contact with infected the rodents or their excreta (Amakiri et al., 2020). Currently, only this West African multimammate rats are known to carry the Lassa virus LASV. This rat has multiple nipples hence its name multimammate. Poor food storage practices and the consumption of rats as food further increase the risk of transmission.

Cultural practices, such as using bathing water from corpses, also contribute to the virus's spread. The nonspecific symptoms of Lassa fever often mimics other endemic viral infections, leading to frequent misdiagnoses as malaria. Accurate diagnosis requires advanced PCR-based assays, which are not always available in neglected areas (Grace et al., 2021; WHO,2023;Al-Mustapha et al.,2024).

To address these challenges, it will require a multifaceted method, including improved diagnostic capabilities, enhanced public awareness, and targeted interventions to reduce human-rodent contacts. Also, a sustained effort is necessary to mitigate the impact of this endemic disease in Nigeria and the African continent (Adesola et al., 2024; NCDC, 2024; Akindokun et al., 2024).

Lassa fever (LF) is recognized as an annual epidemic in West Africa, with Nigeria reporting the highest yearly incidence. The disease peaks seasonally during the dry season months from November to April, and in similar vein affecting countries such as Sierra Leone, Ghana, Mali, Benin, Togo, Guinea, and Liberia. Diagnosis of LF is frequently delayed due to its nonspecific symptoms, which include fever and fatigue, often mistaken for other febrile illnesses like malaria, a prevalent condition in sub-Saharan Africa. This overlap affects timely identification and intervention, aggravating the impact of the disease (Wada et al., 2022; Dalhat et al., 2022).

Socioeconomic Implication

Beyond the direct health consequences, Lassa fever has profound socioeconomic ripple effects. The recurrent outbreaks strain Nigeria's healthcare infrastructure and economy. Communities reliant on agriculture and trade experience disruptions, as infected individuals are isolated and local markets are shut down. Healthcare workers, who are at high risk of infection due to inadequate protective measures, face increased workloads and personal danger, further destabilizing the system (Naeem et al., 2023; Akindokun et al., 2024).

Challenges and Response

The response to Lassa fever outbreaks is coordinated by the NCDC, which has activated a National Multi-Partner, Multi-Sectoral Incident Management System. Despite these efforts, challenges persist, including poor lifestyle and hygiene, inadequate supply of clinical treatment regimen, and ineffective vaccination programs. The disease's nonspecific symptoms made it masquerades as other febrile illnesses, such as fever, muscle pain, sore

throat, and abdominal discomfort, complicating early diagnosis and management (NCDC, 2024).

METHODS

Study review setting: Nigeria, with its 36 states and the Federal Capital Territory (FCT), is divided into six geopolitical regions: South East, South South, South West, North Central, North West, and North East. The country experiences two distinct seasons: the rainy season, which begins between March and May and ends between September and November, depending on the region, and the dry season, which starts in October or December and ends in April, sometimes extending to May or June in certain areas.

Lassa fever surveillance in Nigeria is conducted through the Integrated Disease Surveillance and Response (IDSR) platform. Information flows from health facilities via ward focal persons to Local Government Area (LGA) Disease Surveillance and Notification Officers (DSNOs). These officers then relay the data to State DSNOs, who pass it on to the Federal Ministry of Health through the State Epidemiologist. Feedback follows the reverse path, ensuring a continuous exchange of information. All states, including the FCT, report through the IDSR system (NCDC , 2024).

The Nigeria Centre for Disease Control (NCDC) classifies epidemiological (Epi) weeks based on a standardized calendar system. Each epidemiological week begins on Monday and ends on Sunday in 2025.The Lassa Fever Situation Report for 2025 Epi Week 1 started from 30th December 2024–5th January 2025. This classification allows for consistent tracking and reporting of disease trends throughout the year (NCDC, 2025).

Review design and population: A secondary analysis of Lassa fever-specific records from Nigeria's Integrated Disease Surveillance and Response (IDSR) system was conducted for the period 2020–2025. Weekly epidemiological data, obtained from the Nigeria Centre for Disease Control (NCDC) Surveillance and Epidemiology Department, included variables such as state of residence and Lassa fever classification based on laboratory diagnosis (suspected or confirmed cases) were exported from the NCDC websites.

Inclusion criteria:

Articles considered for inclusion spanned the period from 2020 to 2025 that have reported significant data on the clinical presentation, transmission patterns, epidemiology,

management and the socioeconomic challenges associated with mitigating Lassa fever in Nigeria. To ensure accuracy and relevance, references cited within the included articles were cross-checked to validate the authenticity of the data.

Exclusion criteria:

Articles that did not align with the research objectives were filtered out

Artilces that were not written in English were excluded

Articles that focused solely on animal model studies were filtered out.

Data collection

The area of coverage for this review included all states in Nigeria. Data on weekly Lassa fever incidence were collected from the Nigerian Centre for Disease Control (NCDC) website from December 30th, 2024 to April 6th, 2025 to showcase the Lassa haemorrhagic fever situations for the first quarter of 2025.

RESULTS AND DISCUSSION

The concise presentation of results from Table 1 and Figure 5-8 below highlights critical epidemiological data and response efforts for Lassa fever in 2025.

Epidemiological Trends: In week 14 of 2025, the number of new confirmed cases rose slightly from 14 cases in week 13 to 15 cases. These were distributed across Ondo, Bauchi, Edo, Taraba, Ebonyi, and Gombe States. Cumulatively, 127 deaths have been reported with a Case Fatality Rate (CFR) of 18.8%, reflecting an increase compared to the 18.5% CFR for the same period in 2024. Overall, 18 states have recorded at least one confirmed case across 93 Local Government Areas, emphasizing the widespread nature of the outbreak (NCDC,2025).

Geographical Distribution: Seventy-one percent (71%) of all confirmed cases originated from three states—Ondo, Bauchi, and Edo—while the remaining 28% were reported from 15 other states with confirmed Lassa fever cases. Of the 71% concentration, Ondo reported 30% of cases, Bauchi 25%, and Edo 16%, highlighting the disproportionate impact on these regions (NCDC, 2024).

Demographics: The predominant age group affected is 21–30 years, with a median age of 30 years and a range from 1 to 94 years. The male-to-female ratio for confirmed cases stands at 1:0.8, indicating a slightly higher prevalence among males.

Suspected Cases and Healthcare Impact : A decrease in the number of suspected cases was observed compared to the same period in 2024, demonstrating progress in identification or containment. No new healthcare worker infections were reported in week 14, signifying improved protective measures and training efforts among health personnel (NCDC, 2025).

Coordination and Response: The National Lassa Fever Multi-Partner, Multi-Sectoral Incident Management System (IMS) has been activated to oversee and coordinate response activities at all levels, aiming to curb the outbreak and mitigate its impacts in Nigeria (NCDC, 2025)

The epidemiological analysis of Lassa fever in Nigeria (2020–2025) reveals its persistent nature and widespread impact. Data from the confirmed cases by states, trends over epidemiological weeks, and the primary reservoir of the infection,the African rat, demonstrate its endemic status and emphasize the importance of targeted ecological interventions. Efforts like rodent control, environmental sanitation, and public sensitization on food drying practices and rodent consumption have been critical in reducing exposure risks. However, challenges remain in ensuring that these preventive measures reach under-served areas effectively (Izah., 2022; Dalhat et al., 2022) .

Regarding the public health response, measures such as healthcare worker training programs, protective guidelines for handling suspected cases, and community awareness campaigns have shown cumulative progress. These interventions have enhanced disease management capabilities and also highlighted gaps in healthcare access and infrastructure, particularly in high-burden regions (Okoro et al., 2020; Adesola et al., 2024).

The outbreak's socioeconomic ripple effects have been profound, straining healthcare systems through increased patient loads and overwhelming medical personnel. Economic hardships caused by the disease, including lost productivity and income, have exacerbated poverty levels in rural communities. Additionally, the stigmatization of survivors has posed significant social challenges, eroding community trust and cohesion. These impacts underscore the need for tailored interventions that address both the health and socioeconomic dimensions of the epidemic (Akindokun et al., 2024).

CONCLUSION

Lassa fever remains a silent yet formidable killer and public health challenge in Nigeria, with far-reaching implications for both health systems and socioeconomic stability. The epidemiological data provided underscores the need for a comprehensive approach to mitigate its impact, addressing environmental factors, disease transmission dynamics, and social determinants of health. By prioritizing proactive measures—such as public education, healthcare worker training, and the strengthening of surveillance systems—the government and NGOs can reduce the risk of future outbreaks and alleviate the profound burden on vulnerable communities.

Recommendations

1. Strengthen Disease Surveillance: The government of Nigeria should establish robust monitoring and reporting systems, enhance laboratory capacity, and re-position emergency response teams to ensure prompt detection and response.

2. Promote Rodent Control and Environmental Sanitation: The government of Nigeria and NGOs should partner with researchers, local authorities, traditional leaders, and community groups to implement targeted rodent control initiatives and improve hygiene practices.

3. Increase Public Awareness: Public Health Researchers and the people of Nigeria should launch multimedia and community-based sensitization programs focused on educating residents about Lassa fever transmission, prevention, and early detection, especially in high-risk areas. This can be funded by the government of Nigeria/NGOs.

4. Reinforce Healthcare Infrastructure: The government should allocate resources to enhance healthcare accessibility by improving facilities, training healthcare workers, and ensuring the availability of protective equipment and supply of medicines to the Lassa fever endemic and epidemic prone states and areas.

5. Invest in Research and Innovation: Research grants and support studies should aimed at vaccine development, antiviral therapies, and novel public health strategies for managing Lassa fever outbreaks. Also, providing financial incentives to interested researchers on Lassa fever control and prevention.

6. Encourage Multisectoral Collaboration: Foster partnerships among government bodies, NGOs, and international organizations to pool expertise and resources for combating the disease effectively.

Limitations : These limitations can pave the way for future research.

1. Under-reporting of Cases: The epidemiological data, such as case counts and CFRs, might not fully capture the true burden of Lassa fever due to under-reporting and misdiagnosis in rural and under-served areas.

2. Limited Geographic Scope:While this analysis focuses on Nigeria, outbreaks in neighboring West African countries might influence regional trends and dynamics, but this has not been fully explored in this review.

3. Data Gaps:There may be gaps in the availability of reliable and up-to-date for certain epidemiological indicators (e.g., trends beyond week 14 of 2025).

4. Bias in Source Material: The data and conclusions relied heavily on official reports from the NCDC and WHO, which could be influenced by reporting standards and political factors.

5. Unaccounted Socioeconomic Factors:While socioeconomic impacts are mentioned, deeper exploration of indirect effects (e.g., long-term psychological effects or regional economic disparities) may be limited.

6. Lack of Primary Data Collection: Since the review relies on published sources, it is constrained by the quality, scope, and availability of the studies reviewed.

REFERENCES

Adesola, R. O., Idris, I., Bakre, A. A., Arthur, J. F., & D'Souza, J. N. (2024). Challenges Associated With Re-Emergence of Lassa Fever in Nigeria: An Exploratory Study of Epidemiology, Phylogenomics, and Recommendations Toward Its Eradication. Health science reports, 7(12), e70225. https://doi.org/10.1002/hsr2.70225

Amakiri, P. C. , Nkwoemeka, N. E. , Okwelogu, I. S. , Njoku, O. C. , & Chukwudi, V. N. (2020). Challenges to the Control and Eradication of Lassa Fever Virus in Nigeria. American Journal of Public Health Research, 8(4), 118-121.

Akindokun, S. S., Adeleye, O. O., & Olorunlowu, D. R. (2024). The socioeconomic impact of Lassa fever in Nigeria. Discover Public Health,21,133. https://doi.org/10.1186/s12982-024-00265-z

Al-Mustapha, A. I., Adesiyan, I. M., Orum, T. G., Ogundijo, O. A., Lawal, A. N., Nzedibe, O. E., Onyeka, L. O., Muhammad, K. U., Odetayo, L., Oyewo, M., Muhammad, S. O., Atadiose, E. O., Adebudo, L. I., Adetunji, D. A., Jantiku, H. J., Akintule, A. O., Nwachukwu, R. C., & Abubakar, A. T. (2024). Lassa fever in Nigeria: epidemiology and risk perception. Scientific reports, 14(1), 27669. https://doi.org/10.1038/s41598-024-78726-3

Balogun, O. O., Akande, O. W., & Hamer, D. H. (2020). Lassa Fever: An Evolving Emergency in West Africa. The American journal of tropical medicine and hygiene, 104(2), 466–473. https://doi.org/10.4269/ajtmh.20-0487

Dalhat, M. M., Olayinka, A., Meremikwu, M. M., Dan-Nwafor, C., Iniobong, A., Ntoimo, L. F., Onoh, I., Mba, S., Ohonsi, C., Arinze, C., Esu, E. B., Nwafor, O., Oladipupo, I., Onoja, M., Ilori, E., Okonofua, F., Ochu, C. L., Igumbor, E. U., & Adetifa, I. (2022). Epidemiological trends of Lassa fever in Nigeria, 2018-2021.PloSone,17(12),e0279467. https://doi.org/10.1371/journal.pone.0279467

Grace, J.-U. A., Egoh, I. J., & Udensi, N. (2021). Epidemiological trends of Lassa fever in Nigeria from 2015–2021: A review.Therapeutic Advances in Infectious Disease, 8, 1–7. https://doi.org/10.1177/20499361211058252

Gulumbe, B. H., Aminu, U., Liman, U. U., Abdulrahim, A., & Kalgo, Z. M. (2023). Recurring outbreaks of Lassa fever in Nigeria: Understanding the root causes and strategies for the future. Sudan Journal of Medical Sciences, 18(2), 257–264. https://doi.org/10.18502/sjms.v18i2.13608

Izah SC, Ovuru KF, Ogwu MC (2022) Lassa fever in Nigeria: Social and Ecological Risk Factors Exacerbating Transmission and Sustainable Management Strategies. Int J Trop Dis 5:065.

Okoro, O. A., Bamgboye, E., Dan-Nwafor, C., Umeokonkwo, C., Ilori, E., Yashe, R., Balogun, M., Nguku, P., & Ihekweazu, C. (2020). Descriptive epidemiology of Lassa fever in Nigeria, 2012-2017. Pan African Medical Journal, 37(15). https://doi.org/10.11604/pamj.2020.37.15.21160

Naeem, A., Zahid, S., Hafeez, M. H., Bibi, A., Tabassum, S., & Akilimali, A. (2023). Re-emergence of Lassa fever in Nigeria: A new challenge for public health authorities. Health science reports, 6(10), e1628. https://doi.org/10.1002/hsr2.1628

Nigeria Centre for Disease Control and Prevention (NCDC). (2024). Nigeria records 1,154 confirmed cases of Lassa fever and 190 deaths. Leadership News. Retrieved from https://leadership.ng/lassa-fever-nigeria-recorded-1154-cases-190-deaths-in-2024-ncdc/

Nigeria Centre for Disease Control and Prevention (NCDC). (2025). Rise in Lassa fever cases in Nigeria: NCDC reports 80 deaths in six weeks. Public Health Nigeria. Retrieved from https://www.publichealth.com.ng/rise-in-lassa-fever-cases-in-nigeria-ncdc-reports-80-deaths-in-six-weeks/

Nyinoh, I. W., Utume, L. N., & Bob-Echikwonye, O. (2021). A review of Lassa fever cases in Nigeria for the year 2020. International Journal of Community Medicine and Public Health, 8(6), 2572–2575.

Usuwa, I. S., Akpa, C. O., Umeokonkwo, C. D., Umoke, M., Oguanuo, C. S., Olorukooba, A. A., Bamgboye, E., & Balogun, M. S. (2020). Knowledge and risk perception towards Lassa fever infection among residents of affected communities in Ebonyi

State, Nigeria: Implications for risk communication. BMC Public Health,20(1),217. https://doi.org/10.1186/s12889-020-8299-3

Wada, Y. H., Ogunyinka, I. A., Yusuff, K. B., Ochu, C. L., Yahaya, M., Khalid, G. M., Mutalub, Y. B., & Adeniye, S. B. (2022). Knowledge of Lassa fever, its prevention and control practices and their predictors among healthcare workers during an outbreak in Northern Nigeria: A multi-centre cross- sectional assessment. PLoS neglected tropical diseases, 16(3), e0010259. https://doi.org/10.1371/journal.pntd.0010259

World Health Organization (WHO). (2023). Lassa fever - Nigeria. Retrieved from https://www.who.int/emergencies/disease-outbreak-news/item/lassa-fever---nigeria