

Lassa fever and COVID-19 in Africa: A double crisis on the fragile health system

Dear Editor,

Lassa Fever (LF), an acute zoonotic disease caused by the Lassa fever virus (LFV), has approximately 2 million annual occurrences with 5000 to 10000 deaths.¹ The disease has been identified to be endemic in Africa, particularly West Africa, where a larger percentage is recorded in Guinea, Liberia, Nigeria and Sierra Leone,² especially as a result of its transmission pathways which is through rodents and warm-blooded species via contact with their pathogenic infected body wastes around the house.¹⁻³

Studies have shown that one of the major challenges facing the fight against this disease is the similarities between its symptoms, that include, sore throat, pains in the joints, back and chest, and weakness,¹ with many other popular diseases. Since the disease can progress in serious cases to pharynx inflammation, conjunctivitis, abdominal pains, diarrhoea, vomiting and clinical manifestations that range from facial drops to respiratory symptoms, loss of hearing, acute hemorrhagic fever, multiple-organ failure, foetal loss and death,^{1,2} that under and misdiagnosis is a problem as early diagnosis is key to effective treatment with Ribavirin, which is recommended to be used in the first 6 days of infection.¹ In addition, the presence of vaccines to help combat the virus and its spread, still remains unpopular to many.³

The pre-existing situation has been aggravated by the coronavirus disease 2019 (COVID-19) pandemic. As expected, the pandemic has different annihilating public health and socioeconomic impacts across the world, resulting in a reduction in the epidemiological control of several infectious diseases, such as zoonotic diseases.⁴⁻⁶ Africa, like every other continent has been affected, and the pre-existing deficits in its health system add as a major disadvantage,⁷ and Nigeria, besides other West African nations, is also faced with a repetitive Lassa fever epidemic. As of May 3, 2021, the entire number of COVID-19 cases in Nigeria amounted to 165.2 thousand. Lagos was the foremost affected state, tallying up to 58.5 thousand cases. Government Capital Domain (FCT) and Kaduna had the second and third most elevated number of aggregate cases, separately.⁸

COVID-19 in Nigeria is at 56,256 affirmed cases with 1082 deaths across the country, though LF comes to 1078 affirmed cases with 225 deaths.⁹ The yearly hike of human cases is more often than not watched amid the dry season (December–April) taking after the generation cycle of the vector within the monsoon season (May–June). This repetitive transient pattern related to LF implies that the pandemic started shortly after LF peaked in Nigeria,

resulting in a double crisis of COVID-19 and LF. Amid epidemiological Week 9 of 2020, when the first affirmed case of COVID-19 was recorded in Nigeria, there was an increase in the number of affirmed LF cases. The expanded number of cases from the 2019 LF plague brought about the early rise of LF in 2020.⁹ In 2007, almost 6% of febrile adults and 3.5% of intensely febrile sick children in endemic ranges have affirmed infections. Indeed, with steady care and treatment with ribavirin, case fatalities were still as high as 24%–33% in tertiary clinic settings in recent times whereas almost 13.5% of survivors have sensorineural hearing loss. Also, LF accounts for almost 22% of hospital maternal mortality in endemic ranges. Unfortunately, LF control was quite ignored in Nigeria. This disappointment permitted the episodes to gain in recurrence and seriousness with numerous deaths, which also included healthcare workers.¹⁰

The extent of cases shifted from 37% to 82% within the first quarter, 8%–30% within the second quarter, 6%–22% within the third quarter, and 11%–33% within the fourth quarter. The extent of cases within the to begin with quarter was less than 50% in 6 of the 10 years, 2009–2012, 2014, and 2017.¹¹

From January 1 to February 9, 2020, 472 research facility affirmed cases have been detailed in 26 out of 36 Nigerian states and the Government Capital Domain. Of the 472 affirmed cases, 75% have been detailed from three states: Edo (167 cases), Ondo (156 cases), and Ebonyi (30 cases). The other states that have recorded cases include Taraba (25), Bauchi (14), Level (13), Kogi (13), Delta (12), Nasarawa (4), Kano (4), Waterways (4), Enugu (4), Borno (3), Kaduna (3), Katsina (3), Benue (2), Adamawa (2), Sokoto (2), Osun (2), Abia (2), Kebbi (2), Gombe (1), Oyo (1), Anambra (1), FCT (1), and Ogun (1).¹²

The situation is complicated due to the similarity within the clinical picture of COVID-19 and LF, making the misdiagnosis at the onset of both illnesses with a critical chance with an expanded probability of coinfection. The underdiagnosis due to the overlap of symptoms between COVID-19 and other infectious diseases, such as Dengue, Typhoid were also identified in other low-income countries, such as Pakistan and India.^{13,14}

The official declaration of COVID-19 as a pandemic had further demonstrated the urgency of taking action globally. Yet in the case of Nigeria, resources directed for containing the COVID-19 pandemic had to be compromised for fighting diseases with higher rate fatality ratio, such as LF.¹⁵ Therefore, healthcare professionals, policymakers and researchers assisted

by international institutions should pay special attention to monitoring both diseases.

Given that the host of LFV is a rodent found in houses and surrounding fields and that there's no prophylaxis for LF; prevention can only be achieved through educating people living in endemic areas on ways to protect themselves from LF.¹⁶ Good "community hygiene" should be encouraged by providing of rodent-proof containers and means for maintaining clean households and forming dump away from houses.¹⁰

When it comes to the healthcare sector, early differential diagnosis should take place by testing febrile patients with COVID-19 PCR testing to confirm the cases and proceed to the appropriate treatment. To ensure preparedness of health institutions in control of LF and COVID-19, it is important to follow the written protocol of managing infectious diseases for achieving optimal safety precautions for the management and control of infectious diseases.¹⁷ Also, laboratory workers dealing with possibly infected samples should be trained and placed in equipped laboratories.¹⁰ Africa's health systems are undeniably fragile due to numerous continuous plagues that have debilitated health frameworks, including LF. Under the light of COVID-19 widespread, healthcare systems may be overwhelmed in Africa. Skilled healthcare workers are in short supply, falling 60% underneath the UN's least limit, whereas sub-Saharan Africa has only 1%–5% of the intensive care unit beds per capita, compared to European and East Asian countries. To date, over \$160 billion has been made accessible for the COVID-19 reaction over East, Central, West, and Southern Africa—80 percent of it from public and benefactor sources and 20 percent from private sources. The lessons of the past, where outbreak reactions have driven to declining well-being results in other regions, make a compelling case for donors and governments to consider utilizing the subsidizing for COVID-19 to control and include financing for COVID-19 to control and address the spread of the illness and construct long-term strength in health frameworks.¹⁸

Furthermore, to improve epidemiology and surveillance programs urgent investigation is required for both rat and human populations to enhance comprehension of LF and the reform of its management. This can be achieved through the formation of international research collaboration, mapping of the epidemiological and clinical history of the disease as well as geographical allocation.

National control and prevention strategies should be implemented by providing effective and affordable diagnostics and treatment for LF and COVID-19, enhancing laboratory diagnostics, clinical management, environmental control and research. The involvement of the communities affected is highly recommended, and the development of an effective and affordable vaccine would be the key pillars for the absolute management of Lassa especially during the challenging times of the COVID-19 pandemic. Hence, the need to create awareness on the vaccine availability and make it readily accessible, in addition to early diagnosis and treatment, is paramount in creating a LF free society.


CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Mohammad Yasir Essar developed the concept for this letter. Mohammad Mehedi Hasan, Ana Carla dos Santos Costa, Eleni Xenophontos, Parvathy Mohanan and Esther Edet Bassey wrote the first draft. Ana Carla dos Santos Costa and Mohammad Mehedi Hasan edited the second draft. Shoab Ahmad and Mohammad Yasir Essar made the critical comments and revision. All authors revised and approved the final draft.

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REFERENCES

1. Happi AN, Happi CT, Schoepp RJ. Lassa fever diagnostics: past, present, and future. *Curr Opin Virol*. 2019;37:132-138. <https://doi.org/10.1016/j.coviro.2019.08.002>
2. Asogun DA, Günther S, Akpede GO, Ihekweazu C, Zumla A. Lassa fever: epidemiology, clinical features, diagnosis, management and prevention. *Infect Dis Clin North Am*. 2019;33(4):933-951. <https://doi.org/10.1016/j.idc.2019.08.002>
3. Purushotham J, Lambe T, Gilbert SC. Vaccine platforms for the prevention of Lassa fever. *Immunol Lett*. 2019;215:1-11. <https://doi.org/10.1016/j.imlet.2019.03.008>
4. Rabiou AT, Mohan A, Çavdaroglu S, et al. Dengue and COVID-19: a double burden to Brazil. *J Med Virol*. 2021;93:4092-4093. <https://doi.org/10.1002/jmv.26955>
5. Jain S, Rocha ICN, Maheshwari C, et al. Chikungunya and COVID-19 in Brazil: the danger of an overlapping crises. *J Med Virol*. 2021;93:4090-4091. <https://doi.org/10.1002/jmv.26952>
6. Costa ACdS, Hasan MM, Xenophontos E, et al. COVID-19 And Zika: an emerging dilemma for Brazil. *J Med Virol*. 2021;93:4124-4126. <https://doi.org/10.1002/jmv.27006>
7. Çavdaroglu S, Hasan MM, Mohan A, et al. The spread of Yellow fever amidst the COVID-19 pandemic in Africa and the ongoing efforts to mitigate it. *J Med Virol*. 2021;19. <https://doi.org/10.1002/jmv.27027>
8. Statista. Nigeria: cumulative coronavirus cases, by state 2021. <https://www.statista.com/statistics/1122620/coronavirus-cases-in-nigeria-by-state/>. Accessed May 28, 2021.
9. Reuben RC, Gyar SD, Makut MD, Adoga MP. Coepidemics: have measures against COVID-19 helped to reduce Lassa fever cases in Nigeria? *New Microbes New Infect*. 2021;40:100851. <https://doi.org/10.1016/j.nmni.2021.100851>
10. World Health Organization. Lassa fever. <https://www.who.int/news-room/fact-sheets/detail/lassa-fever>. Accessed May 8, 2021.
11. Umar ShehuS, Bilqis O, Muhammad ZSB. Preparedness of Nigerian Health Institutions toward managing Lassa fever epidemic and COVID-19 pandemic. *Niger J Med*. 2020;29(2):303. <https://www.ajol.info/index.php/njm/article/view/197581>
12. WHO. Lassa fever -Nigeria. 2020. <https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON245>. Accessed May 8, 2021.
13. Ahmad S, Tsagkaris C, Aborode AT, et al. A skeleton in the closet: the implications of COVID-19 on XDR strain of typhoid in Pakistan. *Public Heal Pract*. 2021;2:100084. <https://doi.org/10.1016/j.puhip.2021.100084>
14. Phadke R, Mohan A, Çavdaroglu S, et al. Dengue amidst COVID-19 in India: the mystery of plummeting cases. *J Med Virol*. 2021;93:4120-4121. <https://doi.org/10.1002/jmv.26987>
15. Reuben RC, Danladi MMA, Pennap GR. Is the COVID-19 pandemic masking the deadlier Lassa fever epidemic in Nigeria? *J Clin Virol*. 2020;128:104434. <https://doi.org/10.1016/j.jcv.2020.104434>
16. Fichet-Calvet E, Rogers DJ. Risk maps of lassa fever in West Africa. *PLoS Negl Trop Dis*. 2009;3(3):e388. <https://doi.org/10.1371/journal.pntd.0000388>
17. Umar S, Muhammad B, Zaharadeen Sb. Preparedness of Nigerian health institutions toward managing lassa fever epidemic and COVID-19 pandemic. *Niger J Med*. 2020;29(2):303. https://doi.org/10.4103/njm.njm_71_20
18. McKinsey. Acting now to strengthen Africa's health systems. 2021. <https://www.mckinsey.com/featured-insights/middle-east-and-africa/acting-now-to-strengthen-africas-health-systems#>. Accessed May 28, 2021.