





# Viral hepatitis amidst COVID-19 in Africa: Implications and recommendations

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## Abstract

Hepatitis, a significant cause of mortality worldwide, results in around 1.34 million deaths each year globally. Africa is not exempt from the plague of Hepatitis. Around 100 million estimated individuals are infected with Hepatitis B or C. Egypt has the highest prevalence of cases of Hepatitis followed by Cameroon and Burundi. The continent is severely affected by the onset of the COVID-19 pandemic, as the virus has added an additional burden on the already fragile continent. With the pandemic, it is presumable that Hepatitis like other viral diseases will pose a threat to collapsing healthcare system. Therefore, for Africa to become more resilient in the face of such menaces, including Hepatitis, further prevention policies are required to be implemented

## KEYWORDS

coronavirus, hepatitis A virus, hepatitis B virus, hepatitis C virus, virus classification

## 1 | BACKGROUND

Viral hepatitis, a significant cause of mortality worldwide, results in around 1.34 million deaths each year globally.<sup>1</sup> 95% of viral hepatitis-related mortality and morbidity is due to Chronic Hepatitis B and C.<sup>2</sup> Although countries with advanced economies such as the United States have around 2.4 million individuals infected with Hepatitis, Africa has an estimated 100 million individuals infected with Hepatitis B (HBV) or C (HCV).<sup>3</sup>

HBV and HCV, both enter the bloodstream and attack the hepatocytes causing acute and chronic disease. In 70% of the cases, these viral hepatitis strains which are highly endemic to Sub-Saharan Africa progress to chronicity, leading to liver cirrhosis and hepatocellular carcinoma, which is the most common cause for mortality among HBV and HCV patients.<sup>4</sup> HBV transmission can occur early in life through transplacental transmission from the infected mother to the infant and horizontal transmission having unprotected sexual

contact with multiple partners.<sup>5</sup> It is estimated that 25% of young adults, infected during childhood die prematurely from HBV-related cirrhosis or hepatocellular carcinoma.<sup>6</sup> HBV and HCV are both transmitted through exchange or contact with bodily fluids especially contact with blood, most commonly encountered by health care workers through needle prick injuries, sharing of needles and syringes.<sup>5</sup>

Despite HBV being preventable with vaccination and HCV curable, 90% of the population living in Africa lack care due to decreased availability, inadequate utilization of resources, and untimely management, hence resulting in the death of around 200 000 hepatitis-related deaths in Africa.<sup>2</sup>

In addition to the burden of the hepatitis epidemic, Africa is also currently affected by the COVID-19 pandemic. The first case of COVID-19 in Africa was reported in Egypt on February 14, 2020, just 14 days after World Health Organization (WHO) declared the epidemic, "a public health emergency of international concern".<sup>7</sup> Therefore, Hepatitis, like other infectious diseases worldwide, such as dengue,

Lassa fever, and measles,<sup>8–10</sup> will further add pressure to the fragile healthcare system that has already been burdened with existing socioeconomic problems and a concurrent pandemic.

## 2 | IMPLICATIONS OF COVID-19 ON HEPATITIS IN AFRICA

Although COVID-19 is more related to respiratory symptoms and complications, there is increasing evidence that the innate immune response to SARS-CoV-2 infection causes liver damage. The exact mechanism is not confirmed, it is hypothesized to be due to the direct attack on hepatocytes or SARS-CoV-2 causing immune-mediated inflammation like cytokine storm and pneumonia-associated hypoxia or drug hepatotoxicity, which could develop into liver failure in patients with critically ill COVID-19 patients.<sup>11</sup> A recent study found that 2%–11% of COVID-19 patients had a history of chronic liver disease, with 14%–53% of patients developing COVID-19 related liver damage. These liver lesions are associated with severe disease progression or mortality.<sup>12</sup> SARS-CoV-2 infection may therefore be an important risk factor for critical illness and serious outcomes in this large and under-diagnosed population living with viral hepatitis in Africa. Chronic liver disease represents a major disease burden globally. Given the high burden of chronic liver disease globally and in Africa, it is essential to meticulously evaluate the various underlying liver conditions that influence liver injury in patients with COVID-19.<sup>11</sup>

In addition, for patients already diagnosed with HBV or HCV, there are substantial disruptions in ongoing monitoring and treatment. Professional societies in high-income settings have strongly encouraged remote consultation via telemedicine and other virtual platforms to maintain continuity of care. However, in Africa, more than 800 million people are still not connected to the mobile internet, and hence the challenge to enable such telemedicine solutions remains.<sup>13</sup> Decline Remote laboratory monitoring is complicated by the absence of diagnostic services outside of a large area. Untreated infection, disease relapse and loss of follow-up due to treatment interruption are inevitable, leading to critically low detection and management of serious outcomes, such as liver decompensation and hepatocellular carcinoma, which are likely to worsen in this context.<sup>14</sup>

Therefore, of the myriad challenges Africa faces with a concurrent COVID-19 pandemic and viral Hepatitis, lack of health care capacity and implementation of large-scale preventive measures has led to serious implications in the healthcare system.<sup>15</sup> With the global pandemic, attention has been diverted from local health concerns to pandemic preparedness in most of the low- and middle-income countries. From February 2020, outpatient visits to clinics in Sub-Saharan Africa evidently decreased (>70%), which was more than during the Ebola outbreak, due to the fear of acquiring COVID-19. The continuity of healthcare services proves to be a necessity in Africa where more deaths were attributed to non-Ebola causes during the Ebola outbreak. From January to April 2020, the

reduction in monthly visits to Hepatitis clinics ranges from 71% in Burkina Faso to 95% in Tanzania. For the follow-up cases, this amounts to a reduction of 73% in Burkina Faso, 77% in Tanzania, and 89% in The Gambia.<sup>16</sup>

Although hepatitis patients were encouraged to seek treatment initially in 2020, the fear of COVID-19 turned out to be a hindrance in obtaining care, as most clinics began focusing on COVID-19 preparedness. Clinics were shut and there was a reduction in nucleic acid tests for HBV DNA or HCV RNA and direct-acting antivirals for HCV, the diagnostic tests due to interruption in international flights. The disruption of critical services, particularly, in Sub-Saharan Africa has long-term clinical implications: those identified to have HBsAg or anti-HCV antibody could not access critical care, adequate assessment, and treatment for Hepatitis.<sup>17</sup> With a prevalence of 11% for HIV-HBV, 13.5% for HIV-HCV 5%, co-infection of HIV-Hepatitis is another unavoidable challenge to be tackled as they are predisposed to the early progression of liver cirrhosis and hepatocellular carcinoma.<sup>18</sup>

The overall reduction in the availability and use of routine health services is likely to substantially reduce the detection of early-stage and asymptomatic viral hepatitis cases among people at higher risk. The redeployment of equipment, infrastructure, and laboratory staff to diagnose SARS-CoV-2 is a crucial component of the pandemic response. However, these actions have further reduced the availability of the already limited PCR-based tests for viral hepatitis.

The birth dose HBV vaccine, which is still scarce in most of Africa but is a central focus of elimination efforts, faces challenges due to the rising frequency of home births, breaking complicated cold chain requirements, and shifting government priorities and funding.<sup>19</sup>

In terms of COVID-19, the cases and deaths remain high. Several factors include poor health before the pandemic, and limited contact tracing, testing, and treatment, which has serious implications for mortality. CDC has listed Chronic liver disease to be one of the high risks of COVID-19 manifestations.<sup>20</sup> In a region where only 1% of those with Hepatitis are diagnosed, this could have fatal impacts on both the economy and public health. With economic impacts on livelihood because of the pandemic, the number of people able to sustain their treatments for hepatitis is low. With a lack of Internet and phone services, even telemedicine proves to be a weak option for follow-up treatment.<sup>13</sup> Challenges include screening, co-infection assessment, and treatment, high-risk categorization of liver cirrhosis, and vaccination strategies, which need to be assessed and corrected at the earliest.

## 3 | RECOMMENDATIONS

The collateral damage suffered by the emergence of COVID-19 in Africa is by no means unique to individuals with viral hepatitis. There are widespread epidemiological, clinical, and socioeconomic consequences of the COVID-19 pandemic for people already living with a wide range of conditions in Africa. However, the highly under-diagnosed, highly prevalent, and severely advanced nature of liver

disease due to viral hepatitis in Africa requires careful attention from policymakers and clinical practitioners and a pragmatic strategy to mitigate risks during the growing pandemic. Innovative implementation strategies and new financing mechanisms to maintain and strengthen health systems in low-income countries are urgently needed to address not only emerging but also existing pandemics.<sup>21</sup> Hepatitis eradication in Africa will need a new and highly targeted approach which should involve implementation of large scale prevention strategies and more research on the effects of COVID-19 on Hepatitis and combating issues ranging as deep as overcrowding, the baseline health status of Sub Saharan Africa, limited infrastructure for testing, remote monitoring, contact tracing, and management.<sup>15,17</sup> In all of this, the involvement of government stakeholders would be necessary to advocate for such preventions. Collaborative efforts between international organizations such as WHO and public health officials can help mitigate Hepatitis awareness campaigns at national levels, provide financial support, and establish long-term health solutions.<sup>22</sup> Allowing both humanitarian support and governmental assistance will strengthen healthcare systems with more financial, and legal support in the form of policies to protect both healthcare worker (HCWs) and the general population. This can be achieved through advertisements on broadcast news channels, radios, and in healthcare facilities raising awareness about early diagnosis and advising patients to follow public health policies. Financing initiatives may present a challenge, thus intervention from humanitarian organizations, the international community, and focusing on increasing the healthcare budget should be considered. The United States has provided COVID vaccines and medical equipment to multiple countries, hence monetary relief or donated equipment from western democratic nations through international collaborations could prove to be helpful.<sup>23</sup> This will also have the potential to expand political ties with the international community. However, transparency must be maintained, and inequalities in distribution of such equipment may pose a threat. Hence, appropriate and regular reporting from healthcare officials will be needed to ensure equipment and monetary relief is reaching patients. In addition, weekly updates on the progression of Chronic hepatitis from different nations and its impact on COVID-19 cases, the healthcare system, and the general population are important. Lack of timely updated data remains an issue, hence efforts at a humanitarian and governmental level may better help with maintaining transparency in numbers. Each country presents financially, politically, and socially different circumstances, thus cultural barriers, social norms, and economic status should be considered in the creation of campaigns especially as the involvement of religious leaders in some countries play a key role in encouraging public health policies. Lastly, an integrated approach involving the government, NGOs, religious leaders, HCWs, pharmacists, and psychologists or social workers could enforce a stronger strategy. Patient counseling is a crucial part of Hepatitis treatment, and a holistic health approach will not only comfort patients but also contribute to appropriate prevention. A mental health crisis line, community support circles, and the involvement of religious leaders are key considerations.<sup>22</sup>

Due to the available evidence that the innate immune response to SARS-CoV-2 infection results in liver damage, hence, it is essential to accelerate working towards hepatitis elimination and eradication, despite the depletion in resources and shift in priorities that the SARS-CoV-2 pandemic has caused. Infection to SARS-CoV-2 could be considered as an important risk factor for critical disease and severe outcomes in post-COVID-19 infection in Sub-Saharan Africa where there is preexisting high load of poorly controlled HIV co-infection and chronic diseases (e.g., hypertension and diabetes) along with a large and underdiagnosed population living with viral hepatitis.<sup>18,20</sup> Additionally, the pandemic could lead to an increased risk of iatrogenic exposure to hepatitis owing to shortage of medical equipment, which includes reduced availability of needles and syringes leading to unwarranted reuse of needles, which is deleterious. Gaining momentum in the battle towards hepatitis elimination will require universal clinical screening for all age groups along with the regular and targeted screening of the high-risk groups which includes IV drug users, prison inmates, patients with HIV co-infection, and health care workers. Awareness of hepatitis transmission and risk should be emphasized by targeted community screening and regular assessments to be made during hospital visits and by improving treatment uptake and efficient antiviral delivery systems. Hence, diagnosing cases at early stages, implementation of screening and testing centers is of paramount importance. To ensure this, accurate and affordable diagnostic test kits and tools are required along with the availability of more beds in the Intensive care units in hospitals with reduced hospital costs. To maintain continuity of care, remote consultation via telemedicine could be practiced. However, to enable telemedicine services, the lack of mobile phones, broadband networks, and connectivity among the widespread patients and providers should be kept in mind. The challenges associated with the reductions in the already precarious supply of antiviral drugs in public and private sectors should be addressed.<sup>20</sup> Pregnant mothers should be routinely tested for Hepatitis B as there is a high chance of mother-to-child transmission and the babies of the seropositive mothers should be given hepatitis B to prevent the occurrence of infection. Providing a birth dose HBV vaccine and following a routine vaccination schedule is a vital solution to work towards the elimination. To maintain safe vaccination, maintaining cold chains and safe transport of vaccination is essential.<sup>15</sup> Alcohol consumption is one of the common causative factors and high-risk factors for the development of liver cirrhosis.<sup>2</sup> The usage should be stopped and public campaigns and awareness on the same should be made. Counseling services and interventions should be promoted in the population to enable a successful reduction in alcohol intake and drug usage. Awareness and promotion of a good lifestyle and maintaining adequate body weight to prevent obesity along with liver health, which includes avoidance of the above-mentioned causative risk cannot be underestimated. Antiviral drug delivery to affected individuals and providing easy and cheap access with an emphasis on compliance of regimen is of paramount importance.

## 4 | CONCLUSION

Due to the COVID-19 pandemic, there is plausible neglect towards the mitigation of Viral hepatitis. However, it is imperative that the Viral hepatitis elimination in Africa will need a new and highly focused approach that will adapt novel strategies to maintain and strengthen health systems in low-income countries. This begins at the grassroots level by implementing basic preventive care measures and involving collaborative efforts of international organizations and governmental collaboration with the help of community support. The current pandemic gives us a vivid picture of the challenges and victories of the healthcare system, enabling the nation to improve and develop a strategic plan.

### CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

### AUTHOR CONTRIBUTIONS

All authors equally contributed to this work

### DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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### REFERENCES

- CIDRAP. WHO: Viral hepatitis deaths increasing. Accessed July 7 2021, <https://www.cidrap.umn.edu/news-perspective/2017/04/who-viral-hepatitis-deaths-increasing>
- World Health Organization Africa. Hepatitis Overview. Accessed August 20 2021, [https://www.afro.who.int/health-topics/hepatitis#:~:text=In%20Africa%2C%20chronic%20viral%20hepatitis,\(HCV\)%20is%20now%20curable](https://www.afro.who.int/health-topics/hepatitis#:~:text=In%20Africa%2C%20chronic%20viral%20hepatitis,(HCV)%20is%20now%20curable)
- U.S. Department of Health and Human Services. Viral Hepatitis in the United States: Data and Trends. Accessed July 9 2021, <https://www.hhs.gov/hepatitis/learn-about-viral-hepatitis/data-and-trends/index.html>
- World Health Organization. Hepatitis. Accessed August 20 2021, [https://www.who.int/health-topics/hepatitis#tab=tab\\_1](https://www.who.int/health-topics/hepatitis#tab=tab_1)
- Coppola N, De Pascalis S, Onorato L, Calò F, Sagnelli C, Sagnelli E. Hepatitis B virus and hepatitis C virus infection in healthcare workers. *World J Hepatol.* 2016;8(5):273-281. <https://doi.org/10.4254/wjh.v8.i5.273>
- Madhava V, Burgess C, Drucker E. Epidemiology of chronic hepatitis C virus infection in sub-Saharan Africa. *Lancet Infect Dis.* 2002;2(5):293-302. [https://doi.org/10.1016/s1473-3099\(02\)00264-5](https://doi.org/10.1016/s1473-3099(02)00264-5)
- Al Jazeera News. Egypt confirms coronavirus case, the first in Africa. Accessed June 14 2021, <https://www.aljazeera.com/news/2020/02/egypt-confirms-coronavirus-caseafrica-200214190840134.html>
- Mohan A, Fakhor H, Nimavat N, et al. Dengue and COVID-19: a risk of coepidemic in Ethiopia. *J Med Virol.* 2021;93:5680-5681. <https://doi.org/10.1002/jmv.27116>
- Hasan MM, Costa A, Xenophontos E, et al. Lassa fever and COVID-19 in Africa: A double crisis on the fragile health system. *J Med Virol.* Jun 30 2021;93:5707-5709. <https://doi.org/10.1002/jmv.27169>
- Mohan A, Temitope RA, Çavdaroglu S, et al. Measles returns to the Democratic Republic of Congo: A new predicament amid the COVID-19 crisis. *J Med Virol.* 2021;93:5691-5693. <https://doi.org/10.1002/jmv.27137>
- Zhang C, Shi L, Wang FS. Liver injury in COVID-19: management and challenges. *Lancet Gastroenterol Hepatol.* 2020;5(5):428-430. [https://doi.org/10.1016/s2468-1253\(20\)30057-1](https://doi.org/10.1016/s2468-1253(20)30057-1)
- Li Y, Xiao SY. Hepatic involvement in COVID-19 patients: pathology, pathogenesis, and clinical implications. *J Med Virol.* 2020;92(9):1491-1494. <https://doi.org/10.1002/jmv.25973>
- GSMA. The Mobile Economy Sub-Saharan Africa. Accessed August 20 2021, <https://www.gsma.com/mobileeconomy/sub-saharan-africa/>
- Stowe MJ, Scheibe A, Shelly S, Marks M. COVID-19 restrictions and increased risk of overdose for street-based people with opioid dependence in South Africa. *S Afr Med J.* 2020;110(6):12939. <https://doi.org/10.7196/SAMJ.2020.v110i6.14832>
- Lemoine M, Eholié S, Lacombe K. Reducing the neglected burden of viral hepatitis in Africa: strategies for a global approach. *J Hepatol.* 2015;62(2):469-476. <https://doi.org/10.1016/j.jhep.2014.10.008>
- Sonderup MW, Dusheiko G, Desalegn H, et al. Hepatitis B in sub-Saharan Africa-How many patients need therapy? *J Viral Hepatitis.* 2020;27(6):560-567. <https://doi.org/10.1111/jvh.13247>
- Lemoine M, Kim JU, Ndow G, et al. Effect of the COVID-19 pandemic on viral hepatitis services in sub-Saharan Africa. *Lancet Gastroenterol Hepatol.* 2020;5(11):966-967. [https://doi.org/10.1016/s2468-1253\(20\)30305-8](https://doi.org/10.1016/s2468-1253(20)30305-8)
- Adesegun OA, Olaniran OH, Bamidele E, et al. HIV-hepatitis co-infection in a rural community in Northern Nigeria. *Pan Afr Med J.* 2020;36:352. <https://doi.org/10.11604/pamj.2020.36.352.23978>
- Van Caesele P, Bailey D, Forgie SE, Dingle TC, Krajden M. SARS-CoV-2 (COVID-19) serology: implications for clinical practice, laboratory medicine and public health. *CMAJ.* 2020;192(34):E973-e979. <https://doi.org/10.1503/cmaj.201588>
- Centers for Disease Control and Prevention. What to Know About Liver Disease and COVID-19. Accessed August 20 2021, <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/liver-disease.html>
- Catanzaro M, Fagiani F, Racchi M, Corsini E, Govoni S, Lanni C. Immune response in COVID-19: addressing a pharmacological challenge by targeting pathways triggered by SARS-CoV-2. *Signal Transduct Target Ther.* 2020;5(1):84. <https://doi.org/10.1038/s41392-020-0191-1>
- World Health Organization. Hepatitis Scorecard 2019. Accessed August 20 2021, <https://www.afro.who.int/publications/hepatitis-scorecard-who-africa-region-implementing-hepatitis-elimination-strategy>
- BBC News. Covax: How many Covid vaccines have the US and the other G7 countries pledged? Accessed August 20 2021, <https://www.bbc.com/news/world-55795297>

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