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Viral Hepatitis Research at the University of Lubumbashi: A Narrative Review of Current Knowledge and Future Directions

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Abstract

Introduction: This narrative review of the academic literature examines the scientific output on viral hepatitis at the University of Lubumbashi, Democratic Republic of Congo.

Methods: Based on studies selected according to the Newcastle-Ottawa criteria, it focuses on four main areas: epidemiology, diagnosis, population knowledge, and clinical management.

Results: The prevalence of hepatitis B virus (HBV) remains a concern, reaching 4.3% to 7.9% among blood donors and 6.69% among pregnant women. HIV infection is identified as an independent risk factor associated with HBV. At the molecular level, genotypic mosaicism is observed: genotype E is predominant in Lubumbashi (53.1%), followed by genotype A (41.8%). Evaluation of rapid diagnostic tests (RDTs) shows excellent sensitivity (100%), but variable specificity. The SD BioLine tests (HBsAg and HCV) stand out for their analytical performance, justifying their recommendation as a first-line test. Furthermore, HBV-HDV coinfection was documented for the first time at a rate of 2%, highlighting the need for systematic hepatitis D screening in chronic HBV carriers. The knowledge and attitudes of the local population are incomplete and often negative, necessitating extensive health education programs. Clinically, the use of the APRI and MELD scores is suggested for predicting complications non-invasively and at a lower cost.

In conclusion, although local research is dynamic, it is crucial to standardize screening protocols according to genotypic and endemic realities and to strengthen community involvement to improve the fight against these diseases.

Keywords: Epidemiology; Genotypic Characterization; Knowledge; Rapid Test Performance; Clinical Score; Narrative Review; Lubumbashi

Abbreviations: HBV: Hepatitis B Virus, RDT: Rapid Diagnostic Tests, PMTCT: Prevention of Mother-To-Child Transmission, HIV: Human Immunodeficiency Virus, HDV: Hepatitis D Virus, NPV: Negative Predictive Value, PPV: Positive Predictive Value, WHO: World Health Organization

Introduction

This work presents a critical review of the academic literature on viral hepatitis in Lubumbashi. This literature review highlights the growing scientific interest in this topic among clinicians, epidemiologists, medical biologists, and researchers. While numerous publications document the situation in the Democratic Republic of Congo (DRC), the university city of Lubumbashi stands out for its diverse local output. This research addresses the current epidemiological situation, genotypic characterization, the population's level of knowledge, and the challenges of diagnosing and managing hepatitis B, C, and D.

Approche Methodologique

We compiled studies focusing on epidemiology, genotypic profile, knowledge, attitudes and practices (KAP), as well as screening and treatment protocols in Lubumbashi. The methodological quality of the selected articles was assessed using the Newcastle-Ottawa Scale, retaining only publications with a high rigor score, between 13 and 16 **[1,2]**.

Results and Discussion

1. Epidemiological Aspects and Genotypic Characterization

The literature indicates a fluctuating prevalence of hepatitis, particularly among blood donors and in the context of prevention of mother-to-child transmission (PMTCT). Several authors, including Matanda (2023), Kabamba (2020), and Ngalula (2018), have explored these dynamics.

[3] report in their study the prevalence of these infections—Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), and HIV-HBV—between 2016 and 2021 among blood donors and their correlations with various parameters in Lubumbashi. At the end of their study, the prevalence of HIV increased from 0.6% to over 1%. The prevalence of HBV infection remains among the highest (4.3%), while HIV-HBV coinfection is lower than the global average [3] Other authors have addressed the same issue **[4–6]**. These findings suggest the value of equipping multiple points of care in our blood banks with testing capabilities to minimize nosocomial blood contamination by HIV and viral hepatitis infections.

In the same vein, Kabamba et al. (2020) reported a prevalence of 7.9% among blood donors and produced a genetic map of hepatitis B virus in Lubumbashi with the following proportions: E (53.1%), A (41.8%), A3/E (3.8%), A1/E (1.3%), and a map of certain drug resistance mutations **[7]**. Similar results from a systematic review of scientific publications in the DRC reported 5.0% among blood donors **[8]**. Beyond the cases concerning Lubumbashi, the particular interest in genotypic characterization in the eastern part of the country is also highlighted by Shindano (2018). In his article, the author reports the predominance of the A genetic map (976%) **[8]**. In the western part of the country, Thomson (2019) demonstrated results similar to those of Lubumbashi with the E genetic map (60%) **[9]**. This results in a mosaic of genotypic maps depending on the geographical area of the Democratic Republic of Congo, which raises questions about the nature of diagnostic tests and treatments for viral hepatitis. In **[10]** established that hepatitis B is a major public health problem among pregnant women in the city of Lubumbashi, with a prevalence of 6.69%. In this context, a history of HIV infection appears to be an independently associated factor for HBV infection **[10]**. These data corroborate the findings of a systematic review of the entire scientific literature in the DRC, which reports a prevalence of 5.9% **[8]**. Such observations underscore the urgent need to integrate the management of viral hepatitis into perinatal care services in our setting.

In **[11]** assessed the knowledge, attitudes, and practices (KAP) of the Lubumbashi population regarding hepatitis B and C viruses. Their observations reveal that knowledge is limited and practices are often inappropriate among the Lubumbashi population. Furthermore, the study highlights a generally negative attitude towards these infections. These results underscore the urgent need to implement comprehensive health education programs to raise awareness and optimize care **[11]**. Ultimately, this study argues for greater community involvement in local prevention strategies

2. Evaluation of the Analytical Performance of Rapid Diagnostic Tests (RDTs)

This work focuses on evaluating diagnostic devices in the city of Lubumbashi. It documents the operational difficulties encountered in the field, while analyzing their potential

causes and their impact on patient care. Furthermore, a series of studies highlights a high frequency of co-infection with hepatitis B (HBV) and D (HDV) viruses in individuals with chronic HBV infection in Lubumbashi.

Recent work by Tshikongo Kabamba et al. (2020) focused on the analytical performance evaluation of six rapid diagnostic tests (RDTs) dedicated to screening for hepatitis B and C. The conclusions of this study indicate that all the evaluated tests have optimal sensitivity and negative predictive value (NPV) of 100%. In contrast, specificity and positive predictive value (PPV) showed greater variability, ranging from 46% to 98.1%. Among the devices tested, the SD BioLine HBsAg test demonstrated the most compelling performance, with a sensitivity and NPV of 100%, as well as a specificity of 97.1% and a PPV of 96.9%. Similarly, the SD BioLine HCV test demonstrated remarkable results, achieving 100%, 98.1%, 100%, and 93.9%, respectively, for these same parameters. In light of these data, the SD BioLine range of tests (HBsAg and HCV) are emerging as first-line tools for viral hepatitis screening. Their systematic deployment could significantly reduce the risk of transfusion-transmitted HBV and HCV in resource-limited areas, such as Lubumbashi **[12]**. Therefore, these results argue in favor of increased popularization and protocol-based integration of the SD BioLine test into local clinical practice.

In 2020, in another study, Kabamba et al. highlighted, for the first time, HBV-HDV coinfection at a rate of 2% in Lubumbashi. Furthermore, they suggested that hepatitis D be tested for in all HBsAg carriers presenting with severe or chronic hepatitis to allow for early management of these patients and thus prevent the worsening of liver disease. However, the scope of this work is limited by the lack of longitudinal data on disease progression, as well as by the lack of information on circulating genotypes (HBV and HDV), delta viral load, and current treatment protocols **[13]**. Although this local rate is lower than the national prevalence of 26.1% reported for HBV-HDV coinfection in the DRC, these observations underscore the need for increased surveillance **[14]**. In conclusion, all of these data argue for systematic concomitant identification of HDV in patients infected with other forms of viral hepatitis in our clinical setting.

In 2024, Kasamba Ilunga examined the current state of hepatitis B virus (HBV) screening programs in the southern region of the Democratic Republic of Congo. His field investigations revealed that the rapid diagnostic tests (RDTs) used for HBsAg detection had insufficient sensitivity according to the standards recommended by the World Health Organization (WHO), although their specificity remained within established norms. In resource-limited countries facing high endemicity, such as the DRC, the adoption of high-performance, user-friendly, affordable, and highly accurate screening tests is imperative. It is now urgent to develop HBe-specific RDTs with optimized sensitivity, specifically adapted to the sub-Saharan African context. These tools must be validated using locally circulating genotypes to ensure the effectiveness of screening, prevention, and treatment programs **[15]**. These findings corroborate the conclusions of a nationwide systematic review, which identified the heterogeneity of screening methods as a major limitation to the reliability of epidemiological data. Indeed, the accuracy of detecting an active infection remains dependent on the biological technique used **[8]**. All of these observations argue for a standardization of testing protocols, harmonized with the genotypic diversity observed in the Congolese territory.

3. Clinical Evaluation and Complications of Hepatitis B and C Viruses

Recent academic interest has focused on the clinical prediction of complications related to chronic hepatitis.

In 2025, Kabamba et al. conducted a survey of patients in Lubumbashi to determine the correlation between APRI and MELD scores in predicting complications of chronic hepatitis in patients infected with hepatitis B or C viruses in Lubumbashi, Democratic Republic of Congo. Their findings suggest that the APRI and MELD scores had a sensitivity of 100% and a specificity of 93.5% and 88.6%, respectively. In the group of patients with fibrosis and HBV infection, the mean APRI score was 1.89, while the mean MELD score was 12.4. Integrating these scores into routine clinical practice could reduce morbidity, the costs associated with liver biopsy, and thus improve the routine management of viral hepatitis in Lubumbashi **[16]**. These observations suggest a large-scale study in the Democratic Republic of Congo to

internally validate these preliminary findings from Lubumbashi.

Future direction and Limitations

This work identifies areas suitable for rapid intervention, such as strengthening prevention, biological monitoring, and synergy between HIV and viral hepatitis programs. It also underscores the crucial need for continued scientific research and community engagement, particularly regarding the assessment of healthcare provider skills and the conduct of local clinical trials. The incompleteness of the scientific output is a limitation of this study.

Conclusion

In summary, research on viral hepatitis in Lubumbashi highlights a concerning endemicity through epidemiological, clinical, and diagnostic studies. To reverse this trend, it is crucial to standardize screening according to local genotypes and to further secure blood transfusions and mother-to-child transmission through multiplex testing (HIV, hepatitis A-D, and syphilis). The adoption of accessible clinical scoring systems would also allow for better patient monitoring in clinical settings. This narrative review particularly underscores the urgent need to create synergies between HIV and hepatitis programs to streamline funding and strengthen the community response.

Ag HBs	Hepatitis B Surface antigen
APRI	AST To Platelet Ratio Index
DRC	Democratic Republic of Congo
KPA	Knowledge Practice Attitude
HIV	Human Immunodeficiency Virus
HVB	Hepatitis Virus B
HVC	Hepatitis Virus C
HVD	Hepatitis Virus Delta
MELD	Model for End-Stage Liver Disease

References

1. Pallot A., Rostagno S. Newcastle–Ottawa Scale: traduction française de l'echelle de qualite methodologique pour les etudes de cohorte. Kinesitherapie, la Revue. 2021;21(235):3–4. [ScienceDirect]
2. Gualdi–Russo E., Zaccagni L. The Newcastle–Ottawa Scale for Assessing the Quality of Studies in Systematic Reviews. Publications. 2026;14:4. [Ref]
3. Serge MK., Michel KN., Eric K., Josephine MK., Christian KN., et al. HIV, HBV Infections and HIV–HBV Coinfection in Lubumbashi: 6 Years Follow–Up of Prevalence (2016 To 2021). J Virol Viral Dis.. 2023;3(1):1–9. [Ref]
4. Blaise Sumbu., Mireille Nganga., Jeremie Muwonga., Mbayo F., et al. Bilan de 10 annees de Serologie VIH, VHB, VHC aux Cliniques Universitaires de Kinshasa. Ann Afr Med. 2014; 7(2). [Ref]
5. Kiezo LM; Kanza JPB; Bolisomi S., Leon SO., Njolu FO. Profil Epidemiologique Des Hepatites Virales Et Infection A VIH/SIDA Chez Les Donneurs Benevoles Du Sang A Kinshasa. Int J Prog Sci Technol. 2023;41(2):88–94. [Ref]
6. Hippolyte SN., Rhema SB., Mbuyi Serge., Kiazayawoko Z Florian., Mbula M Marcel ., et al. Seroprevalence rate of viral markers (HIV / HBV / HCV) in blood donors at the Matadi Provincial Blood Transfusion Center., Kongo Central Province, DR Congo. Congrès AFMED 2017, Session De Medecine. 2017;11(1). [Ref]
7. Kabamba AT., Kalunga BT., Mwamba CM., Nyembo CM., Dufrasne F., et al. Longanga. Epidemiological aspects and molecular characterization of the hepatitis B virus among blood donors in Lubumbashi., Democratic Republic of Congo. Transfus Clin Biol. 2021;28(1):1–128:30–37. [PubMed]

8. Shindano TA., Kabinda JM., Mitashi P., Horsmans Y. Hepatitis B virus infection in the Democratic Republic of Congo: a systematic review of prevalence studies (2000–2016). J Public Health (Berl). 2018;26(5):595-603. [ResearchGate]
9. Thompson P., Parr JB., Holzmayer V., Carrel M., Tshefu A., et al. Seroepidemiology of Hepatitis B in the Democratic Republic of the Congo. Am J Trop Med Hyg. 2019;101(1):226–229. [PubMed]
10. Ngalula MT., Mukuku O., Kitenge FM., Kakoma JBS. Etude preliminaire de la seroprevalence et des facteurs de risque de l'infection par le virus de l'hepatite B chez les femmes enceintes à Lubumbashi, Republique Democratique du Congo. Rev Infirm Congolais. 2018;2(1):22–26. [Ref]
11. Kabamba AA., Manya H., Mutombo C., Kasongo C., Kakisingi CC., et al. Knowledge., attitude., and practice towards hepatitis B and C viruses among the population of Lubumbashi, Democratic Republic of Congo. African J Gastroenterol Hepatol. 2023;6(1):19-35. [Ref]
12. Tshikongo A., Mwamba C., Dessilly G., Dufrasne F., Kabamba B., et al. Evaluation of the analytical performance of six rapid diagnostic tests for the detection of viral hepatitis B and C in Lubumbashi, Democratic Republic of Congo. J Virol Meth. 285. 2020;113961. [ResearchGate]
13. Tshikongo A., Mwamba C., Nyembo C., Kabamba B., Longanga A. Seroprevalence de l'hepatite D chez les personnes atteintes d'hepatite B chronique à Lubumbashi (RDC) Hepatitis D Seroprevalence in people with chronic hepatitis B in Lubumbashi (DRC). Int J Biol Chem Sci. 14(9):3110–3116. [ResearchGate]
14. Makiala–Mandanda S., Le Gal F., Ngwaka–Matsung N., Ahuka–Mundeke S., Onanga R., et al. High Prevalence and Diversity of Hepatitis Viruses in Suspected Cases of Yellow Fever in the Democratic Republic of Congo. J Clin Microbiol. 2017;55(5):1299-312. [PubMed]
15. Ilunga Kasamba. Screening Tests of Hepatitis B Virus Infection in the South of DR Congo: A Status Report. Asian J Res Biol. 2024;7(1):13-24. [Ref]
16. Kabamba–Tshikongo A., Baleebenga A., Kalunga–Tompa B., Mwamba–Mulumba C., Manya–Mboni H., et al. Comparative evaluation of Apri and Meld scores in the prediction of complications of chronic hepatitis in patients infected with hepatitis B or C viruses in Lubumbashi, Democratic Republic of Congo. Clin Virol Plus. 2025;5(1):100200. [ScienceDirect]