



This is a repository copy of *A public health call for action to address liver cancer and hepatitis in northern Ghana.*

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/225927/>

Version: Published Version

Article:

Tuck, C. orcid.org/0000-0003-3525-6295, Timtoni Iddrisu, A.R., Moro, S.A. et al. (4 more authors) (2025) A public health call for action to address liver cancer and hepatitis in northern Ghana. *Communications Medicine*, 5. 121. ISSN 2730-664X

<https://doi.org/10.1038/s43856-025-00854-2>

Reuse

This article is distributed under the terms of the Creative Commons Attribution (CC BY) licence. This licence allows you to distribute, remix, tweak, and build upon the work, even commercially, as long as you credit the authors for the original work. More information and the full terms of the licence here:

<https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>



A public health call for action to address liver cancer and hepatitis in northern Ghana

Chloe Tuck, Abdul Rashid Timtoni Iddrisu, Salimatu Asam Moro, Robert Akparibo, Richmond Aryeetey, Laura Gray & Richard Cooper



Lack of access to diagnosis and treatment of hepatitis is unethical, resulting in avoidable liver cancer cases. Drawing on existing evidence and current research in Ghana, we identify a number of ways to address hepatitis and liver cancer in Ghana.

April 2024 saw the World Health Organization (WHO) release of the *Global hepatitis report 2024: action for access in low- and middle-income countries*¹. The growing burden of hepatitis globally is particularly concerning given it leads to a severely high likelihood of developing hepatocellular carcinoma (HCC)². The World Hepatitis Alliance has called for hepatitis to be recognised for its role in causing cancer³ as many liver cancer cases could easily be prevented through screening and vaccination^{4,5}. This is not dissimilar to cervical cancer, which the WHO has launched a plan to eradicate⁶. Hepatitis disproportionately causes liver cancer in Africa; in 80% (28/35) of African countries surveyed, over 70% of liver cancer cases are attributed to the infection⁷. However, a lack of epidemiological data in Africa means levels are likely underestimated⁸ as so many patients are being overlooked and underserved. We argue that countries such as Ghana bear a significant (but avoidable) burden and that several initiatives could be introduced relating to hepatitis and liver cancer.

Hepatitis in Ghana

Although there are five main strains of hepatitis, hepatitis B and C represent the largest global disease burden². In Ghana, it was estimated that there was 2,865,177 and 442,797 hepatitis B and C cases respectively in 2023¹. This is of major concern as global estimates suggest 4 out of 5 cases are undiagnosed⁴. Without a registry and routine screening procedures at the population level, the true number of cases is hard to accurately assess in Ghana. Hepatitis is also associated with poverty as poor and marginalised groups have higher incidence globally along with reduced access to related health services⁹. The disease is often transferred during childbirth or in early childhood. Antenatal transfer of hepatitis B, increases the likelihood of chronic infection and leads to severe disease with early onset of liver cirrhosis and hepatocellular carcinoma (HCC)^{10–12}.

Liver cancer in Ghana

For both sexes, liver cancer was the second most common cancer in Ghana in 2020¹³. Moreover, it was estimated to cause 3,166 deaths per year in 2020 according to GLOBOCAN estimates, making it the largest contributor to cancer death in Ghana^{13,14}.

District facilities reports from Northern Ghana suggest HCC caused by hepatitis is a growing problem and the largest cancer burden they face. In terms of case load, it may supersede breast cancer and cervical cancer, which have been raised to the public health agenda in recent years.

Hepatitis is typically diagnosed through serological tests for hepatitis surface antigens and rapid diagnostic tests are now being developed that reduce the sample needed and allow same day turnaround¹⁵. This has traditionally been managed through conventional antiviral therapies. However new therapeutic advances are being made through specific molecular targets that inhibit key proteins in the viral life cycle and silence replication using RNAi¹⁵. Early treatment is crucial to prevent development into liver cirrhosis and HCC¹⁵.

In Ghana most cases of HCC present at a late stage, only being eligible for supportive palliative care^{16,17}. These outcomes are a result of several factors including poor awareness, delayed treatment seeking behaviours¹⁶ and patient preference for traditional herbal and spiritual treatments^{18,19}. Many community level facilities lack training in HCC diagnoses, which means some cases are misdiagnosed with gastritis. In the case when patients may be eligible for other therapies, such as systemic therapy and resection, they struggle to afford the associated diagnostic tests, travel and treatment, leading to high levels of drop out against medical advice. Systemic therapies are not available on the national health insurance scheme and anecdotal evidence suggest this is highly expensive compared to the median monthly income (estimated at 2000 GHS/month, approximately £140 in August 2023)²⁰. Liver resection is only available at major facilities in Accra and Kumasi.

Initiatives to eradicate hepatitis C and prevent liver cancer

Attempts to curb HCC through tackling hepatitis C elsewhere on the African continent have seen some success. For example, Egypt has estimated to have diagnosed 87% of hepatitis C cases that exist and provided treatment to 93% of these through local drug manufacture^{1,4} indicating substantial gains in the disease's eradication nationally. Following their success, the Egyptian government has partnered with Ghana to supply hepatitis C medicine¹. Barriers to patients still remain, such as concerns over medication availability and pre-requisite testing prior to treatment eligibility. Lower-income groups and those in rural areas are disadvantaged as testing for hepatitis C in Ghana occurs on a walk-in basis and carries fees. Thus, this current treatment availability profile is only expected to increase the inequalities in hepatitis C status awareness and prevention.

Initiatives to eradicate hepatitis B and prevent liver cancer

Hepatitis B cannot be cured but it can be prevented with vaccination and when detected, effectively managed to prevent development into HCC and antenatal transfer. Screening is not free in most African countries including Ghana. In addition to initial testing, diagnostic tests are required to ascertain stage and whether treatment is required. Treatment imparts high monthly cost on patients leading to high levels of drop-out. While screening of pregnant women is available, the vaccine is not routinely offered at birth as part of Ghana's Expanded Programme on Immunisation (EPI), despite this been shown as an effective way to prevent transmission. When available,

costs, and poor maternal and health professional understanding, may hinder uptake²¹.

Conclusion

There is an imminent need to address the burden of hepatitis as a crucial strategy to combat liver cancer in Africa. Taking learnings from Ghana, strong preventative measures to detect, treat and vaccinate against hepatitis B and C could go a long way to prevent liver cancer. Main initiatives should focus on increasing awareness and free screening in communities to detect and treat cases at an early stage. Additionally, making vaccination against hepatitis B a routine immunisation at birth and freely available throughout adulthood, could go a long way in combating preventable infections. At a policy level, health economic models could help governments decipher the most cost-effective strategies to reduce the liver cancer burden in their context which could include providing essential medicines as part of a national health insurance package, and making these freely available at the community level to all who need them.

Chloe Tuck ^{1,2} , Abdul Rashid Timtoni Iddrisu³,
Salimatu Asam Moro⁴, Robert Akparibo ^{1,5}, Richmond Aryeetey ²,
Laura Gray ¹ & Richard Cooper ¹

¹Sheffield Centre for Health and Related Research, Division of Population Health, School of Medicine and Population Health, University of Sheffield, Sheffield, UK. ²School of Public Health, University of Ghana, Accra, Ghana. ³Oncology, Tamale Teaching Hospital, Tamale, Ghana. ⁴Gastroenterology, Tamale Teaching Hospital, Tamale, Ghana. ⁵Fred Binka School of Public Health, University of Allied Health Sciences, Ho, Ghana.

 e-mail: Cztuck1@sheffield.ac.uk

Received: 19 June 2024; Accepted: 5 April 2025;

Published online: 16 April 2025

References

1. World Health Organization. *Global Hepatitis Report 2024: Action for Access in Low- and Middle-Income Countries*. 978-92-4-009167-2 242 pages <https://www.who.int/publications/i/item/9789240091672> (2024) [Accessed Dec 2024].
2. Global Policy Reporting. *Deaths from Viral Hepatitis Increase Globally With Limited Access to Diagnostics and Treatment*. *Health Policy Watch* <https://healthpolicy-watch.news/deaths-from-viral-hepatitis-increase-globally-with-limited-access-to-diagnostics-and-treatment/> (2024) [Accessed Dec 2024].
3. e World Hepatitis Alliance. Event Reports: Aortic International Conference On Cancer In Africa. *Hep Voice* 16–17 (2023).
4. World Health Organization. Egypt becomes the first country to achieve WHO validation on the path to elimination of hepatitis C. *World Health Organization* <https://www.emro.who.int/media/news/egypt-becomes-the-first-country-to-achieve-who-validation-on-the-path-to-elimination-of-hepatitis-c.html> (2023) [Accessed Dec, 2024].
5. Flores, J. E., Thompson, A. J., Ryan, M. & Howell, J. The global impact of hepatitis B vaccination on hepatocellular carcinoma. *Vaccines* **10**, 793 (2022).
6. Cervical cancer elimination initiative. *Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem*. 52 <https://www.who.int/publications-detail-redirect/9789240014107> (2020).
7. Huang, J. et al. Disease burden, risk factors, and recent trends of liver cancer: A global country-level analysis. *Liver Cancer* **10**, 330–345 (2021).
8. El-Kassas, M. & Elbadry, M. Hepatocellular carcinoma in Africa: Challenges and opportunities. *Front. Med.* **9**, 899420 (2022).
9. Li, C., Thapa, D., Mi, Q., Gao, Y. & Fu, X. Disparities in hepatitis B virus healthcare service access among marginalised poor populations: a mixed-method systematic review. *Infect. Dis. Poverty* **13**, 58 (2024).
10. Hyams, K. C. Risks of chronicity following acute hepatitis B virus infection: A review. *Clin. Infect. Dis.* **20**, 992–1000 (1995).

11. McMahon, B. J. et al. Acute hepatitis B virus infection: Relation of age to the clinical expression of disease and subsequent development of the carrier state. *J. Infect. Dis.* **151**, 599–603 (1985).
12. Yang, J. D. et al. Hepatocellular carcinoma occurs at an earlier age in Africans, particularly in association with chronic hepatitis B. *Am. J. Gastroenterol.* **110**, 1629–1631 (2015).
13. Tuck, C. Z., Cooper, R., Aryeetey, R., Gray, L. A. & Akparibo, R. A critical review and analysis of the context, current burden, and application of policy to improve cancer equity in Ghana. *Int. J. Equity Health* **22**, 254 (2023).
14. Cancer today. <http://gco.iarc.fr/today/home> (2022) [Accessed Dec, 2024].
15. Zhang, W., Aryan, M., Qian, S., Cabrera, R. & Liu, X. A focused review on recent advances in the diagnosis and treatment of viral hepatitis. *Gastroenterol. Res.* **14**, 139–156 (2021).
16. Tachi, K., Agyei-Nkansah, A. & Archampong, T. Hepatocellular carcinoma in Ghana: a retrospective analysis of a tertiary hospital data. *Pan Afr. Med. J.* **36**, 43 (2020).
17. Gyedu, A., Shrauner, W. R. & Kingham, T. P. No patients to resect or transplant: an analysis of patients with hepatocellular carcinoma admitted to a major African referral hospital. *World J. Surg.* **39**, 231–236 (2015).
18. Salisu, W. J., Mirlashari, J., Seylani, K., Varaei, S. & Thorne, S. Fatalism, distrust, and breast cancer treatment refusal in Ghana. *Can. Oncol. Nurs. J. Rev. Can. Nurs. Oncol.* **32**, 198–205 (2022).
19. Tuck, C. Z., Akparibo, R., Gray, L. A., Aryeetey, R. N. O. & Cooper, R. What influences cancer treatment service access in Ghana? A critical interpretive synthesis. *BMJ Open* **12**, e065153 (2022).
20. [www.exchange-rates.org/Ghanaian-Cedi-\(GHS\)-To-British-Pound-\(GBP\)-Exchange-Rate-History-for-2023](https://www.exchange-rates.org/Ghanaian-Cedi-(GHS)-To-British-Pound-(GBP)-Exchange-Rate-History-for-2023). *World currency exchange rates and exchange rate history* <https://www.exchange-rates.org/exchange-rate-history/ghs-gbp-2023> (2024) [Accessed Dec, 2024].
21. Adjei, C. A., Suglo, D., Ahenkorah, A. Y., MacDonald, S. E. & Richter, S. Barriers to timely administration of hepatitis B birth dose vaccine to neonates of mothers with hepatitis B in Ghana: Midwives' perspectives. *SAGE Open Nurs.* **9**, 237796082311775 (2023).

Acknowledgements

We would like to thank staff at Tamale Teaching Hospital and the Northern Regional Health Directorate in Ghana, without whom this ongoing research project would not be possible. This research was conducted as part of C.T.'s Wellcome Trust PhD Scholarship: 108903/B/15/Z.

Author contributions

C.T. conceptualised the article and developed the first draft of this manuscript. This was based on insights by documented discussion with A.R.T.I. and S.A.M. A.R.T.I., S.A.M., R.A.k., R.A.r., L.G. and R.C. reviewed the draft manuscript and made intellectual inputs to improve quality. All authors read and approved the final manuscript. The corresponding author (C.T.) attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted. C.T. is responsible for the overall content as guarantor and accepts full responsibility for the work and controlled the decision to publish.

Competing interests

The authors declare no competing interests.

Additional information

Correspondence and requests for materials should be addressed to Chloe Tuck.

Reprints and permissions information is available at <http://www.nature.com/reprints>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2025