

**SHORT COMMUNICATION**DOI: <https://doi.org/10.3329/mediscope.v10i2.67997>**Risk Factors of Infection and Transmission of Viral Hepatitis B and E****Aisosa J. Osadolor¹, Owens O. Osadolor², *Obehi O. Osadolor³****Abstract**

Viral hepatitis is a disease burden in Africa and globally. It can be caused by RNA or DNA virus, which is hepatotropic and can pose a financial burden on the individual, their family, and society. Hepatitis E virus (HEV) is a single-stranded RNA virus that is transmitted through the faeco-oral route by consumption of contaminated food and water. Low socio-economic status, poor environmental sanitation, poor water supply, poor sewage disposal facilities, level of awareness on prevention, poor social condition and decreased personal hygiene are associated factors for the risk of hepatitis E virus infection. Hepatitis B virus (HBV) is a DNA virus that can be present in blood and body fluids, including saliva, semen, and vaginal secretion. It is par-enterally transmitted with horizontal and vertical transmission. The risk of infection and transmission of hepatitis B virus infection could be a result of occupational exposure, use of unsterilized blades for traditional and cultural practices in Africa like tribal marks, level of awareness on prevention and adherence to standard or universal precautions. The risk of infection and transmission of hepatitis B virus infection also includes individual sexual history, the availability and access to vaccines, the level of occupational hazards exposure, the level of vaccine acceptance and the vaccination status of individuals. Knowledge and community-based awareness and practice of World Health Organization (WHO) preventive practices and treatments could reduce the burden of hepatitis B and E virus infections.

Keywords: Risk factors, Transmission, Hepatitis B, Hepatitis E.

Introduction

Viral hepatitis is a disease burden of public health significance in Africa, and globally. The virus is hepatotropic, with different modes of transmission, affecting different populations in developed and developing countries, and can cause acute and or chronic infection. It can contribute significantly to morbidity and mortality¹ when infections are not prevented, or not

detected early if asymptomatic, and when infections are not treated before it becomes chronic and progress to liver cirrhosis and hepatocellular cancer. Viral hepatitis is caused by RNA or DNA virus and can be faeco-orally transmitted² or par-enterally transmitted with risk factors and associated factors of transmission and infection. It can pose a financial burden on the individual, their family, communities, health systems and society.

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Hepatitis E virus

Hepatitis E virus (HEV) is a small, icosahedral, non-enveloped, positive sense³, single-stranded RNA virus^{3,4} that can occur in acute outbreaks in communities with unsafe water and poor sanitation. It can be transmitted through faeco-oral route by consumption of contaminated food and water. It has eight major genotypes,⁵ with genotypes 1-4 commonly involved in human infections. It can be asymptomatic in children. Low socio-economic status, poor environmental sanitation, poor water supply, poor sewage disposal facilities and crowding are associated factors for the risk of infection. Other factors are a level of awareness of prevention, poor social condition and decreased personal hygiene.² Poor water supply, poor sewage disposal facilities, and poor social conditions are some features seen in some slum areas, rural and remote areas. Contamination of food products and water with hepatitis E virus constitutes a threat to food safety in rural and slum areas, as it can put the consumers⁴ at risk of water and food-borne hepatitis E virus infection. Hepatitis E virus (HEV) infection is considered acute, self-limiting, and endemic in low-income countries including the African continent. Progression throughout asymptomatic infection to chronicity, resulting in liver damage and cirrhosis, has been reported in immunocompromised patients with solid organ transplant (SOT), human immunodeficiency virus (HIV) and haematological malignancies.³ Hepatitis E virus is sheltered by domestic pigs, chickens⁶, rabbits, boar, deer and some other domestic animals or their products. Pigs are the predominant implicated source of HEV-3 and HEV-4 strains.⁵ Animal-to-person transmission is recognized with pigs serving as the reservoir for human infections.⁴ Abattoir workers, butchers, slaughterhouse workers, pig farmers, veterinary doctors⁶ working with pigs are at increased risk of acquiring hepatitis E virus infection. Reports have shown that, alongside the already known faeco-oral transmission of hepatitis E virus, other routes of transmission such as the paren-

teral route, person-to-person and perinatal mode of transmission are also possible.⁴

Hepatitis E virus (HEV) infection has been reported to cause fulminant hepatitis failure (FHF), especially in pregnant women.⁵ The reported mechanisms⁷ for fulminant hepatitis during pregnancy include increased levels of steroid hormones, reduced progesterone receptor expression and higher interleukin and viral load.⁷ The infection in pregnancy is associated with high rates of preterm labour,⁵ disseminated intravascular coagulation⁵ and mortality in pregnant women, possibly as a result of fulminant hepatitis.⁷ The infection can be vertically transmitted from infected mothers to their infants, with significant perinatal morbidity and mortality.⁵ Knowledge and community-based awareness on hygienic practices, interventions of safe water drinking practices, personal hygiene and World Health Organization (WHO) preventive practices could reduce the burden of hepatitis E virus infections.

Hepatitis B virus

Hepatitis B virus (HBV) is a DNA virus that can be present in blood and body fluids⁸, including saliva, semen, and vaginal secretion. Cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, and amniotic fluid are considered potentially infectious. Faeces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they contain blood infected with the virus. Hepatitis B virus (HBV) can be transmitted to non-immune persons, via contact with infected blood or body fluids such as saliva. It can occur between family members⁹ within households possibly by contact of non-intact skin or mucus membranes with secretions or saliva containing the hepatitis B virus. It can be transmitted from mother to child at birth, through sharing of sharp objects during some traditional or cultural practices in Africa; like tribal marks and ear piercing. Hepatitis B virus (HBV) can be transmitted through sexual transmission, percutaneous or mucosal exposure to infected blood and other

body fluids and public barbing salon clipper cuts, manicure and pedicure cuts. It can be transmitted following needle stick injuries and accidental exposure to infected blood and other body fluids.⁸ Hepatitis B virus can live outside the body in dried blood for longer than a week.¹ There is a risk of transmission of hepatitis B virus in dental practice to both the health caregivers and the patients, the risk of becoming a chronic hepatitis B virus carrier is ten times higher in dental care health workers (DCHW) than in the general population.¹⁰ Hepatitis B virus infections in healthcare workers are attributed to professional hazards⁸. Healthcare workers have a 3- to 5-fold higher prevalence of hepatitis B virus than the general population, with surgeons and dentists having higher reported cases.^{8,11} Health care workers are vulnerable to contaminated sharp injuries which constitute a major source of hepatitis B infection.

The risk of infection and transmission of hepatitis B virus infection could be a result of poor adherence to standard or universal precautions, individual sexual history, the availability and access to vaccines, the level of exposure to occupational hazards,⁹ the level of vaccine acceptance and vaccination status and the availability and access to healthcare especially for those in slum areas, rural and remote areas. Knowledge and community-based awareness on the need to adhere to standard or universal precautions always by all health workers, reduction of occupational exposure to infected blood,¹ vaccine acceptance by the population, complete vaccination status, and compliance with World Health Organization (WHO) preventive practices could reduce the burden of hepatitis B virus infections.

Conclusion

Hepatitis B virus is a DNA virus while hepatitis E is a RNA virus. Viral hepatitis is a health problem both in resource-rich and resource-poor countries globally. Knowledge and community-based awareness of the need to adhere to

World Health Organization (WHO) preventive practices and treatments could reduce the burden of viral hepatitis infections.

Financial support and sponsorship: None.

Conflicts of interest: None declared.

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