

Hepatitis B Infection Among Nurses: A review

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ABSTRACT

Hepatitis B virus (HBV) infection is a significant occupational hazard for healthcare workers, including nurses. This review aims to provide an overview of the prevalence, risk factors, and preventive strategies for hepatitis B infection among nurses.

Introduction

The Hepatitis B virus (HBV) is a blood borne virus that has become a major global public health concern. HBV, which belongs to the *Hepadnaviridae* family, has only one known natural host: humans. The virus enters the liver through the bloodstream and replicates in the tissue of the liver (1). Acute hepatitis B infection causes inflammation and jaundice in the liver, while chronic hepatitis B infection can lead to potentially fatal diseases such as liver cirrhosis and hepatocellular carcinoma(2). Globally, HBV infected over 2 billion individuals with 250 million of them suffering from chronic HBV infection(3). According to the World Health Organization (WHO), 325 million people are infected with HBV, with the African and Western Pacific regions having the highest rates of HBV infection at 68%(4), and approximately 900,000 people dying from HBV each year. Hepatitis B is most common in Sub-Saharan Africa and Southeast Asia (8.0–10.0%). This is followed by Eastern and Southern Europe, the Middle East, and Japan (2.0-7.0%), and the United States and Northern Europe (0.5–2.0%)(5),(6). Furthermore, it is estimated that 40% of the healthcare workers (HCWs) are infected with HBV infections in the developing countries(7).

Healthcare workers are four times more likely to be infected with HBV compared to the general population(8). This may be due to a lack of compliance with infection control recommendations from established guidelines such as the Center for Disease Control and Prevention (CDC)(9) . Handwashing, glove use, and correct disposal of sharp instruments are all part of the CDC's recommended precaution, which is aimed to prevent the spread of blood-borne infections like HBV(10) . In the case of HBV infection, knowledge includes information gathering, experience, skill, and disease prevention strategies (11). A lack of understanding among HCWs in both low- and middle-income countries leads to low adherence to safety measures, aggravating the HBV situation(12). A better understanding of HBV infection is essential to reduce the rate of infection among HCWs in the healthcare context(13). Knowledge is usually assessed to investigate how far the community know the concepts of disease including causes and symptoms of disease. Attitude is defined as a product of a complex interaction on values, feelings and beliefs practice is defined as an action of the habitual community to prevent the disease (14). Awareness is the knowledgeable person being conscious and behavior under the receiving in taxonomy of affective domain. Although HCWs are more aware of Hepatitis B, several countries lack a comprehensive grasp of the disease biology, transmission methods, risk of transmission, clinical characteristics, and vaccination availability(15) .Hepatitis B virus seroprevalence among HCWs was reported in a prior

study by Mahamat et al. (16), but there was no relationship study between seroprevalence and knowledge or awareness (16). Hepatitis B awareness is lower among HCWs in developing countries, which is linked to poorer preventive attitudes, including lower Hepatitis B vaccine coverage (17).

Prevalence of Hepatitis B Infection Among Nurses:

Numerous studies have reported the prevalence of hepatitis B infection among nurses worldwide. A systematic review and meta-analysis found that the pooled prevalence of hepatitis B infection among nurses was 5.0% confidence interval, subgroup analysis by region revealed the highest prevalence in Africa 5% followed by Asia 4 % (11)

Several other studies have also reported a high prevalence of hepatitis B infection among nurses In Uganda and found a hepatitis B prevalence of 10.5% among healthcare workers, including nurses (11).

Risk Factors for Hepatitis B Infection Among Nurses:

Several factors contribute to the risk of hepatitis B infection among nurses:

1. Exposure to Blood and Body Fluids

Nurses are at increased risk of HBV exposure due to their frequent contact with blood and body fluids during patient care activities.

2. Needlestick Injuries

Accidental needlestick injuries are a common occupational hazard for nurses, especially during

procedures such as venipuncture and intravenous catheter insertion.

3. Lack of Vaccination

Failure to receive the hepatitis B vaccine or incomplete vaccination increases the risk of HBV infection among nurses.

4. Poor Adherence to Standard Precautions

Inadequate adherence to standard precautions, such as hand hygiene, personal protective equipment (PPE) use, and safe injection practices, can increase the risk of HBV transmission.

Preventive Strategies

Preventive measures are essential for reducing the risk of hepatitis B infection among nurses:

1. Vaccination

Vaccination against hepatitis B is the most effective way to prevent HBV infection. All healthcare workers, including nurses, should receive the hepatitis B vaccine as part of their occupational health program.

2. Adherence to Standard Precautions

Nurses should strictly adhere to standard precautions, including hand hygiene, PPE use, safe injection practices, and proper handling and disposal of sharps.

3. Post-Exposure Prophylaxis (PEP)

Prompt management of needlestick injuries and other occupational exposures to blood and body fluids is crucial. Nurses should receive immediate post-exposure evaluation and, if necessary, PEP with hepatitis B immunoglobulin and vaccination.

4. Education and Training

Providing nurses with education and training on infection control practices, occupational hazards, and the importance of vaccination can help raise awareness and reduce the risk of HBV transmission.

Conclusion

Hepatitis B infection remains a significant occupational risk for nurses worldwide. Preventive strategies, including vaccination, adherence to standard precautions, prompt post-exposure management, and education and training, are essential for reducing the risk of HBV transmission among nurses and ensuring a safe work environment.

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