The National Open Journal of Medicine

NOJM

Editorial

The Epidemiology of HBV Infection, Its Management, and The Challenges of Hepatitis B Control in China.

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Abstract: This study aims to discuss the epidemiology of HBV infection, its management, and the challenges of hepatitis B control in China. PubMed and other resources of the national library of medicine under the national institute of health were searched. Other sources such as the British medical journal were looked at as well. The reference list of all related articles was reviewed. Retrospective and prospective cohort studies that examined the epidemiology, management and challenges of HBV infection between from 1992 up to present. It is of great importance to challenge the issue of HBV infection head-on given its widespread occurrence, the risk it poses for severe liver conditions, its transmission routes, the presence of detected cases, the associated stigma, its economic implications, the potential for prevention, and its global consequences. By uniting forces and efforts focused on education, testing, and treatment, the Chinese government coupled with compliance from the masses can take substantial steps towards managing and eventually eradicating HBV as a public health concern.

Keywords: Epidemiology; Hepatitis B; Management; Vaccination; Public Health

Citation: Musinguzi, A. The Epidemiology of HBV Infection, Its Management, and The Challenges of Hepatitis B Control in China.. *NOJM* **2023**, *1*, 3. https://doi.org/10.60088/nojm1010003

Received: 4 September 2023
Accepted: 8 October 2023
Published: 13 October 2023

1. Introduction

In China, the hepatitis B virus (HBV) infection rate is a serious public health concern. According to WHO estimates, 87 million people in China are chronic hepatitis B virus carriers, accounting for close to one-third of all carriers globally. It's also crucial to remember that less than 25% of people with chronic hepatitis have obtained a diagnosis.[1] The prevalence of hepatitis B infection is expected to remain high in the absence of a more comprehensive preventative plan. The risk of acquiring HBV-related liver diseases such hepatic cirrhosis and hepatocellular carcinoma (HCC) is higher in people who have a chronic HBV infection. The good news is that China has achieved outstanding progress in lowering this risk to the public's health. The nation has made great advancements in the past three decades toward reducing the incidence of HBV infection thanks to high child immunization rates and extensive use of the timely birth-dose vaccine to prevent mother-to-child transmission of HBV.[2] The goal of a 65% reduction in hepatitis B mortality by 2030 is still being hindered by a number of factors, despite the fact that the prevalence of HBV infection is steadily dropping. Hepatitis B is a dangerous disease that affects people's health in China and frequently leads to chronic poverty because of its high prevalence, persistence, and difficult management.[3] As a result, the Chinese government has prioritized preventing HBV infection. This study discusses the epidemiology of HBV infection, its management, and the challenges of hepatitis B control in China.

Hepatitis B viral infection, a potentially fatal liver condition, is brought on by the hepatitis B virus (HBV). It frequently spreads by physiological fluids like blood, semen, and vaginal secretions. Transmission occurs both vertically and horizontally. The two most common methods of horizontal transfer are sexual contact and mucosal surface contact.[4] Vertical transmission—maternal to newborn perinatal transfer of the virus—is

the primary mode of infection in areas with high frequency, such as China. 296 million individuals are estimated to be living with chronic hepatitis B infection worldwide, with China accounting for a third of all cases. The greatest HBV prevalence rate in China is found in the southern province of Guangdong, and a community-based study carried out in 2016 found an HBsAg prevalence of 8.76% in Guangdong's Pearl River Delta area. Subgroups with low economic growth and considerable interprovincial development were at high risk.[5] Regional economic growth in Guangdong varies, and better economic development might make healthcare resources more accessible. Around 30 million workers relocated to Guangdong in 2020 in pursuit of better employment; individuals who came from provinces with low or intermediate HBV prevalence may develop the disease in this area with a high HBV prevalence rate.

2. The social-ecological model and HBV infection in China.

The ecological model, sometimes called the social-ecological model according to CDC, is a model that conceptualizes health broadly and focuses on multiple factors that might affect health. There are too many factors affecting health ranging from micro to macro level. Based on the above reason they are grouped into five levels including, individual, interpersonal, organizational, community and social/public policy factors.[6] These levels have a multidirectional flow of influence both within and between different levels. For example, individual factors might influence the response to community factors and vice vasa. This model is particularly important because it helps us organize our thinking, identify opportunities for intervention and assess whether the interventions are having a desired effect or not and take measures accordingly.[7] Let's use the above literature on HBV infection in China to illustrate how this infection is structured with in the social-ecological model. Figure 1

2.1. Individual level

At the individual level, deficiency in knowledge and awareness especially in low-income areas about HBV transmission, prevention, and the importance of vaccination has contributed to the slow rate of elimination of HBV. As mentioned, less than 25% of people with chronic hepatitis have been diagnosed, indicating a need for increased individual awareness and education.[5] Although Individual behaviors such as promiscuous lifestyles or social gatherings and object sharing can contribute to the transmission of HBV, they have not been found to have a significant role in the transmission of HBV as compared to vertical transmission which is, on the other hand, the most dominant mode of transmission.

2.2. Interpersonal level

The interpersonal level is highlighted in the context of vertical transmission from mother to child.[5] Efforts to prevent mother-to-child transmission such as timely birth-dose vaccination involve family and community support and education. stigma surrounding HBV is still a big challenge and affects individuals and families, leading to discrimination and reluctance to seek testing or treatment. Addressing stigma is critical at the interpersonal level to encourage testing and treatment.

2.3. Organizational level

Access to healthcare resources and services is a significant factor in HBV control. The literature mentions that higher levels of economic development in some regions of Guangdong may ensure better access to healthcare resources, highlighting the role of healthcare organizations in providing prevention, testing, and treatment services.[3] Organizational efforts, such as vaccination programs targeting children and pregnant women, have contributed to reducing HBV incidence in China. These programs are organized and implemented at the organizational level.

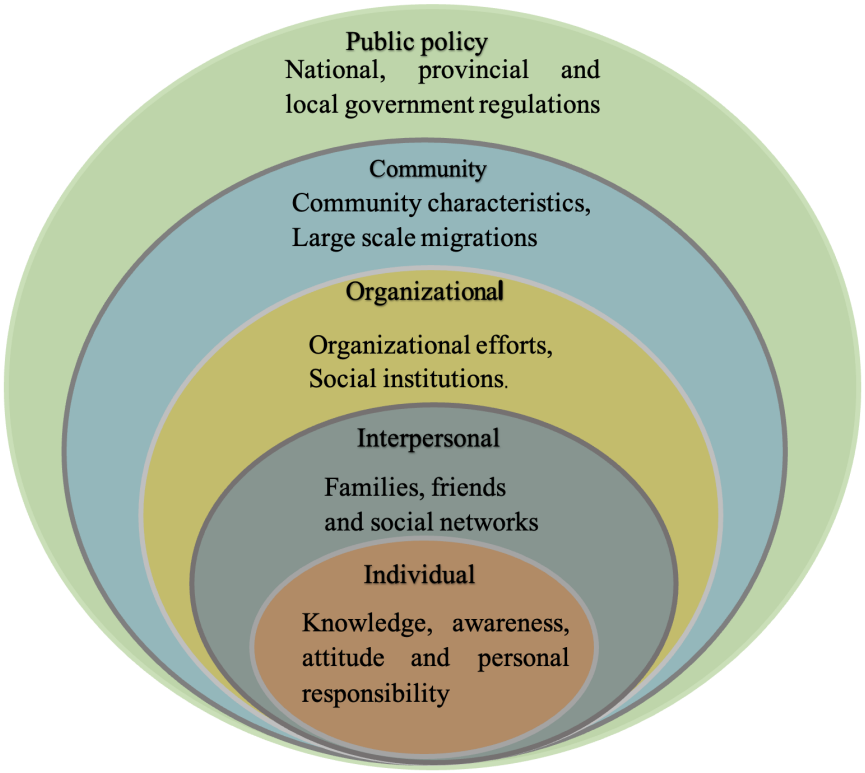

Figure 1. Illustrates how HBV infection is structured within the social-ecological model through various levels of influence.

2.4. Community level

Regional variations in HBV prevalence are a community-level factor. The example of Guangdong province having a higher prevalence emphasizes how community characteristics can influence infection rates.[5] Large-scale migration, as mentioned, can impact community-level dynamics. Migrants from different regions with varying HBV prevalence contribute to the spread and concentration of the virus within and across communities.

2.5. Public policy level

The Chinese government's prioritization of HBV control is a public policy level factor. The government of China enacted policies such as the national expanded program on immunization where HBV was included to increase coverage especially in pregnant women, new-born and infants.[8] This program was heavily funded with the support of national financial fund and significant results have been achieved. The government currently has an ongoing campaign with a target of 65% reduction on mortality of hepatitis B by 2030.

3. Existing strategies and promising intervention points

To combat this public health problem of HBV infection, the government of China at national level has expanded the vaccination programs against HBV. The program is free for children within the age range of 1-15 years.[9] The program is also available for ages older than 15 years at an affordable fee. In 2018, I received three doses of the hepatitis vaccine at a fee of 159 yuan which is equivalent to 21 dollars(adjusted for inflation).

At the national level, the government also requires all pregnant women going for antenatal care be screened for HBV. Patients going for surgery, hemodialysis and any other invasive diagnoses and treatments are also required to be tested for HBV.[8] This has augmented other public screening efforts at both the national and lower levels of government. For example, through the national preconception health examination project, reproductive couples planning to have children can have free health checkups including HBV.

4. Strategy proposal to combat HBV infection in China

In a bid to deal with HBV infection comprehensively, I propose two phases of action points; an educational phase followed by a mass testing phase.

4.1. The educational phase

Launching an education campaign to promote awareness and reduce the stigma surrounding HBV is crucial for its successful control and prevention. The education campaign themed "HBV health for all: break the stigma, know the facts" has three objectives which are to raise awareness, reduce stigma and promote testing.[10] To achieve this, I have identified six components to structure this model and these are multimedia campaigns, public service announcements, community workshops, online resources, social media campaigns and partnerships with organizations. This campaign should go on for at least one year using key messages and efforts to drive down stigma. Routine measurement and evaluation should be carried out to assess the impact of this campaign and adjustments made if the need arises.

4.2. The mass testing phase

Applying the concept of mandatory mass testing for HBV in all high-risk areas bidirectionally, both from top to bottom (government-driven) and from bottom to top (community-driven). The end of this is to provide a more comprehensive approach to screening and addressing the HBV infection in China.

4.2.1. Top-Down (government-driven) Mass Testing

This can be achieved through government policy and funding, coordination and planning, healthcare infrastructure, communication and education, data collection and

analysis and treatment and support. a combination of all these will provide sufficient resources to support this program.

4.2.2. Bottom-Up (community-driven) Mass Testing

This can be achieved through encouraging individuals and families to attend community events, community mobilization, community testing events, educational workshops, support groups and data sharing. It is important to establish a feedback mechanism where community concerns and needs are communicated to government health agencies for policy adjustments if necessary.

5. Recommendations

1. At the individual and interpersonal levels, I recommend encouraging the general masses to take personal responsibility through social media campaigns using key messages. Encouraging people to attend public health events and data sharing is a great way to build discipline. Carelessness of any kind should be punished using the full weight of the law.
2. At organizational and community level, establish mobile healthcare units to reach those who would otherwise not seek for help. This can be done through holding public rallies.
3. At public policy level, I recommend establishing feedback mechanisms where communities can communicate their concerns and needs directly to policy makers for review.

6. Conclusions

In conclusion, addressing HBV infection is crucial due to its high prevalence, potential for severe liver diseases, modes of transmission, undiagnosed cases, stigma, economic impact, preventability, and global implications. By prioritizing education, testing, and treatment, China and the international community can make significant progress in controlling and ultimately eliminating HBV as a public health threat.

Author Contributions: Conceptualization, M.A.; methodology, M.A.; writing—original draft preparation, M.A.; All authors have read and agreed to the published version of the manuscript.

Funding: Not applicable

Institutional Review Board Statement: Not applicable

Informed Consent Statement: Not applicable

Data Availability Statement: Not applicable

Acknowledgments: Not applicable

Conflicts of Interest: The authors declare no conflict of interest

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