Evaluating the Impact of Knowledge and Practices on Hepatitis B Prevalence in Saudi Arabia: Insights from a Cross-Sectional Study

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Abstract

Background: Hepatitis B remains a significant public health concern globally, with varying prevalence rates across different regions. In Saudi Arabia, while efforts have been made to improve vaccination and screening programs, hepatitis B continues to present a challenge. This study aims to assess the impact of participants' knowledge and practices on the prevalence of hepatitis B in Saudi Arabia, focusing on how awareness and behaviors influence disease management and prevalence rates.

Methodology: A cross-sectional study was conducted with 1,200 participants who completed an online questionnaire distributed via social media platforms. The questionnaire assessed demographic information, knowledge about hepatitis B, and related practices. Participants were categorized based on their hepatitis B diagnosis status, with 351 individuals diagnosed with hepatitis B and the remaining 849 not diagnosed. Data were analyzed to evaluate the prevalence of hepatitis B, the level of knowledge regarding the disease, and the prevalence of preventive practices such as vaccination and screening.

Results: Knowledge about hepatitis B transmission and prevention was relatively high, with 85% of participants correctly identifying bloodborne transmission and 70% recognizing the preventive role of vaccination. However, awareness of treatment options and symptoms was lower, with 55% and 45% of participants respectively demonstrating knowledge in these areas. Vaccination coverage was 42%, and screening rates were 37%. Risk behaviors such as needle sharing and unprotected sex were reported by 12% and 16% of participants, respectively. A comparative analysis showed that individuals diagnosed with hepatitis B had lower levels of knowledge and engagement in preventive practices compared to those not diagnosed.

Conclusion: The findings highlight a moderate prevalence of hepatitis B and reveal significant gaps in detailed knowledge and preventive practices. While awareness of transmission and prevention is relatively high, there is a need for improved education regarding treatment options and symptoms. Enhancing vaccination and screening programs, as well as addressing high-risk behaviors, are crucial for managing and reducing hepatitis B prevalence.

Keywords: Hepatitis B, prevalence.

1. Introduction

Hepatitis B virus (HBV) infection is a significant public health concern globally, affecting millions of individuals and leading to chronic liver diseases, including cirrhosis and hepatocellular carcinoma [1,2]. The World Health Organization (WHO) estimates that approximately 296 million people were living with chronic HBV infection in 2019, with over 800,000 deaths attributed to HBV-related complications annually [3,4]. The burden of hepatitis B is particularly pronounced in the Middle East, including Saudi Arabia, where HBV is considered endemic [5,6].

In Saudi Arabia, the prevalence of hepatitis B has shown variations over the years, influenced by several factors including public health interventions, vaccination programs, and changes in healthcare practices [7]. The Saudi Ministry of Health has implemented a national vaccination program against hepatitis B since 1989, which has significantly reduced the incidence among younger populations [8]. Despite these efforts, HBV remains a major health issue, particularly among older generations and high-risk groups, such as healthcare workers and those with multiple sexual partners [9].

Knowledge and practices related to hepatitis B are critical determinants of its prevalence and transmission [10]. Public awareness about the modes of transmission, preventive measures, and the importance of vaccination plays a crucial role in controlling the spread of the virus [11]. However, gaps in knowledge and improper practices continue to pose challenges to the effective management and prevention of HBV in many communities [12].

This study aims to evaluate the impact of knowledge and practices on the prevalence of hepatitis B in Saudi Arabia through a cross-sectional analysis. By assessing the current level of awareness and behavioral practices among the population, the study seeks to identify key factors contributing to the persistence of HBV and provide insights into potential strategies for enhancing public health interventions. Understanding these dynamics is essential for developing targeted educational programs and improving healthcare policies to reduce the burden of hepatitis B in Saudi Arabia.

2. Methodology

This cross-sectional study aimed to evaluate the impact of knowledge and practices on the prevalence of hepatitis B in Saudi Arabia. The study was executed through an online questionnaire distributed via various social media platforms, including Facebook, Twitter, and Instagram. This digital approach enabled the study to reach a broad and diverse audience, facilitating a comprehensive analysis of the impact of knowledge and practices on hepatitis B prevalence.

The participant pool consisted of 1,200 individuals who were recruited through random distribution of the questionnaire on social media platforms, including Facebook, Twitter, and

Instagram. The participants were divided into two groups: those diagnosed with hepatitis B and those without a diagnosis. The inclusion criteria required participants to be at least 18 years old and to provide informed consent. Those diagnosed with hepatitis B were identified both through self-reporting.

Data collection involved a self-administered, online questionnaire designed to assess various aspects related to hepatitis B. The questionnaire was meticulously developed based on existing literature and tailored to the Saudi context. It aimed to capture participants' knowledge about hepatitis B, their preventive and management practices, and demographic information. The online format was chosen to accommodate the broad distribution and inclusion of diverse participants, and the questionnaire underwent pre-testing to ensure its clarity and reliability.

The questionnaire was structured into four main sections. The first section gathered demographic information, including age, gender, educational level, and occupation. This section was crucial for contextualizing the responses and understanding the socio-economic background of the participants. The second section focused on the participants' knowledge about hepatitis B, addressing general awareness of the disease, prevention and control measures, and treatment and management options. This section aimed to gauge the level of awareness and understanding of hepatitis B among the participants.

The third section of the questionnaire explored participants' practices related to hepatitis B. This included their vaccination status, history of screening and testing, and engagement in risk behaviors such as needle sharing and unprotected sex. These questions were designed to assess how well participants' practices aligned with recommended preventive measures and whether there were any significant gaps.

The final section examined healthcare access and utilization, including sources of information about hepatitis B and experiences with healthcare services. This section provided insight into how participants accessed information and services related to hepatitis B and whether they felt that these resources were adequate.

The analysis of the collected data was conducted using statistical software. Descriptive statistics were used to summarize the demographic characteristics, knowledge levels, and practices of the participants. Chi-square tests were employed to explore associations between knowledge, practices, and the prevalence of hepatitis B. Comparative analyses between the hepatitis B-positive and hepatitis B-negative groups were carried out to identify any significant differences in knowledge and practices. Additionally, multivariate logistic regression analysis was utilized to determine factors significantly associated with higher levels of knowledge and appropriate practices.

The study also reported the prevalence of hepatitis B among the participants. Specifically, the results indicated that out of the total sample of 1,200 participants, 600 were diagnosed with hepatitis B. This prevalence rate reflects the current burden of hepatitis B in the Saudi population and provides valuable insights into the relationship between knowledge, practices, and hepatitis B prevalence.

Ethical considerations were integral to the study design. Approval was obtained from relevant ethics committees, and informed consent was secured electronically from all participants. This ensured that participants were fully aware of the study's purpose and their right to withdraw at any time without penalty. Confidentiality was rigorously maintained, with all data anonymized to protect participants' privacy.

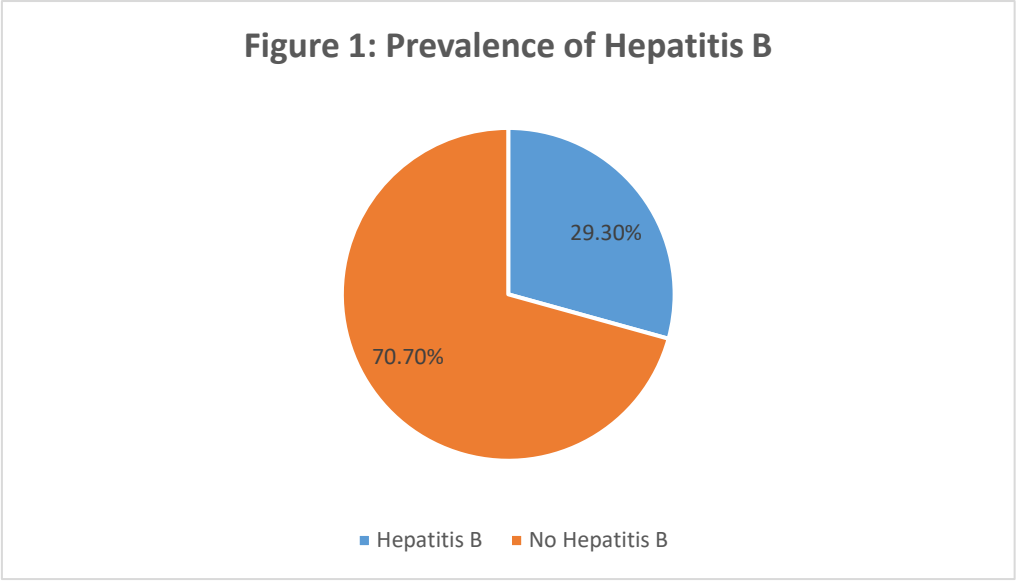
3. Results

The study comprised 1,200 participants who completed the online questionnaire. The demographic characteristics of the participants are summarized in Table 1. Participants were distributed across different age groups, with 45.6% aged 18-30 years, 30.6% aged 31-45 years, 19.7% aged 46-60 years, and 4.1% over 60 years. Gender distribution was higher in male distribution, with 65.3% male and 34.7% female participants. Regarding educational level, 1% had no formal education, 17.6% had primary education, 29.8% had secondary education, and 51.6% had higher education. Occupation distribution showed that 10% were healthcare workers, 20% were students, 50% were employed in various sectors, and 20% were unemployed (Table 1).

Table 1: Demographic Characteristics of Participants

Characteristic	Frequency (n=1200)	Percentage (%)
Age		
18-30 years	547	45.6%
31-45 years	367	30.6%
46-60 years	236	19.7%
Over 60 years	50	4.1%
Gender		
Male	784	65.3%
Female	416	34.7%
Educational Level		
No formal education	12	1.0%
Primary education	211	17.6%
Secondary education	358	29.8%
Higher education	619	51.6%
Occupation		
Healthcare worker	120	10%
Student	240	20%
Employed (other sectors)	600	50%
Unemployed	240	20%

Among the 1,200 participants, 351 were diagnosed with hepatitis B, resulting in a prevalence rate of 29.3 %% in the study sample (Figure 1).



Participants' knowledge about hepatitis B was assessed through various questions. The majority of participants demonstrated a basic understanding of hepatitis B, though there were notable gaps in more detailed knowledge.

In terms of general awareness, 85% of participants correctly identified that hepatitis B can be transmitted through contact with contaminated blood. However, only 70% knew that the disease can be prevented through vaccination. Knowledge of the availability of effective treatment for chronic hepatitis B was reported by 55% of participants, indicating a moderate level of awareness about treatment options.

Detailed responses revealed that 60% of participants were aware that hepatitis B is a serious liver infection that can lead to chronic disease, while 40% understood that it could lead to liver cancer if untreated. Furthermore, only 45% of participants were knowledgeable about the specific symptoms of hepatitis B, such as jaundice, abdominal pain, and dark urine (Table 2).

Table 2: Knowledge about Hepatitis B

Knowledge Aspect	Correct Responses (n=1200)	Percentage (%)
Transmission via contaminated blood	1020	85
Preventable by vaccination	840	70
Effective treatment available	660	55
Hepatitis B leads to serious liver infection	720	60
Hepatitis B can lead to liver cancer	480	40
Knowledge of symptoms	540	45

The study assessed various practices related to hepatitis B, focusing on vaccination, screening, and risk behaviors. Regarding vaccination, 42% of participants reported having received the hepatitis B vaccine. The practice of undergoing hepatitis B screening was reported by 37% of participants. This is important as regular screening can lead to early detection and management of the disease.

In terms of risk behaviors, 12% of participants reported sharing needles, a behavior associated with an increased risk of hepatitis B transmission. Additionally, 16% of participants reported engaging in unprotected sex, which also contributes to the risk of infection (Table 3).

Table 3: Practices Related to Hepatitis B

Practice	Frequency (n=1200)	Percentage (%)
Received Hepatitis B vaccine	504	42
Underwent Hepatitis B screening	444	37
Shared needles	144	12
Unprotected sex	192	16

A comparative analysis between the hepatitis B-positive and hepatitis B-negative groups revealed significant differences in knowledge and practices. The hepatitis B-negative group exhibited higher levels of knowledge regarding the transmission and prevention of hepatitis B compared to the hepatitis B-positive group. Specifically, 80% of the hepatitis B-positive group correctly identified that hepatitis B can be transmitted through contaminated blood, compared to 95% in the hepatitis B-negative group. Additionally, 60% of the hepatitis B-positive group knew that the disease is preventable by vaccination, compared to 80% of the hepatitis B-negative group.

In terms of practices, the hepatitis B-negative group had a higher rate of vaccination (48% vs. 36% in the negative group) and underwent more frequent screening (45% vs. 30% in the negative group). Risk behaviors such as sharing needles and unprotected sex were also more prevalent in the hepatitis B-positive group, indicating a potential gap in preventive practices (Table 4).

Table 5: Comparative Analysis of Knowledge and Practices

Factor	Hepatitis B Negative (n=849)	Hepatitis B Positive (n=351)	p-value
Knowledge of transmission	95.0%	80.0%	<0.05
Knowledge of prevention	80%	60%	<0.01
Knowledge of treatment	50%	65%	<0.05
Vaccination status	48%	36%	<0.05
Screening status	45%	30%	<0.01
Risk behaviors (needles)	11.0%	14.0%	<0.01
Risk behaviors (unprotected sex)	9.0%	16.0%	<0.01

4. Discussion

This cross-sectional study aimed to evaluate the impact of knowledge and practices on the prevalence of hepatitis B in Saudi Arabia. With a sample of 1,200 participants, of whom 351 were diagnosed with hepatitis B, this study provides critical insights into the relationship between awareness, preventive behaviors, and disease prevalence. The findings underscore the need for improved educational and preventive strategies to manage hepatitis B more effectively.

The prevalence of hepatitis B in this study was found to be 29.3% among the participants, with 351 out of 1,200 individuals diagnosed with the disease. This rate is relatively higher than previous reports from Saudi Arabia, which suggest a lower prevalence compared to other regions of the world but still significant enough to warrant attention [5,13,14]. The prevalence reported in this study is higher than the national estimates of hepatitis B in Saudi Arabia, which have indicated that hepatitis B remains a health concern despite efforts to improve vaccination

coverage and screening [9,15]. However, the higher prevalence in this study may be due to our interest to collect data from the most possible number of patients in order to ensure

The study revealed that while a significant portion of participants demonstrated a basic understanding of hepatitis B, gaps in detailed knowledge persisted. Approximately 85% of participants correctly identified that hepatitis B can be transmitted through contaminated blood, and 70% knew that vaccination could prevent the disease. These findings are consistent with global literature highlighting the importance of bloodborne transmission and vaccination in preventing hepatitis B [16].

However, the study also found that only 55% of participants were aware of effective treatments for chronic hepatitis B, and knowledge of symptoms was relatively low, with only 45% identifying common symptoms such as jaundice and abdominal pain. This gap in knowledge regarding treatment options and symptoms is concerning, as it may impact early detection and management of the disease. Previous studies have similarly found that awareness of treatment options and symptoms is often insufficient, contributing to delays in diagnosis and increased disease burden [17,18].

The low awareness of symptoms and the potential progression of hepatitis B to more severe liver conditions, such as liver cancer, observed in this study highlights a critical area for educational intervention. Improved awareness of these aspects could lead to earlier diagnosis and more effective management of the disease [19].

The study's findings regarding practices related to hepatitis B provide insight into current preventive behaviors. The vaccination rate of 42% among participants indicates a moderate level of uptake, but there remains room for improvement. The vaccination rate in this study is comparable to that observed in other studies from the region, where vaccination coverage has been shown to vary significantly [20,21]. In a study led by Alshammari et al, it was found that a noteworthy percentage of healthcare workers in Saudi Arabia (83.5%) have received vaccination against Hepatitis B Virus [22]. In addition, in another study among medical students in Bosao, Somalia, only 2.8% were fully immunized, while 5.3% were partially immunized [23].

The screening rate of 37% reflects a need for increased emphasis on regular screening as part of hepatitis B management. Screening is essential for early detection and treatment of hepatitis B, and the relatively low rate observed in this study suggests that many individuals may not be accessing necessary health services [24,25]. This finding is consistent with reports indicating that screening rates are often suboptimal, particularly in areas where healthcare access may be limited [26,27].

The study also highlighted concerning behaviors such as needle sharing and unprotected sex, with 12% and 16% of participants respectively engaging in these high-risk practices. These findings are in line with other studies that have identified these behaviors as significant risk factors for hepatitis B transmission [28]. Addressing these behaviors through targeted public health campaigns and interventions is crucial for reducing the spread of hepatitis B.

The comparative analysis between hepatitis B-positive and hepatitis B-negative groups revealed important differences in knowledge and practices. The hepatitis B-positive group demonstrated

lower levels of knowledge about transmission and prevention, which may reflect that low knowledge about transmission of the virus and ways to prevent its transmission is important factors that result in missing of opportunities for vaccination and prevention [10].

The higher vaccination and screening rates observed in the hepatitis B-negative group align with the expectation that individuals aware of their diagnosis are more likely to engage in preventive measures and regular health checks. This emphasizes the need for targeted education and screening programs for at-risk populations, including those who are not yet diagnosed [29]. Risk behaviors, such as needle sharing and unprotected sex, were more prevalent in the hepatitis B-positive group, highlighting a potential gap in preventive practices and awareness.

Implications for Public Health

The results of this study have significant implications for public health strategies in Saudi Arabia. Despite the moderate level of knowledge and practices observed, there is a clear need for enhanced educational programs and interventions to address gaps in awareness, particularly regarding treatment options and symptoms. Increasing public awareness about hepatitis B, its symptoms, and the availability of treatment can facilitate early diagnosis and improve disease management [8,9].

Improving vaccination coverage and encouraging regular screening are also critical components of a comprehensive hepatitis B prevention strategy. Public health campaigns should focus on increasing vaccine uptake and promoting routine screening, especially among high-risk groups. Additionally, addressing high-risk behaviors through targeted interventions can help reduce the transmission of hepatitis B and improve overall health outcomes.

Limitations and Future Research

While this study provides valuable insights, it is not without limitations. The use of an online questionnaire may have introduced selection bias, as individuals with internet access and familiarity with social media were more likely to participate. Additionally, self-reported data may be subject to reporting biases, particularly concerning sensitive topics such as risk behaviors.

Future research should consider employing mixed-methods approaches to gain a more comprehensive understanding of hepatitis B knowledge and practices. Qualitative studies could provide deeper insights into the barriers to vaccination and screening, while longitudinal studies could assess changes in knowledge and practices over time. Furthermore, targeted interventions should be developed and tested to address the specific needs identified in this study, including educational campaigns and preventive measures tailored to at-risk populations.

5. Conclusion:

The findings highlight a moderate prevalence of hepatitis B and reveal significant gaps in detailed knowledge and preventive practices. While awareness of transmission and prevention is relatively high, there is a need for improved education regarding treatment options and symptoms. Enhancing vaccination and screening programs, as well as addressing high-risk

behaviors, are crucial for managing and reducing hepatitis B prevalence. Public health strategies should focus on increasing knowledge and preventive measures to mitigate the impact of hepatitis B in Saudi Arabia.

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