

Hepatitis B Vaccination Status and KAP towards Hepatitis B Virus among Medical Students at Green Hope University Branch of Beledweyne

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Abstract

Background: Hepatitis B infection is a disease of the liver caused by the hepatitis B virus (HBV), which has a partially double stranded circular DNA and belongs to the family Hepadnaviridae [1, 2,3].

Study design: This was a descriptive cross-sectional study conducted on 270 medical students at green hope branch of beledweyne in Beledwein District, Somalia. A pretested structured questionnaire were adapted for data collection among medical students.

Result: Results indicate that there are 176 total responses, with 10 unique age groups and 2 unique genders of male and female. Out of the respondents, 65 have received at least one dose of the hepatitis B vaccine, while 111 have not been vaccinated. The mean value for "heard of HBV" is high (88.00%), indicating a general awareness of HBV among respondents. Knowledge of Transmission: There is a moderate understanding that HBV can be transmitted by blood and blood products, with a mean of 58.67 were aware of hepatitis.

Conclusion: High Awareness: Most respondents have heard of HBV (mean = 0.93) and know it can be transmitted by blood and blood products (mean = 0.91). Knowledge Gaps: There is a significant gap in understanding that HBV can affect organs other than the liver (mean = 0.48) and that it can be transmitted by contaminated water/food (mean = 0.44). Misconceptions: A low percentage correctly identified that HBV cannot be transmitted through skin contact (mean = 0.29).

Key words: knowledge attitude and practice, and vaccine status medical students.

Introduction

Hepatitis B virus (HBV) is a global health challenge, with an estimated 257 million chronic cases worldwide as of 2015. (5) Africa has the highest prevalence (6.1%) compared to less than 2% in developed countries.(6) In Somalia, the prevalence among children under five reached 11.06% in 2019. HBV is responsible for 80% of liver cancer cases and remains a significant cause of mortality, claiming 1.34 million lives in 2015 alone. (4, 4, 5) Medical students and healthcare workers are at high risk for HBV due to occupational exposure. The risk of infection is heightened during clinical training, especially for less experienced medical students who may not strictly adhere to universal safety protocols. (7) Although safe and effective vaccines have been available since 1982, (8) Somalia has no mandatory vaccination or immunity checks for students entering medical programs.

This study aimed to assess the hepatitis B vaccination status and the knowledge, attitudes, and practices (KAP) regarding HBV among medical students at Green Hope University's Beledweyne branch. The findings will help identify areas for improvement in student awareness, vaccination efforts, and preventive measures.

Materials and Methods

Study Design and Setting

A cross-sectional study was conducted in October 2024 at the Green Hope University branch in Beledweyne, targeting all medical students in the School of Health Science and Medicine. Green Hope University is a private institution with campuses across Somalia, including Beledweyne, the capital of the Hiran region. Beledweyne, located 340 km from Mogadishu and near the Ethiopian border, is a strategic city along the Shabelle River, with the Hiran region hosting Somalia's largest livestock population (estimated at 5 million in 2018). According to the National Development Plan 9.

Data collection

Data were collected using a self-administered questionnaire in English, consisting of 30 questions across five sections: (1) Demographics, (2) HBV perception and vaccination status, (3) HBV knowledge, (4) Attitudes toward HBV, and (5) Practices regarding HBV. Participants were briefed on the study's purpose and assured of anonymity and voluntary participation. To ensure clarity, questions were explained and translated as necessary.

Data analysis

The data were coded, entered, and analyzed using SPSS version 20.0 and Python. Ethical approval was obtained from the Institutional Ethical Review Board of the Faculty of Health Science and Medicine, Green Hope University, Beledweyne branch.

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Results

HB Infection Perception and Hepatitis B Vaccination Status

The majority of respondents have heard of HBV, as indicated by the high count of "Yes" responses. There are significant gaps in understanding specific

aspects of HBV, such as its transmission and effects on organs other than the liver.

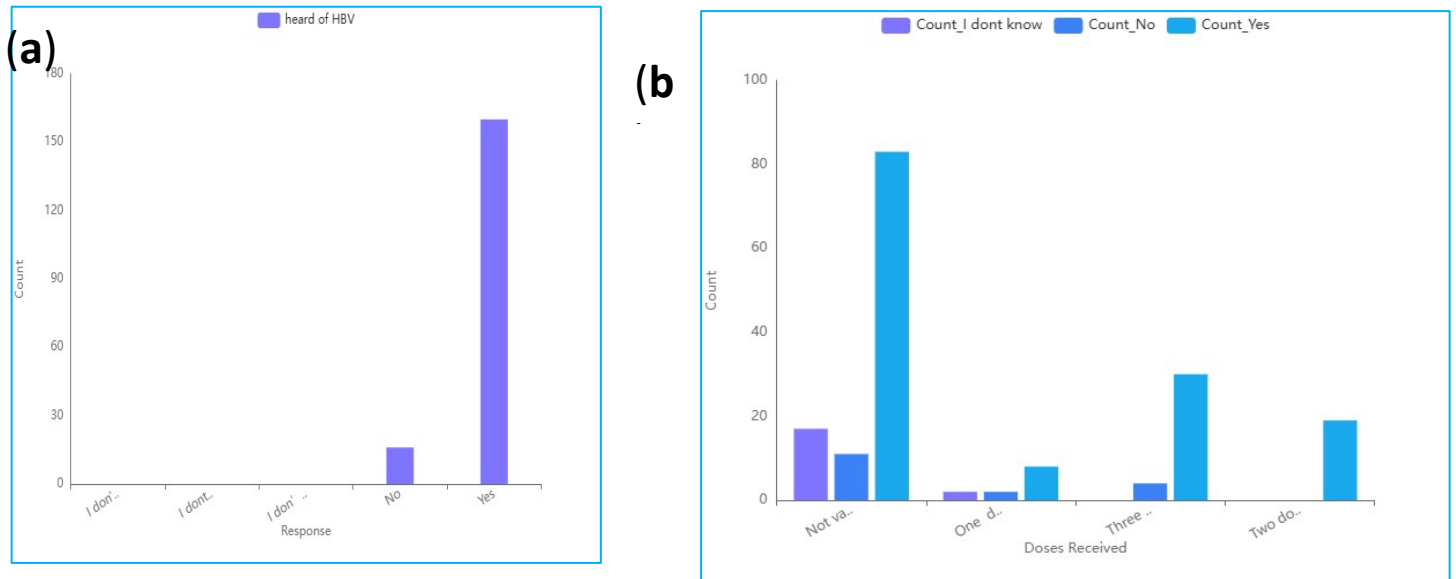


Figure 1 HB Infection Perception and Hepatitis B Vaccination Status

Figure 1: (a) shows a strong awareness of HBV, with most respondents acknowledging its existence. However, there are still some who are unsure or unaware. (b) Highlights the disparity in vaccination status, with a significant number of individuals not receiving any doses. Those who are vaccinated mostly receive three doses, indicating partial compliance with vaccination protocols.

Correlation of Demographic Factors with Vaccination Status

Age Correlation: The age group 20-22 shows a significant correlation with HB vaccine protection. Gender and Department Correlation: No significant gender differences, but departments like Medicine and Public Health show higher vaccination-related counts.

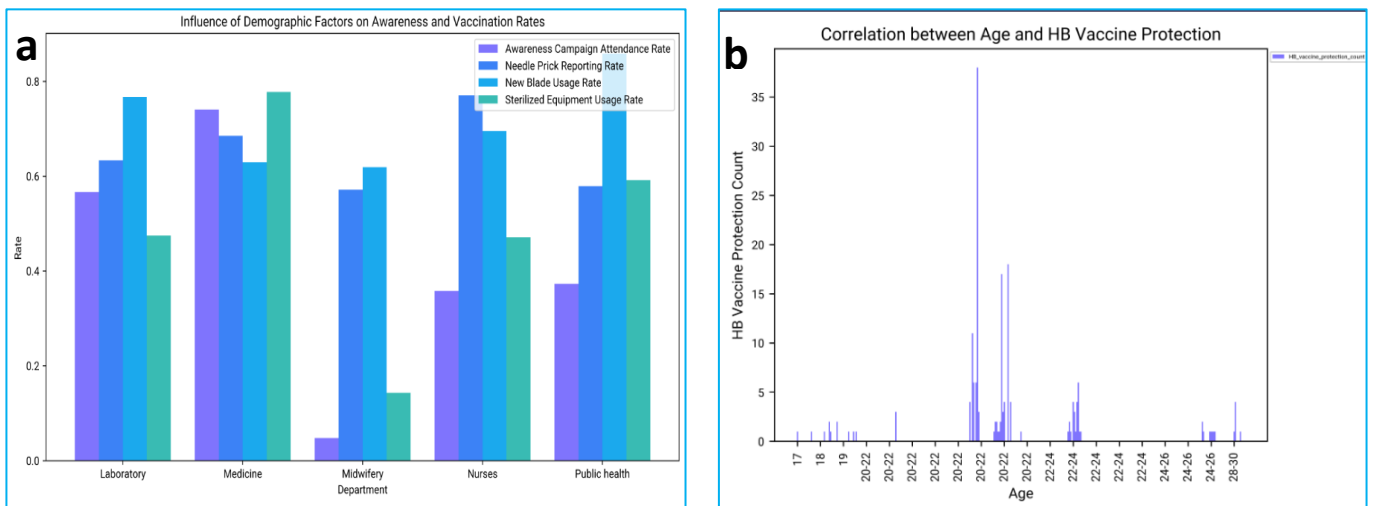


Figure 2 Correlation of Demographic Factors with Vaccination Status

Figure 2: (a) Grouped Bar Chart Insights: Shows varying rates of awareness and vaccination practices across different departments, with Nurses

and Public Health departments leading in most categories. (b) The bar chart highlights the age group 20-22 as having the highest HB vaccine

protection count, indicating a focus on this age group for vaccination effort.

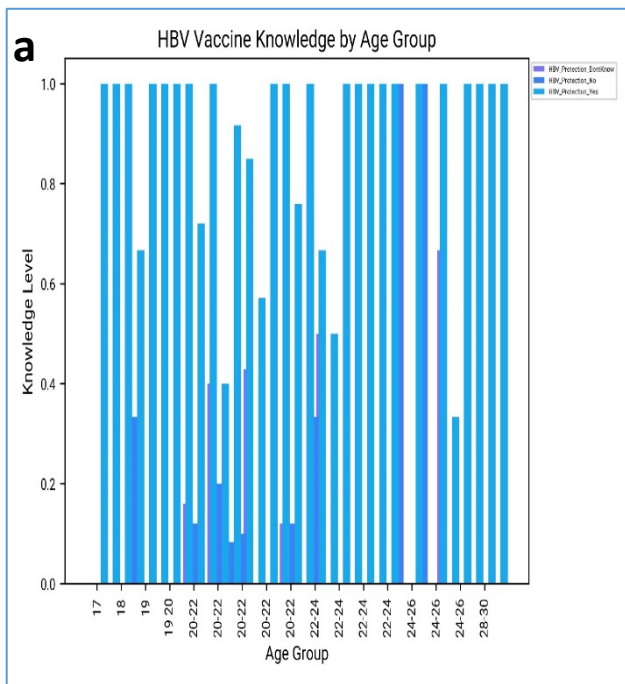
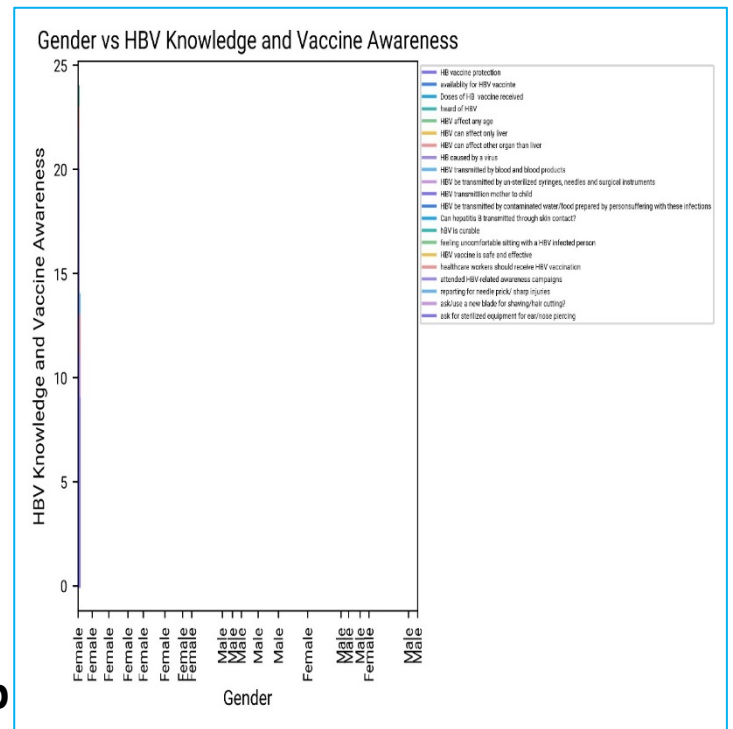


Figure 3 shows HBV Vaccine Knowledge by Age Group

Figure 3: (a) This chart shows HBV Vaccine Knowledge by Age Group, with knowledge levels represented for different age ranges. The bars are categorized into three levels :((1) HBV Protection “Don’t Know” (dark blue): Represents those who

(b) Gender Differences: The visualization shows minimal variation between genders in terms of



are uncertain about the HBV vaccine’s protection. (2) HBV-Protection-No (light purple): Indicates respondents who believe the HBV vaccine does not provide protection. (3) HBV-Protection-Yes (light blue): Shows respondents who are aware that the HBV vaccine offers protection.

HBV knowledge and vaccine awareness, indicating a general lack of awareness across both group

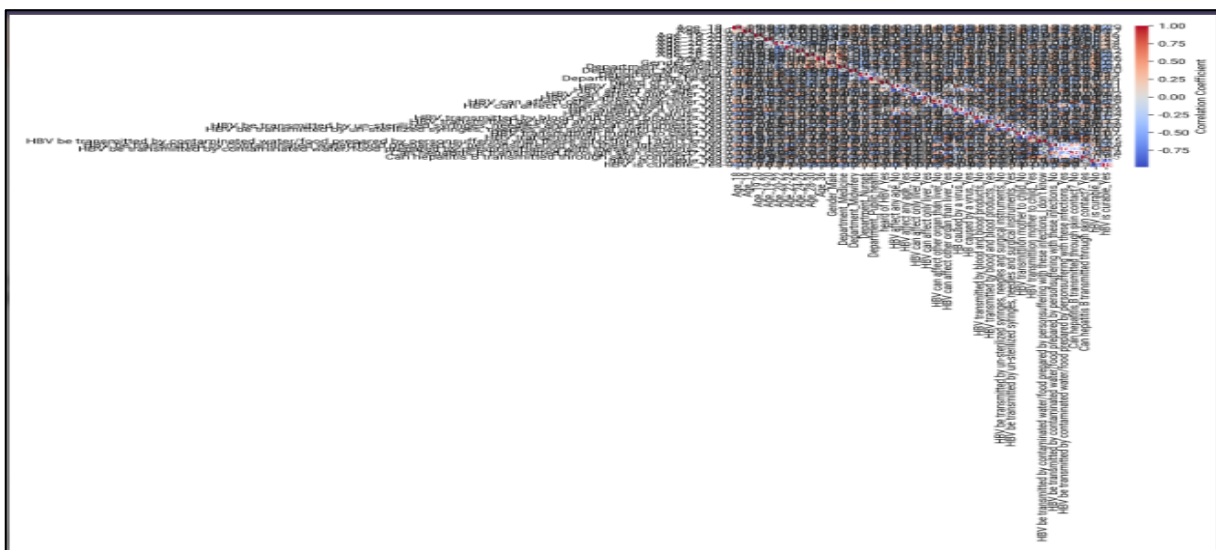


Figure 4 the heatmap shows a complex correlation pattern between demographic factors and perception-related

Figure 4: This heatmap displays a complex correlation matrix that visualizes the relationships between demographic factors and perception-related variables (such as knowledge, attitudes, and beliefs). Correlation values range between -1 and +1, indicating the strength and direction of the relationships between pairs of variables. Correlation Coefficients: Positive Correlation (+1 to 0): Indicates that as one variable increases, the other variable also tends to increase. Example: If age positively correlates with vaccination knowledge, older individuals

are more likely to have higher knowledge. Negative Correlation (0 to -1): Indicates that as one variable increases, the other variable tends to decrease. Example: If gender negatively correlates with fear of vaccination, one gender may have less fear than the other. Near Zero (0): Suggests little to no linear relationship between the variables.

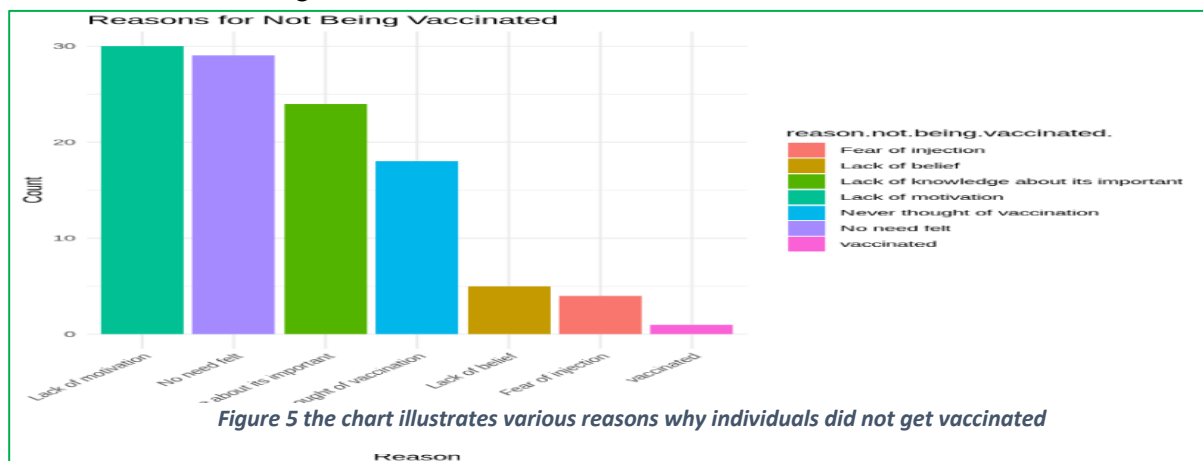


Figure 5: Lack of motivation" (24%) and "No need felt" (22.4%) together account for nearly half of the reasons. Knowledge Gaps: Around 20% of individuals cited a lack of knowledge, which points to the need for educational campaigns. Minor Barriers: "Fear of injection" and "Lack of belief" are less common but still significant barriers for 14.4% of the population combined. Vaccination Coverage: Only 3.2% of the individuals surveyed reported being vaccinated, which indicates low uptake. These percentages provide a clearer view of where to prioritize public health efforts, such as addressing motivation and knowledge barriers to improve vaccination rates.

Educational campaigns should target these barriers by raising awareness, boosting motivation, and addressing common misconceptions.

Correction patterns

The study highlighted strong correlations between demographic factors and perceptions. For example: Older respondents tended to have better vaccination knowledge and more positive attitudes toward vaccination. Gender differences influenced perceptions such as fear of injections.

Efforts to increase vaccination rates should be data-driven, addressing these correlations by tailoring educational strategies to specific demographics.

Discussion

Vaccination Rates by Age and Gender

A significant portion of unvaccinated individuals were in the younger age group (17–22). This suggests that vaccination efforts should focus on this demographic, which may face barriers such as insufficient knowledge or motivation.

Reasons for not being vaccinated

Key reasons for non-vaccination included: Lack of awareness about the importance of vaccination. Low motivation to seek vaccination. Never considering vaccination.

KAP (Knowledge, Attitude, and Practice) Differences

Clear differences were observed in KAP responses between vaccinated and unvaccinated individuals. Higher knowledge and positive attitudes were linked to better vaccination practices. Programs should aim to: Improve knowledge by addressing misinformation. Promote positive attitudes by emphasizing vaccine safety and importance. This approach could lead to better vaccination uptake and reduced vaccine hesitancy among medical students.

Key Findings from the Study

1. High Awareness but Significant Knowledge Gaps

- **Awareness:** The study found that 88.6% of respondents had heard of HBV, indicating a strong general awareness of the virus.
- **Knowledge Gaps:** However, there were significant misconceptions about HBV transmission and its effects. For example, only 48% of respondents knew that HBV could affect organs other than the liver, and 44% incorrectly believed it could be transmitted through contaminated food or water.

2. Low Vaccination Rates

- Out of 176 respondents, only 65 (37%) had received at least one dose of the hepatitis B vaccine.
- The primary reasons for not getting vaccinated included a lack of motivation (24%), feeling no need for vaccination (22.4%), and insufficient knowledge about the vaccine (20%).

3. Demographic Insights

- Younger students (aged 17–22) were less likely to be vaccinated, highlighting the need for targeted vaccination campaigns for this age group.
- Gender differences in vaccination rates were minimal, but fear of injections was a slightly more common barrier among female students.

4. Correlation Between Knowledge and Vaccination

- Students with higher knowledge levels and positive attitudes toward HBV were more likely to be vaccinated. This underscores the importance of educational campaigns to address misinformation and promote vaccine uptake.

Conclusion

This study revealed a concerning number of unvaccinated medical students and highlighted gaps in their knowledge about HBV. There is a critical need to improve education on the risks of HBV and the importance of vaccination. It is recommended that the Green Hope University branch of Beledweyne revise its curriculum to enhance awareness among medical students about HBV and vaccination.

Education plays a vital role as students contribute to community awareness about viral hepatitis. Therefore, greater efforts should be made to educate students on HBV prevention and how to seek care when exposed to the virus. Green Hope University should also participate in national and international discussions on hepatitis prevention to contribute to broader public health initiatives.

Providing free HBV vaccines to all unvaccinated students could encourage universal vaccination among medical students. Future research should focus on measuring anti-HBs levels and evaluating

vaccine efficacy to further improve vaccination programs.

This study highlights the critical need to address HBV awareness and vaccination among medical students. By taking proactive steps, we can reduce the burden of HBV and protect the health of future healthcare professionals.

Medical students are on the frontlines of healthcare delivery, and their exposure to HBV during clinical training poses a significant risk. The low vaccination rates and knowledge gaps identified in this study highlight the urgent need for:

- **Enhanced Education:** Integrating comprehensive HBV education into medical curricula to address misconceptions and improve awareness.
- **Vaccination Programs:** Providing free or subsidized HBV vaccines to all medical students to ensure universal coverage.
- **Public Health Campaigns:** Raising awareness about the importance of vaccination and addressing barriers such as fear of injections and lack of motivation.

Conflict of interests

The authors declare no conflicts of interest regarding the publication of this paper.

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