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Knowledge, Attitude, and Behavior of Pakistani Population Toward Hepatitis B and Associated Factors

Hifza Ishtiaq[1], Alina Zafar[2], Bashir ur Rehman Kant[3], Saqlain Ahmed[2], Ayesha Ijaz Raja[4], Iftikhar Khattak[5]

[1]Department of Accident and Emergency, Abbas Institute of Medical Sciences, Muzaffarabad, AJK, Pakistan.
[2]Sheikh Khalifa bin Zayed Al Nahyan Hospital - CMH, Muzaffarabad, AJK, Pakistan.
[3]Department of Surgery, Dean at The University of Azad Jammu and Kashmir, AJK, Pakistan.
[4]AJK Medical College, Muzaffarabad, AJK, Pakistan.
[5]Department of Public Health, Health Services Academy, Islamabad, Pakistan.

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Corresponding Author: Hifza Ishtiaq, Department of Accident and Emergency, Abbas Institute of Medical Sciences, Muzaffarabad, AJK, Pakistan.
Email: hifzaistiaq17@gmail.com

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ABSTRACT

Background: Hepatitis B is the liver's infection transmitted through the HB virus. The infection can be in acute or chronic form. **Objective:** The study objectives were to find the knowledge, attitude, and behavior of the Pakistani population regarding hepatitis B and associated risk factors. **Methodology:** This was a cross-sectional research study. The research study included 385 respondents with a level of confidence of 95% and less than 5 percent margin of error. Data were collected by sending Google Forms links through all social media platforms, such as WhatsApp and Facebook, which are widely used in Pakistan. The data were then transferred to SPSS Statistics version 25.0. The significance of the association was determined using p-values. The ordinal logistic regression analysis was applied to confirm the relationship of demographic factors with KAB. **Result:** Out of 385 participants most respondents were aged between 30 and 49 years (41.6%). Most of the participants correctly identified that Hepatitis B is caused by a virus (65.0%) and can be transmitted via blood (75.3%). Age demonstrated a significant effect, with individuals aged 50 years or older being about 1.8 higher probability to have better knowledge levels compared to those aged 18–29 years (Odds ratio: 1.8, 95% Confidence Interval (CI): 1.2–2.7, p = 0.003). Level of education significantly influenced attitudes, with individuals having higher education demonstrating over twice the likelihood of a positive attitude compared to those with no formal education (Odds ratio (OR): 2.1, 95% Confidence Interval: 1.5 to 3.0, p-value < 0.001). **Conclusion:** Higher knowledge and positive attitudes, influenced by age, education, and urban residence, strongly correlated with improved health behaviors.

INTRODUCTION

HBV is a significant health issue globally. The World Health Organization's (WHO) West Pacific Region and the World Health Organization's (WHO) African Region have the largest infection burdens, with a total of 97 million and 65 million chronically infected persons, accordingly (1).

Acute HB is a short-term illness that occurs within six months of Hepatitis B exposure. Some persons with acute Hepatitis B infection experience no symptoms or only moderate disease. Others may develop a more serious condition requiring hospitalization due to acute hepatitis B. In 2022, fifty-two percent of all acute HB cases were among adults aged 40 to 59 years. The number of newly diagnosed acute hepatitis B patients stayed steady in 2022 (2)

Countries of South Asia have a significant worldwide burden of HB virus and Hepatitis C

virus infections. According to statistics, India has 18 million people suffering from Hepatitis C virus and 37 million with infection caused by HBV (3) Several nations throughout the world currently have Hepatitis B virus immunization programs in place. The Ethiopian Expanded Program for Immunization was introduced and contains the vaccine pentavalent DPT-Hi B-Hep B, along with Hepatitis B virus immunization. Extended Program Immunization protocols suggest that the Hepatitis B Virus vaccine is delivered sixteen, and fourteen weeks of age after delivery (4). By evaluating resident's understanding perspective, and routine behaviors regarding Hepatitis, Those in charge can take steps to improve the daily lives of individuals by raising their awareness, which will lead to good attitudes regarding HV and ultimately better behaviors. (5). Furthermore, the study on knowledge, mentality and attitude on data related to hepatitis-related was appreciated(6). According to a comprehensive literature analysis conducted over five 50 years from 1968 to 2015, the whole prevalence of HB virus was about 7.4 percent (7). During 2014, the zero prevalence of HB virus infections among pregnant women was 4.4% (8).

In the African nation of Ethiopia 48 percent of health science students have low awareness related to HBV infection (9). In country of China, prevalence of negative perceptions concerning the spread of hepatitis was 16.7 percent between pregnant women (10). Pregnant women in Ethiopia had an average of 46.7 (11). According to research conducted in Quetta Baluchistan, 104 (26.7 percent) engaged in the private sector. (12).

The study Intended to examine the Pakistani population's understanding, behavior, and behavior on Hepatitis C along with its risk factors.

METHODOLOGY

This study was a cross-sectional research study. The study included 385 people who participated with a 95% confidence level and less than five percent of margin of error. Stratified random sampling to confirm representation of different age categories, genders (Male/Female), and socioeconomic strata. This study questionnaire was divided into four parts. The 1st part included sociodemographic information, and the second part contained questions about knowledge, with each item's variable value marked as correct-1, incorrect=0. The third part included questions about attitudes, with values ranging from 1 (Strongly disagree) to 5 (strongly agree). The last part included questions on behaviors Never=1 to always=5. Participants provided written consent before they participated in the study via a Google Forms link with the questionnaire. Data were collected by sending Google Forms links through all social media platforms, such as WhatsApp and Facebook, which are widely used in Pakistan. The authors involved in this study contacted friends and family members in different areas of Pakistan and requested them to spread the questionnaire through social media in their own areas. There were no incentives or rewards for participation. The participants were requested to complete the forms of their free will. Text messages and voice notes were sent with a Google Forms link to briefly explain the context and purpose of the study. The data were then transferred to IBM SPSS Statistics version 25.0 and missing values were replaced with adjacent column values. Frequencies and associations were determined using statistical analyses. The significance of the association was determined using p-values. To confirm the association of demographic variables by KAB we applied the ordinal logistic regression.

RESULTS

Table 1 shows the statistical data that is descriptive for demographic variables in the study population. 54.5% percent of those who participated were men (n=210), while 45.5% were women (n=175). Most of respondents were aged between 30 and 49 years (41.6%), followed by those aged 18–29 years (39.0%), and a slighter percentage aged 50 years and above (19.5%). Regarding education levels, 35.1% had attained higher education, 31.2% had secondary education, 20.8% had primary education, and 13.0% reported no formal education. In terms of residence, 67.5% resided in urban areas (n=260), while 32.5% lived in rural areas (n=125).

Table 1

Descriptive Statistics

Variables	Frequency (n)	Percentage (%)
Gender		
Female	175	45.5%
Male	210	54.5%
Age (years)		
18–29	150	39.0%

30–49	160	41.6%
50+	75	19.5%
Education Level		
No formal education	50	13.0%
Primary	80	20.8%
Secondary	120	31.2%
Higher Education	135	35.1%
Residence		
Urban	260	67.5%
Rural	125	32.5%

The descriptive analysis of survey responses assessing knowledge about Hepatitis B reveals varied levels of awareness among participants. Most of the respondents correctly identified that HB is caused by a virus (65.0%) and can be transmitted via blood (75.3%). Understanding of transmission risks associated with sharing needles was high (80.5%), while 70.1% correctly recognized the availability of a preventive vaccine. However, only 55.2% correctly identified handwashing as a preventive measure, indicating a gap in hygiene-related knowledge. (Table 2)

Table 2

Survey Descriptive Analysis - Knowledge

Knowledge Question	Correct (%)	Incorrect (%)
Hepatitis B is caused by a virus.	65.0	35.0%
It can be transmitted via blood.	75.3	24.7%
Sharing needles can spread the virus.	80.5	19.5%
Hepatitis B can be prevented by a vaccine.	70.1	29.9%
Washing hands prevents Hepatitis B.	55.2	44.8%

Table 3 presents the descriptive analysis of survey responses regarding attitudes toward Hepatitis B. The statement "Vaccination against Hepatitis B is important" received the highest agreement with a mean score of 4.5 (SD 0.6), interpreted as "Strongly Agree." Similarly, respondents strongly agreed that Hepatitis B is a severe disease, with a mean score of 4.3 (SD 0.7). Statements advocating for support for individuals with Hepatitis B (mean 4.2, SD 0.8) and the necessity of regular screening (mean 3.9, SD 0.9) were rated as "Agree." Lastly, avoiding stigma for Hepatitis B patients was also supported, indicating agreement despite a slightly wider response variation.

Table 3

Survey Descriptive Analysis - Attitude

Attitude Statement	Mean (SD)	Interpretation
Vaccination against Hepatitis B is important.	4.5 (0.6)	Strongly Agree
People with Hepatitis B deserve support.	4.2 (0.8)	Agree
Regular screening is necessary.	3.9 (0.9)	Agree
Hepatitis B is a severe disease.	4.3 (0.7)	Strongly Agree
Avoiding stigma for Hepatitis B patients.	3.8 (1.0)	Agree

Table 4 provides a descriptive analysis of behavioral practices related to health and safety. Participants reported engaging in the behavior of using clean needles or syringes most consistently, with a mean score of 4.7 (SD = 0.5), interpreted as "Always." Similarly, seeking medical care following potential exposure was also highly practiced, with a mean of 4.2 (SD = 0.8), indicating frequent adherence. Practices such as avoiding the sharing of personal items (mean = 4.0, SD = 1.0), practicing safe sex (mean = 3.8, SD = 0.9), and getting vaccinated against Hepatitis B (mean = 3.5, SD = 1.2) were performed "Often," albeit with slightly lower consistency.

Table 4

Survey Descriptive Analysis - Behavior

Behavioral Practice	Mean (SD)	Interpretation
Get vaccinated against Hepatitis B.	3.5 (1.2)	Often
Use clean needles or syringes.	4.7 (0.5)	Always
Avoid sharing personal items like razors.	4.0 (1.0)	Often
Practice safe sex.	3.8 (0.9)	Often
Seek medical care if exposed.	4.2 (0.8)	Always

Table 5 describes the findings of analysis of ordinal type of logistic regression evaluating factors related to knowledge levels. Age demonstrated a significant effect, with individuals aged 50 years or older being 1.8 times more likely to have higher knowledge levels linked to those who aged between 18–29 years (OR: 1.8, 95% Confidence Interval: 1.2–2.7, p-value 0.003). Similarly, higher schooling was strongly associated with greater knowledge, with an odds ratio of 3.5 compared to individuals with no formal education (95% CI: 2.4–5.1, $p < 0.001$). Urban residence also contributed positively, as urban dwellers were 1.5 times more likely to exhibit higher knowledge levels than their

rural counterparts (OR: 1.5, 95% Confidence Interval (CI): 1.1–2.2, p-value 0.01).

Table 5
Ordinal Logistic Regression Analysis - Knowledge

Variables	OR	Confidence Interval (95%)	p-value
Age of participants (50+ vs. 18–29)	1.8	1.2–2.7	0.003
Education (Higher vs. None)	3.5	2.4–5.1	<0.001
Urban residence (Yes)	1.5	1.1–2.2	0.01

Findings of an ordinal logistic regression statistical test for attitudes. Gender revealed an (OR) of 1.3 (Cl=95%: 0.9-1.8, p-value=0.07), demonstrating a trend towards a more optimistic attitude among males than females, albeit this was not statistically significant. Individuals who had higher level of education were more expected to have a positive attitude than those without education (ODD Ratio: 2.1, 95% confidence interval (Cl): 1.5-3.0, p < 0.001). Urban residents were also substantially more likely to have positive attitudes than their rural counterparts (ODD Ratio: 1.7, Cl=95%: 1.2-2.4, p-value 0.002). (Table 6)

Table 6
Ordinal Logistic Regression Analysis - Attitude

Variable	Odds Ratio (OR)	CI (95%)	p-value
Gender	1.3	0.9–1.8	0.07
Education (Higher vs. None)	2.1	1.5–3.0	<0.001
Urban residence (Yes)	1.7	1.2–2.4	0.002

Table 7 shows that High knowledge levels were substantially related with improved behavior, with an OR of 3.0, (95% Confidence Interval: 2.1–4.4, *p* less than 0.001), indicating that persons with high knowledge were approximately three times more likely to display better behavior. A positive attitude was found to improve the probability of better behavior by 2.5 times (Odd Ratio: 2.5, 95% CI: 1.8–3.5, $p < 0.001$). Urban residence was also a significant predictor, with people living in cities 1.6 times more likely to exhibit positive behavior than non-urban residents (Odds Ratio: 1.6, 95% Confidence interval CI: 1.1–2.3, *p value* = 0.01).

Table 7
Ordinal Logistic Regression Analysis - Behavior

Variable	OR	CI (95%)	p-value
Knowledge (High level vs. Low level)	3.0	2.1–4.4	<0.001
Attitude (Positive vs. Negative)	2.5	1.8–3.5	<0.001
Urban residence (Yes)	1.6	1.1–2.3	0.01

DISCUSSION

The World Health Organization (WHO) has designated hepatitis as a global public health problem. It launched the world's health sector strategy on HIV, viral hepatitis, and sexually transmitted diseases for the time frame of 2022 to 2030. (13). In our study most of the participants correctly identified that Hepatitis B is caused by a virus (65.0%) and can be transmitted via blood (75.3%). In a study approximately 40% of medical students demonstrated a high degree of knowledge (14) . This finding was comparable to a research project carried out in India (15). In contrast with previous findings, a study showed that among 780 individuals, only 588 individuals (75.4 percent) belong from range of poor knowledge, while other 192 individuals (24.6 percent) demonstrated sufficient knowledge on hepatitis B virus. (12)

According to our study understanding of transmission risks associated with sharing needles was high (80.5%), while 70.1% correctly recognized the availability of a preventive vaccine, only 55.2% correctly identified handwashing as a preventive measure, indicating a gap in hygiene-related knowledge. A survey found that many students were aware that blood transfusion (81.1%) and the use of contaminated synthetic syringes and needles (74.2 percent) are primary mechanisms of transmission. (16).

According to study out of 612 participants 43.3% had knowledge that HB can be transmit through transfusion of blood, in addition to this they also found thar about 25.8% participant had knowledge that sharp objects can also cause HB. 16.8% participants had knowledge that HB is viral infection(17).

In our study, the statement "Vaccination against Hepatitis B is important" received the highest agreement with a mean score of 4.5 (SD 0.6), interpreted as "Strongly Agree." Similarly, respondents strongly agreed that Hepatitis B is a severe disease, with a mean score of 4.3 (SD 0.7). About 55.8 participants had strongly Agree that hepatitis B can be prevented through vaccination, using gloves, and avoiding sharp needles or

syringes. About 36.4 participants believed that hepatitis B vaccine is safe and effective (18).

According to our cross-sectional study results practices such as avoiding the sharing of personal items (mean = 4.0, SD = 1.0), practicing safe sex (mean = 3.8, SD = 0.9), and getting vaccinated against Hepatitis B (mean = 3.5, SD = 1.2) were performed "Often," albeit with slightly lower consistency. Participants reported engaging in the behavior of using clean needles or syringes most consistently, with a mean score of 4.7 (SD = 0.5), interpreted as "Always." Similarly, seeking medical care following potential exposure was also highly practiced, with a mean of 4.2 (SD = 0.8), indicating frequent adherence. Among the participants, 38.2% asked/used a new blade for shaving/hair cutting. About sixty percent of the respondents asked for a new syringe before injection.(18)

According to our study age demonstrated a significant effect, with individuals aged 50 years or older being about 1.8 higher probability to have better knowledge levels as compared to those aged 18–29 years (OR: 1.8, 95% CI: 1.2–2.7, p = 0.003). Similarly, higher education was strongly associated with greater knowledge, with an odds ratio of 3.5 compared to individuals with no formal education (95% CI: 2.4–5.1, p < 0.001). Urban residence also contributed positively, as urban dwellers were 1.5 times more likely to exhibit higher knowledge levels than their rural counterparts (OR: 1.5, 95% CI: 1.1–2.2, p = 0.01). A study found that younger age group (≤40 vs. >40), was related with greater knowledge scores(adjusted β: 9.24; 95%Confidence interval (-0.58, 19.05; with a *p*=0.06).(19)

CONCLUSION

Respondents strongly agreed on the importance of vaccination and recognized the severity of the disease, while also advocating for regular screening, support for affected individuals, and efforts to avoid stigma. The findings emphasize a generally positive adherence to preventive health measures, with some variability across specific practices. Age, education level, and urban residence significantly influenced knowledge, with older individuals, those with higher education, and urban dwellers exhibiting greater knowledge levels. Positive attitudes were more likely among those with higher education and urban residents. High knowledge levels and positive attitudes were strongly associated with improved behaviors, highlighting the importance of education and environment in shaping health-related practices.

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