

UNLOCKING HEPATITIS B AND C INSIGHTS: EXPLORATION OF RISK AWARENESS AMONG UNIVERSITY STUDENTS IN THE CAPITAL TWIN CITIES OF PAKISTAN

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ABSTRACT

Background: Pakistan, a developing nation, grapples with a growing burden of Hepatitis B and C, exerting a substantial strain on the country's economy. Mitigating this challenge necessitates a robust strategy emphasizing prevention of infection by hepatitis B and C viruses.

Objective: This study aimed to assess awareness among university students in the capital twin cities of Pakistan regarding Hepatitis B/C, encompassing knowledge about risk factors, vaccination, and treatment options.

Methods: This cross-sectional survey was conducted from January 2023 to June 2023 in Rawalpindi and Islamabad, this research involved interviewing 1008 students from eight diverse universities. The main emphasis was on identifying areas that required intervention to mitigate the future impact of Hepatitis B and C in Pakistan.

Results: Out of 1008 students, 57.5% were identified having Hepatitis B/C as viral diseases, and 74% recognized their impact on the liver. However, only 28% were aware that these viruses could be transmitted through dental instruments and ear/nose piercing. Additionally, 38% believed transmission could occur through blood/blood products and the reuse of razors. While 56% had encountered hepatitis-related advertisements, a mere 11.6% of social science students had received the HBV vaccine.

Conclusion: While a majority of participants possessed a fundamental understanding of Hepatitis B/C as viral diseases affecting the liver, awareness regarding key risk factors for viral transmission was notably lacking. Urgent, extensive awareness programs are imperative to educate the populace on these risk factors. Moreover, local production of the HBV vaccine is essential to mitigate costs. A fundamental change in the mindset of both patients and doctors is essential to reduce the unnecessary use of injections.

Keywords: Awareness among Students, Hepatitis B Virus, Hepatitis C Virus, Pakistan, Risk factors

INTRODUCTION

Hepatitis B and C present substantial threats, giving rise to severe liver conditions such as hepatocellular

carcinoma, cirrhosis, and end-stage liver disease. Worldwide, an estimated 350 million individuals live with Hepatitis B, and another 200 million are affected by Hepatitis C.^{1,2} World Health Organization reported 308,000 annual deaths due to liver cancer and 785,000 due to cirrhosis.³ In Pakistan, the Hepatitis B virus has a prevalence ranging from 3% to 4%, and the Hepatitis C virus is prevalent at 5%. The country, with a population of 185 million, faces increasing virus prevalence due to various factors, including the reuse of syringes, needles

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for piercing, drug use, tattooing, inadequate implementation of blood transfusion standards, and unsterilized medical instruments.^{2,4}

The treatment for viral hepatitis is costly, imposing a substantial economic burden on Pakistan.^{5,6} Prevention emerges as the primary defense against this epidemic. While initiatives by the Ministry of Health and the World Hepatitis Alliance aim to raise awareness through media, the focus should be on identifying target areas for effective health education.²

Within the Pakistani population, there exists a moderate knowledge about HBV and HCV infections, yet awareness of the associated risk factors remains limited.^{7,7} Previous surveys indicate varied awareness levels; for instance, in Karachi, 61% recognized HCV as a viral disease, 49% believed in needle transmission, 5.3% linked it to ear/nose piercing, and 20.6% knew about its cancer-causing potential.^{7,8,9} Another study in 2006 reported only 19% HCV awareness among injection drug users in Quetta and Lahore. Educational backgrounds significantly influenced knowledge about HCV infection.^{10,11} This study aimed to assess the understanding of risk factors, vaccination, and treatment options concerning Hepatitis B and C among university

students in the twin cities of Pakistan's capital. The survey encompassed 1008 students from eight universities, representing various academic disciplines.

MATERIALS AND METHODS

The study, approved by the Ethical Review Committee of the International Center of Medical Sciences Research (ICMSR), took place in Rawalpindi and Islamabad, with a combined population exceeding 4.5 million and a literacy rate exceeding 70%. A structured questionnaire in English was designed, covering personal information and awareness, risk factors, vaccination, and treatment preferences regarding Hepatitis B and C. Data were collected through random sampling and analyzed using Microsoft Excel and SPSS 12.

RESULTS

Of the 1025 survey responses, 13 were excluded, resulting in 1008 completed surveys for analysis. Respondents represented Bachelors (57.8%), Masters (40%), and Doctoral (2.2%) programs across eight disciplines. The data, organized by academic discipline, unveiled diverse levels of awareness about HBV and HCV, including knowledge of risk factors and treatment options, as outlined in Table I.

Table I: Understanding of Hepatitis B and Hepatitis C Awareness, Risk Factors, and Treatment Options Among University Students.

Knowledge of HBV/HCV and Associated Factors	Data Acquisition	No.	% age
Hepatitis B and C are illnesses resulting from which of the followings?	Bacteria	204	20.2
	Fungus	30	3.0
	Virus	582	57.5
	No Idea	196	19.4
Hepatitis B and C primarily impact which organ?	Brain	16	1.6
	Heart	21	2.1
	Liver	749	74.0
	Stomach	78	7.7
	No Idea	145	14.3
	All	3	0.3
Can Hepatitis B and C be transmitted by individuals who appear healthy?	It can spread	590	58.3
	It can't spread	281	27.8
	No Idea	141	13.9

Modes of transmission for Hepatitis B and C include:	Contaminated drinking water	278	27.5
	Blood and Blood products	386	38.1
	Reuse of razor at barber's shop	387	38.2
	Needles use for ear and nose piercing	289	28.6
	Unhygienic food	165	16.3
	Dental Instruments	293	28.9
	Unprotected Commercial sex	316	31.2
	No Idea	10	1.0
	All of these	159	15.7
Can Hepatitis B and C be transmitted through the consumption of food from individuals with HBV or HCV?	It can spread	283	28.0
	It can't spread	604	59.7
	No Idea	125	12.3
Have you ever encountered advertisements related to Hepatitis?	Yes	570	56.3
	No	325	32.1
	No Idea	117	11.6
Can Hepatitis B and C lead to cancer?	Yes It can cause cancer	359	35.5
	No cancer is different disease	647	63.9
	No Idea	6	0.6
Are there any available treatments for patients with Hepatitis B and C?	Yes	791	78.2
	No	76	7.5
	No Idea	145	14.3

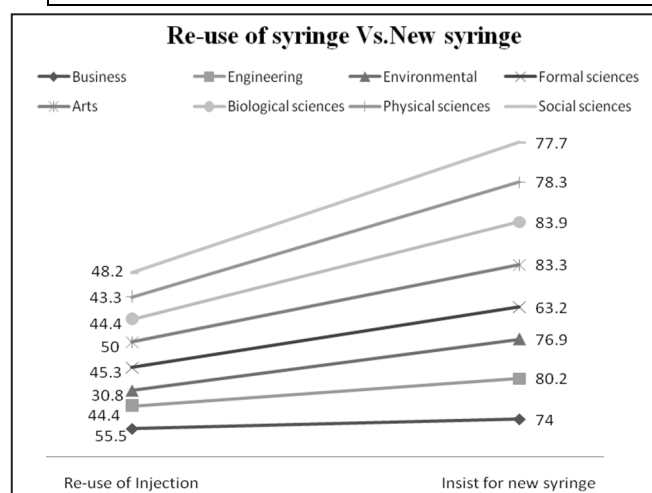


Figure 1: A Comparative Insight into Students' Perceptions Across Disciplines Regarding HBV/HCV Transmission via Reused Injection Syringes and Their Preference for New Syringes During Injections.

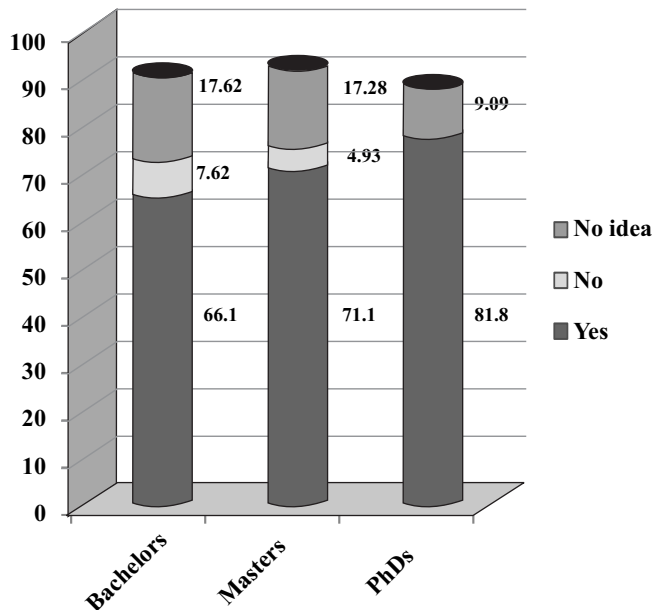
Merely 57.5% of the university-going population recognizes Hepatitis B and C as viral diseases, with an

additional 20% mistakenly attributing their origin to bacteria. A noteworthy 74% acknowledge the liver as the target organ, yet 58% believe transmission can occur even from individuals appearing healthy. Awareness concerning transmission modes remains deficient; a mere 38% are aware of blood/blood products and razor reuse by barbers as potential transfer mediums for HBV/HCV. Moreover, 29% associate transmission with the reuse of needles for ear/nose piercing and dental instruments. A comprehensive 35% grasp the cancer-causing potential, while 56% have encountered advertisements on HBV/HCV awareness.

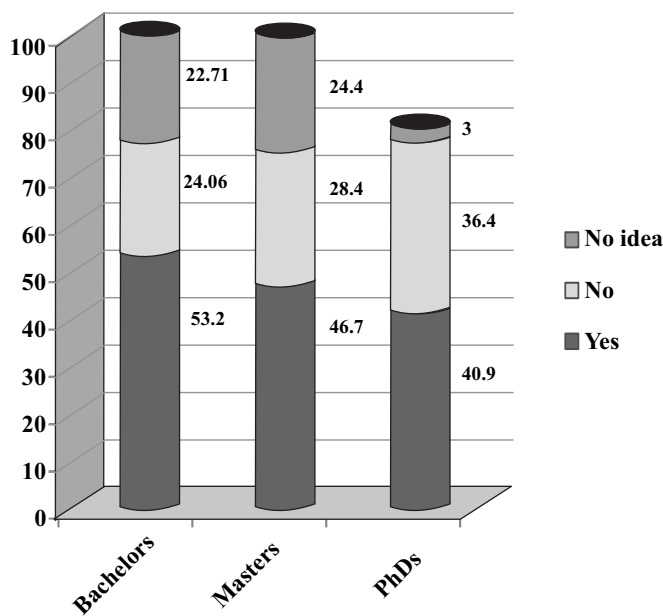
In Figure 1, a comparative analysis reveals students' perspectives across disciplines on HBV/C transmission via reused injection syringes and their insistence on new syringes during injections. Notably, 30.8% of Environmental Sciences students and 55.5% of Business Studies students perceive the risk of transmission through reused syringes, whereas 63.2% of Formal Sciences and an overwhelming 83.9% of Biological

Sciences students insist on new syringes during injections.

In Figure 2, it is evident that 66% of Bachelor's, 71% of Master's, and 81% of Doctoral students believe that a Hepatitis B vaccine is accessible. Conversely, 53% of Bachelor's, 47% of Master's, and 41% of Doctoral students hold the belief that a vaccine for Hepatitis C virus is available.



Hepatitis B



Hepatitis C

Figure 2: Perception of Hepatitis B and C Vaccine Availability Among Students in Various Degree Programs.

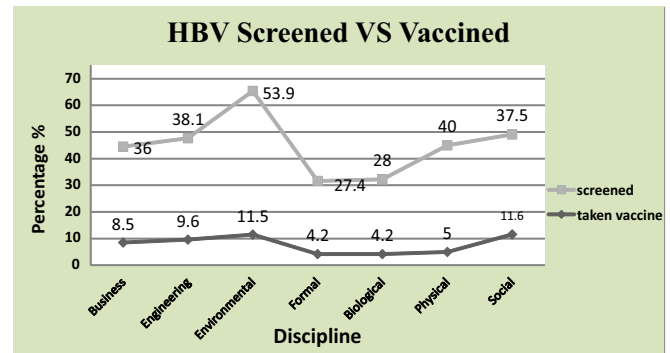


Figure 3: Participants across Disciplines - Screening for Hepatitis B Virus vs. Hepatitis B Vaccine Uptake.

Figure 3: Comparative Analysis of Participants Across Disciplines, highlighting that 27% of Formal Sciences and 54% of Environmental Sciences students have undergone screening for the Hepatitis B virus. Furthermore, 4.2% of Formal Sciences/Biological Sciences students and 12% from Environmental/Social Sciences have received the Hepatitis B virus vaccine.

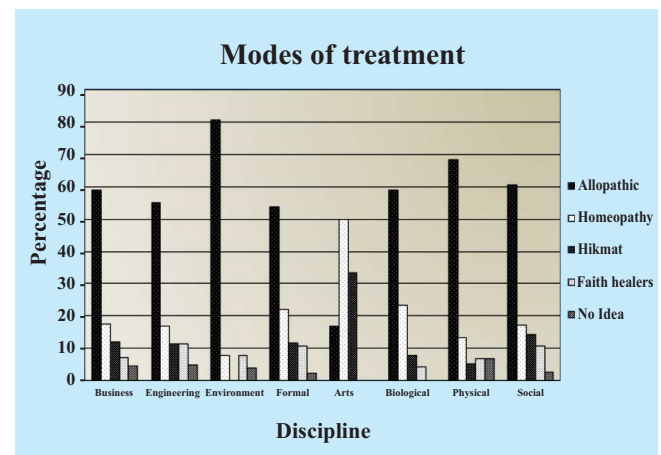


Figure 4: Perspectives on Optimal Treatment for Hepatitis B/C among Students from Diverse Disciplines.

Figure 4: Diverse Perspectives on Hepatitis B/C Treatment Options Among Different Disciplines. Notably, 81% of Environmental Sciences students prefer Allopathy, while 50% and 33% of Arts students endorse Homeopathy and Hikmat, respectively, as illustrated.

DISCUSSION

Concerning transmission awareness, 58.3% believed HBV/HCV could be transmitted by asymptomatic individuals, contrasting with 45.7% among barbers. Additionally, 35.5% associated these viruses with cancer, a higher awareness than observed in the barber community (26.6%). Key gaps in knowledge emerged, with only 38% and 29% acknowledging blood/blood

products and dental instruments as potential transmission routes.^{18,14} Notably, misconceptions persisted, with some associating HBV/HCV transmission with contaminated water and unhygienic food.

Pakistan's high injection rate, with 94.2% deemed unnecessary, highlights a concerning issue. Misguided beliefs about syringe reuse were evident, with 30.8% of environmental sciences and 55.5% of business students associating HBV/HCV transmission with reused syringes.^{14,15} Efforts to decrease unnecessary injections are crucial, as evidenced by the preference for injectable medicines, particularly if equally effective as oral alternatives. A shift in both doctor and patient perspectives is essential to reduce unnecessary syringe use, especially given the reported involvement of certain groups in repackaging unsterilized syringes.^{15,16,17}

Despite global success stories in hepatitis reduction through targeted interventions and vaccination, this study underscores a significant lack of awareness in Pakistan.¹⁴ A mere 11.6% of social science students reported HBV vaccination, reflecting a need for expanded programs targeting adult populations to alleviate future burdens.^{18,19} Divergent opinions on treatment options were noted, with allopathic medicine favored by the majority, while a notable percentage believed in faith healers' interventions.

This study sought to assess awareness, risk understanding, and perceptions of vaccination and treatment options for Hepatitis B/C among university students in the capital twin cities of Pakistan. Notably, 57.5% of participants identified HBV/HCV as viral diseases, surpassing the awareness reported among barbers in a previous study (39.6%). Similarly, 74% recognized the primary impact on the liver, a higher percentage than in young individuals applying for military recruitment (56.5%).^{1,7}

CONCLUSION

Amidst the rising prevalence of viral infections, this study illuminates the awareness levels of hepatitis within the highly educated community residing in the capital twin cities of Pakistan.^{10,19} There was a noticeable lack of awareness regarding significant risk factors, including misconceptions about transmission through water and food.

Given the economic challenges associated with hepatitis treatment in a developing country like Pakistan,

immediate efforts are imperative to boost awareness and rectify misconceptions. The study underscores the urgency of targeted educational campaigns and the expansion of vaccination programs to alleviate the imminent burden of hepatitis B/C on the population.

Authors Contribution

Seneen Noor: Conception of study / Designing / Planning, Experimentation/Study Conduction, Manuscript Writing, Critical Review

Elyeen Noor: Manuscript Writing, Experimentation/Study Conduction, Critical Review, Facilitated for Reagents/ Material Analysis

Rizwan Uppal: Conception of study / Designing / Planning, Manuscript Writing, Facilitated for Reagents/ Material Analysis

Zahra Zahid Piracha: Conception of study / Designing / Planning, Experimentation/Study Conduction, Analysis/ Interpretation/Discussion, Critical Review, Manuscript Writing, Facilitated for Reagents/ Material Analysis

REFERENCES

1. Arif A, Hasnain A, Chaudhry A, Asim M, Shafqat MN, Altaf A, et al. protocol for a multi-centre, prospective observational study examining efficacy and impact of current therapies for the treatment of hepatitis C in Pakistan and reporting resistance to antiviral drugs: study protocol. BMC Public Health. 2023 Dec 18; 23(1):2529. doi: 10.1186/s12889-023-17290-3.
2. Wang J, Huang YG, Zeng Y, Cai QZ, Wu M, Shen X, et al. Epidemiological and clinical profile of pediatric hepatitis B virus infections in Wuhan: a retrospective cohort study. BMC Pediatr. 2023 Dec 16;23(1):636. doi: 10.1186/s12887-023-04460-w.
3. Ejaz S, Abdullah I, Malik WN, Anjum S, Ashraf M, Akhtar N, et al. Screening of hepatitis B and C viral infection, recognition of risk factors, and immunization of patients against hepatitis B virus: a module developed for effective hepatitis control. Front Public Health. 2023 Nov 23; 11:1269209. doi: 10.3389/fpubh.2023.1269209.
4. Waheed Y, Rahat TB, Safi SZ, Qadri I. Epidemiological patterns and risk factors associated with Hepatitis B virus in Pakistani population. Asian Biomed. 2010; 4: 547-554.
5. Wazir MS, Mehmood S, Ahmed A, Jadoon HR.

- Awareness among barbers about health hazards associated with their profession. *J Ayub Med Coll Abbottabad*. 2008; 20:35-38.
6. Qi M, Santos H, Pinheiro P, McGuinness DL, Bennett KP. Demographic and socioeconomic determinants of access to care: A subgroup disparity analysis using new equity-focused measurements. *PLoS One*. 2023 Nov 16;18(11):e0290692. doi: 10.1371/journal.pone.0290692.
7. Alam M, Tariq WZ. Knowledge, attitudes and practices about hepatitis B and C among young healthy males. *Pak J Pathol*. 2006; 17:147-150.
8. Khuwaja AK, Qureshi R, Fatmi Z. Knowledge about hepatitis B and C among patients attending family medicine clinics in Karachi. *Eastern Mediterr Health J*. 2002; 8:1-6.
9. Talpur AA, Memon NA, Solangi RA, Ghumro AA. Knowledge and attitude of patients towards hepatitis B and C. *Pak J Surg*. 2007; 23: 162-5.
10. Kuo I, Hassan S, Galai N, Thomas DL, Zafar T, Ahmed MA, et al. High HCV seroprevalence and HIV drug use risk behaviors among injection drug users in Pakistan. *Harm Reduct J*. 2006; 3: 26.
11. Zuberi BF, Zuberi FF, Vasvani A, Faisal N, Afsar S, Rehman J, et al., Appraisal of the knowledge of internet users of Pakistan regarding hepatitis using on-line Survey. *J Ayub Med Coll Abbottabad*. 2008; 20: 91-3.
12. Yu ZL, Fisher L. Improving hepatitis B screening and vaccination rates in a veterans affairs resident-based primary care clinic. *BMJ Open Qual*. 2023 Oct; 12(4):e002120. doi:10.1136/bmjopen-2022-002120.
13. Javed H, Bano A, Fatima W, Khan R, Akhtar A. Sexually transmitted infections and associated risk factors among the transgender population of Pakistan. *BMC Infect Dis*. 2023 Sep 19; 23(1):618. doi: 10.1186/s12879-023-08591-4.
14. Altaf A, Janjua NZ, Hutin Y. The cost of unsafe injections in Pakistan and challenges for prevention program. *J Coll Phy Surg Pak*. 2007; 16: 622-624.
15. Pasha O, Luby SP, Khan AJ, Shah SA, McCormick JB, Fisher-Hoch SP. Household members of hepatitis C virus-infected people in Hafizabad, Pakistan: infection by injections from health care providers. *Epidemiol Infect*. 1999; 123: 515-518.
16. Qureshi H, Mahmood H, Sabry A, Hermez J. Barriers and Strategies for Hepatitis B and C Elimination in Pakistan. *J Infect Dis*. 2023 Sep 13;228(Suppl 3):S204-S210. doi: 10.1093/infdis/jiad022.
17. Abdul Mujeeb S, Adil MM, Altaf A, Hutin Y, Luby S. Recycling of injection equipment in Pakistan. *Infect Control Hosp Epidemiol*. 2003;24:145-146.
18. Saeed U, Waheed Y, Manzoor S, Ashraf M. Identification of novel silent HIV propagation routes in Pakistan. *World J Virol*; 2013;2(3): 136-138.
19. Saeed U, Waheed Y, Ashraf M. Hepatitis B and hepatitis C viruses: a review of viral genomes, viral induced host immune responses, genotypic distributions and worldwide epidemiology. *Asian Pac J Trop Dis*; 2014: 4: 88-96.