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HEPATITIS B VACCINATION STATUS AND KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARDS VIRAL HEPATITIS B AMONG PRECLINICAL MEDICAL STUDENTS OF GOVT. MEDICAL COLLEGE, ALMORA

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ABSTRACT: Background: Hepatitis B (HB) is a global public health issue that needs to be addressed. This study aims to assess Knowledge, Attitude and Practice (KAP) towards Hepatitis B and its vaccination status among undergraduate medical students of Govt. Medical College, Almora in Kumaon region of Uttarakhand. **Material & Methods:** An institution-based cross-sectional study was conducted at Government medical college, Almora in which 299 students were enrolled. Data was collected via Google form link. **Results:** In the present study, out of 299 students, 104 were male and 95 were females. It was found that students had good knowledge regarding Hepatitis B virus but there was a bit gap between knowledge, attitude and practice towards hepatitis B virus and its vaccine that need to be addressed. **Conclusion:** In the present study, near about half of the participants had good knowledge, attitude, and practice (KAP) regarding Hepatitis B. Education regarding Hepatitis B need to be imparted for prevention and timely treatment.

INTRODUCTION: Hepatitis B virus (HBV) infection has been identified as the most common viral infection worldwide. Nearly two billion people have been infected with it, and nearly half a billion people are chronic virus carriers ¹. The 2019 Global Burden of Disease study documented 555,000 deaths worldwide attributable to diseases related to the Hepatitis B virus (HBV), and it reported a decline in the prevalence of HBV ². Screening of blood donors for HBsAg has been a vital precaution in reducing the prevalence of the Hepatitis B virus ³.

Hepatitis B vaccines have been available in the United States since 1981 ⁴. It is reported that with the increase of age, the antibody response declines. Immunization during childhood or adolescence offers the most potent protection against the virus ⁴. Infection with the Hepatitis B virus has been associated with predisposing patients to develop liver diseases such as liver cirrhosis, liver failure, and hepatocellular carcinoma. The Hepatitis B vaccine has been effective in the prevention of hepatocellular carcinoma ⁵.

Healthcare staffs are at high risk of occupational exposure to Hepatitis B, Hepatitis C, and other blood-borne diseases. In developing countries, the poor emphasis on awareness and knowledge of blood-borne diseases puts the population at higher risk ⁶. The risk of accidental exposure among medical students is high due to a lack of experience and direct contact with a patient's potentially

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infectious body fluids^{7, 8}. A cross sectional study conducted at two medical schools in India showed 23% lifetime prevalence of needle stick injuries among medical students especially during blood taking practices in clinical years⁸. Hence, medical students at the start of clinical years are at high risk of Hepatitis B infection. There is no alternative to vaccines for effective protection. To provide a basis for the implementation of Hepatitis B vaccination programs, our study aims to estimate the Hepatitis B vaccination status along with knowledge, attitude and practice regarding Hepatitis B infection among preclinical medical students of Govt. Medical College, Almora in Kumaon region of Uttarakhand.

MATERIAL & METHODS:

Study Design and Settings: An institution-based cross-sectional study was conducted at Government medical college, Almora from March to June 2023. The data were collected from the participants via Google forms sent out by email after explaining the objective of the study in the form itself. The participation was completely voluntary, and the anonymity was insured.

Study Sample: The total population of the preclinical year students of Government medical college, Almora was taken.

Study Instrument: A self-administered online questionnaire containing 21 items was used for the study. It contained 3 items for demographics, 5 for

the Knowledge section, 5 for the attitude and 5 for practice, 1 for vaccination status and 1 for total dose taken. The questionnaire was developed after an extensive literature search in the English language.

Statistical Methods: The data collected through the Google forms were extracted to Microsoft Excel, then imported and analyzed by using SPSS (Statistical Package for Social Sciences) version 16.

RESULTS: In the present study, 299 students were enrolled, out of them 104 were male and 95 were females. The mean age of study participants were 21.12 ± 1.77 years **Table 1**. In this study, it was found that good knowledge regarding Hepatitis B virus but there was a bit gap between knowledge, attitude and practice towards hepatitis B virus and its vaccine **Table 2**. The median score for knowledge, attitude and practice was 37, 11 and 15, respectively **Table 3**. **Table 4** depicted the correlation between knowledge, attitude and practice and it was found significant association between knowledge and attitude and attitude and practice.

Table 5 showed the association of KAP score with baseline characteristics like age, gender, academic year, vaccination status, doses of vaccination received and was found significant association between vaccination status.

TABLE 1: BASELINE CHARACTERISTICS AND HEPATITIS B VACCINATION STATUS OF THE RESPONDENTS (N = 199)

Variables		No. (%)
Age (in Years)	≤21 years	132 (66.3)
	>21 years	67 (33.7)
	Mean±SD	21.12 ± 1.77
Gender	Male	104 (52.3)
	Female	95 (47.7)
Academic year	1 st batch (2021)	99
	2 nd batch (2022)	100
Vaccinated against hepatitis B	No	24
	Yes	175
Doses of Hepatitis B vaccine received	Not vaccinated	24
	One	52
	Two	45
	Three	65
	More than three	13

TABLE 2: KNOWLEDGE, ATTITUDE AND PRACTICE FINDINGS OF THE RESPONDENTS (N=199)

Assessment of Knowledge related to Hepatitis B (n=19)	Agree (no.)		Neutral (no.)		Disagree (no.)	
	I	II	I	II	I	II
Batch of the Students (n=199)						
1. Hepatitis B is caused by a virus.	100	99	0	0	0	0

2. Hepatitis B can be transmitted by: a. Infected mother to fetus	100	99	0	0	0	0
2. b. Contaminated blood and body fluids	100	99	0	0	0	0
2. c. Unprotected sex	100	99	0	0	0	0
2. d. Casual contact (shaking hands)	6	3	0	0	94	96
2. e. Unsterilized syringes/needles	100	99	0	0	0	0
2. f. Coughing/sneezing	12	13	13	10	75	76
2. g. Contaminated food/water	15	12	11	17	74	70
3. Hepatitis B can cause liver cancer.	64	78	24	13	12	08
4. Healthcare workers are at increased risk of getting hepatitis B than general population	85	92	12	05	03	02
5. Hepatitis B can be prevented by: a. Vaccination	94	99	03	00	03	00
5. b. Antivirals	44	62	38	22	18	15
5. c. Avoiding sharp needle/syringe injury	77	84	09	08	14	07
5. d. Avoiding contaminated food/water	22	20	15	28	63	51
5. e. Using gloves when handling body fluids	88	83	06	11	06	05
	I	II	I	II	I	II
Assessment of Attitude towards Hepatitis B						
6. I feel uncomfortable sitting with a hepatitis B infected person.	15	21	33	26	51	53
7. I don't mind shaking hands/hugging with a hepatitis B infected person.	67	72	22	18	10	10
8. I believe the hepatitis B vaccine is safe and effective.	97	85	03	14	00	01
9. I believe healthcare workers should receive hepatitis B vaccination.	99	91	00	09	00	00
10. I don't need hepatitis B vaccination because I am not at risk	02	12	05	26	92	62
Assessment of Practice towards Hepatitis B						
11. I ask/use a new blade for shaving/hair cutting.	94	95	06	02	00	02
12. I ask for a new syringe before injection.	100	99	00	00	00	00
13. I ask for sterilized equipment for ear/nose piercing.	94	95	06	03	00	01
14. I always report for needle prick / sharp injuries.	84	91	09	06	07	02
15. I attend hepatitis B related awareness programs.	64	62	31	24	05	13

TABLE 3: SUMMATION OF KNOWLEDGE, ATTITUDE AND PRACTICE SCORE DISTRIBUTION

	Knowledge sum (n=199)	Attitude sum (n=199)	Practice sum (n=199)	KAP score (n=199)
Mean	36.79	11.41	14.25	62.45
Median	37.00	11.00	15.00	63
IQR	(29-45)	(8.0-15.0)	(9.0- 15.0)	(46-75)

TABLE 4: ASSOCIATION OF KAP SCORE WITH BASELINE CHARACTERISTICS

Variables		KAP score (<63) Inadequate	KAP score (≥63) Good	P value
Age (in Years)	≤21 years	82 (62.2)	50 (37.8)	0.18
	>21 years	48 (71.6)	19 (28.4)	
	Mean ± SD	21.12 ± 1.77		
Gender	Male	64 (61.5)	40 (38.5)	0.24
	Female	66 (69.5)	29 (30.5)	
Academic year	1 st batch (2021)	66 (67.3)	32 (32.7)	0.55
	2 nd batch (2022)	64 (63.4)	37 (36.6)	
Vaccinated against hepatitis B	No	20 (83.3)	04 (16.7)	0.048
	Yes	110 (62.9)	65 (37.1)	
Doses of Hepatitis B vaccine received	Not vaccinated	20 (83.3)	04 (16.7)	0.023
	One	32 (61.5)	20 (38.5)	
	Two	22 (48.9)	23 (51.1)	
	Three	48 (73.8)	17 (26.2)	
	More than three	08 (61.5)	05 (38.5)	

TABLE 5: CORRELATION OF KNOWLEDGE, ATTITUDE, AND PRACTICE

Variables	Spearman's correlation coefficient	p-value
Knowledge-Attitude	0.15	0.03
Knowledge-Practice	0.04	0.57
Attitude-Practice	0.021	0.05

DISCUSSION: Medical science students are at high risk of exposure to blood-borne infections such as Hepatitis B virus, as they provide direct patient care throughout the internship phase of the

program, this places them in a similar risk category as healthcare professionals⁹. Therefore, it is imperative that all students should be vaccinated and acquire sufficient knowledge about the virus to minimize the risk of infection. In the Kumaon Region of Uttarakhand, there have been no studies to measure vaccination status as well as knowledge, attitude, and practice towards the Hepatitis B virus among medical sciences students, as far as authors' knowledge are concerned. This study is designed to evaluate the vaccination status of medical sciences students and their KAP about the virus.

In our study, 87.9% of medical science students were vaccinated against Hepatitis B, which is much higher than the findings of a study in Southwest Ethiopia, where only 25.7% of students were immunized¹⁰. However, our results are higher to a study from Bangladesh, where 42.2% of students were vaccinated, and also study from India, where 47.7% of students reported that they had been vaccinated^{9, 8}. Also, it is high than research carried out in Uganda, where it was found that 66.8% of the participants had received vaccinations¹¹. On the other hand, a more current study conducted in Somalia found that 79% of their participants are vaccinated against Hepatitis B¹².

All in all, 6.5 % of participants were fully vaccinated (3 doses or more), which is much greater than a study in Ethiopia, where just 2% of students were fully vaccinated¹⁴. In comparison to our findings, research in Nepal found that 37% of their students had completed all three doses of vaccination, which is greater than our study¹⁵.

About 100% of the participants surveyed were aware that Hepatitis B is caused by a virus. Compared to a research study carried out in Switzerland and Iraq, it was found that 93.6% and 91.6% of the students knew that Hepatitis B infection was caused by a virus respectively^{16, 17}. Almost all participants have a solid understanding of the mode of transmission, with 100% stating that transmission occurs through contaminated blood, fluid, unsterilized syringes/needles and unprotected intercourse. These findings are consistent with those of Ethiopian, Iraqi and Nepalese studies^{10, 14, 17}. In the present study, 71.3% of participants agreed that the Hepatitis B virus can lead to liver cancer. This is comparable with research studies

from Saudi Arabia, Nepal, and Ethiopia which revealed that 75.5%, 80.6%, and 81.3% of students agreed that Hepatitis B infection can cause liver cancer, respectively^{15, 14, 18}. 96.9% of respondents agreed that vaccination may prevent Hepatitis B infection. In this regard, comparable results were observed in studies carried out in Saudi Arabia, China, Nepal, and Ethiopia^{15, 14, 18, 17}.

Around 18.9% and 10 % of students showed a negative attitude towards sitting and shaking hands with a Hepatitis B infected person, respectively which is much lower than the Iranian study where 39.9% and 42.1% of students showed a negative attitude towards sitting and shaking hands with a Hepatitis B infected person, respectively¹⁷. Nepalese students demonstrated a more positive attitude¹⁵.

In the present study, 91.4% of the students believed that the Hepatitis B vaccine was safe and efficient; which is higher than the results obtained from studies conducted in Saudi Arabia, Nepal, and Ethiopia^{15, 14, 18}. While compared to another study in Saudi Arabia and India our findings are higher where only 63% of participants agreed that the vaccine is safe and effective^{19, 20}. A high enough percentage (95.4%) of our students agreed that health-care workers should be vaccinated, which is higher to a study from Nepal and Iraq^{15, 17}. According to our survey, 10.5% of participants believed that they were not at risk of contracting the Hepatitis B virus and that vaccination against Hepatitis B is not necessary. This figure almost similar when compared to studies conducted in Iraq but nearly three times higher when compared to studies conducted in India and Nepal, whereas only 3.7% and 3.9% of their participants agreed with this statement, respectively^{17, 15, 21}. This concerned finding should be addressed because medical science students are part of the healthcare system and should be aware of the need for Hepatitis B vaccination since they are vulnerable to contracting the virus and spreading the infection in the community.

In our survey, 94.9%, 100%, and 94.9% of the students stated that they requested a new blade for shaving/hair cutting, new syringes to avoid infection, and sanitized equipment for piercing their ears and nose, respectively, which is much

higher from the study conducted in Iraq but result were similar to survey carried out in India and Nepal^{19, 17, 22}. 87.9 % of the students agreed that they would report needle prick/sharp injuries. Our findings presented higher percentages than those indicated by studies in Saudi Arabia (68%), Nepal (64.6%), and Ethiopia (53.7%), where the participants will report needle injuries^{15, 14, 18}. Also, similar to the findings of a study in Nepal (i.e., 62.4%), a percentage of 63.3% of the study participants said that they have attended Hepatitis B related awareness programs¹⁵.

In this study, we found that the male gender is associated with better overall KAP scores when compared to females **Table 4**. These findings are similarly reported in the previous studies from Pakistan and Nepal^{15, 13}. However, a study from Malaysia revealed no association between gender and knowledge about Hepatitis B²².

The total median score of KAP was 63 while the median knowledge, attitude and practice score was 37, 11, 15, respectively as depicted in **Table 3**. These results were comparable to the Iraqi study¹⁷. **Table 4** shows the association between KAP score and basic demographic characteristics and HBV vaccination status including age, gender, the field of study (college), vaccination against the virus, doses of HBV vaccine, and reasons for not being vaccinated against HBV. We found a significant association between the KAP score and vaccination against hepatitis B and doses of hepatitis B vaccine received variables. However, there was no significant association between gender (p-value = 0.048 and 0.023 respectively). Correlations were interpreted using the following criteria: 0–0.25 = weak correlation, 0.25–0.5 = fair correlation, 0.5–0.75 = good correlation and greater than 0.75 = excellent correlation²³. The correlation revealed significant positive linear correlations between knowledge-attitude ($r = 0.15$, $p < 0.03$) and attitude-practice ($r = 0.21$, $p < 0.05$). The result reaffirms the relationship between knowledge attitude and practice with infection control measures as shown in **Table 5**. The findings are in line with the results presented by Zhao et al²⁴.

Limitations of the Study: The main limitation of this research is that vaccination status was self-reported and not confirmed by the measurement of

the anti-Hepatitis B surface antibody (HBsAb) titre of the students. Therefore, recall bias and erroneous information might have affected the findings of the research. Since the study was unicentric, the results cannot be generalized to all medical science colleges in the Uttarakhand state, but they will undoubtedly serve as a background for future studies in the region. Finally, the nature of the study was cross-sectional, and it did not measure the cause-and-effect relationship.

CONCLUSIONS: In the present study, only one-fifth of students were fully vaccinated against Hepatitis B despite it being a preventable disease. The lack of vaccination programs was the main reason for the study participants not to be vaccinated against Hepatitis B. Moreover, about half of the participants had good knowledge, attitude, and practice (KAP) regarding Hepatitis B, and students who were vaccinated displayed a better KAP score than those who were non-vaccinated. We recommend the adaptation of collaborative care where physicians, pharmacists and nurses should play their role in providing Hepatitis B education to the society. Empowering the people by providing them ample education and targeting at least one member of each family to have adequate information about Hepatitis B can help in managing and controlling the infection.

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