

# Awareness about Hepatitis B among Auxiliary Health Workers of Bhopal City in Central India

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## ABSTRACT

**Aim:** The study aimed to investigate the knowledge, attitude and practice of auxiliary health staff regarding Hepatitis B.

**Material and Method:** This descriptive cross-sectional questionnaire based study was conducted in August 2012 using self administered questionnaire. Data was collected on demographic details; knowledge, attitude and practice about Hepatitis B; and vaccination history. Unpaired t test, Chi-square test, Pearson's correlation test were used for statistical analysis. P values <0.05 were considered statistically significant.

**Result:** Most of the subjects were non-operating type of auxiliary health workers. More than half of the subjects agreed that they knew about Hepatitis B.

More than eighty four percent of participants agreed that test for Hepatitis B should be a routine procedure for all the patients. More than half were tested for Hepatitis B and around 45.1% participants were vaccinated for the same. The scores of attitude and practice also showed an escalating trend with years of experience. Knowledge, attitude and practice scores did not show significant difference between operating and non-operating dental auxiliaries.

**Conclusion:** The majority of subjects had good knowledge regarding Hepatitis B and its mode of transmission. However, there were lacunas about prophylaxis, vaccination and treatment of Hepatitis B. There is a need for continuing education programs and strict implementation of CDC guidelines and OSHA regulations in health care settings.

**Keywords:** Auxiliary health workers, Hepatitis B, Knowledge, Attitude, Practice.

## INTRODUCTION

Hepatitis B Virus (HBV) infection is a global public health problem and is one of the leading cause of death. [1] Viral Hepatitis is among the five important infections that cause premature death in the world. [2,3] HBV is 50 to 100 times more infectious than HIV. [4,5] The prevalence of HBV infection is 5-10% in South East Asia and 1% in Northern Europe and America

but in India it is 3-4% of the population is infected by the virus. In India, HBsAg (Hepatitis B surface antigen) prevalence in the population is from 2 to 8% that is 50 million cases placing it in an in-between HBV endemicity zone and also accounting the 2nd largest global pool of chronic HBV infections. [6,7] Its infections cast an enormous burden on healthcare system as India with a population of 1.21 billion

(according to census of 2011) is the second most populous country in world with an annual expenditure on health in recent years being less than 6% of GDP (gross domestic product).<sup>[2,3]</sup> Hepatitis B is the most important infectious occupational hazard.

According to WHO, The annual proportion of health-care workers exposed to HBV was 5.9% equivalent to about 66,000 HBV infections in health-care workers worldwide.<sup>[8]</sup> The auxiliary health workers are at a high risk of encountering needle stick injuries, blood and body fluid exposure and therefore acquiring blood borne infections especially Hepatitis B & C.<sup>[1]</sup> They are at an increased risk as blood contains the highest HBV titres of all body fluids and is the most common vehicle of healthcare settings.<sup>[9,10]</sup> In the industrialized world, occupational surveillance and preventive measures for the hazards caused by blood borne pathogens decrease the risk of transmission.

In contrast due to lack of monitoring of exposure and health impacts much remains to be done to protect healthcare workers from the risks of infections, illness, disability and death that may in turn impact the quality of healthcare in developing countries.<sup>[11]</sup> Due to lack of knowledge of safety precautions, injuries can happen. Safety in the dental set up is responsibility of all the employees and employer.

So far very few studies have been done to assess the infection control measures and the awareness regarding Hepatitis B in paramedical staff working in medical colleges. Hence, this study was undertaken to assess the knowledge, attitude and practice about Hepatitis B among paramedical staff working in medical colleges of Bhopal city in Central India.

## MATERIAL AND METHODS

This descriptive cross-sectional study was conducted among the paramedical staff working in the six medical colleges of Bhopal city. The study protocol was approved by the ethical committee of the Chirayu medical college. Verbal consent

was obtained from the participants of the study. The data was collected in the month of August 2018. The paramedical staffs available on the day of survey were included.

No attempt was made to sketch the paramedical staff absent on the survey days and they constituted the exclusion criteria. The purpose of the study was described and participants were asked to fill the anonymous questionnaire with honesty. The questionnaire consisted of the following categories: 1. Demographic factors including gender, age, the number of years of experience, the nature of work of the paramedical staff was categorized as operating and non-operating.

2. Close ended structured anonymous questionnaire was the tool used to assess knowledge, attitude and practice (KAP). 3. HBV vaccination history. Each correct and incorrect answer scores one and zero were assigned respectively. The knowledge score ranged from zero to twelve, attitude scores ranged from zero to eight and practice scores ranged from zero to nine.

A higher score indicated a greater level of knowledge, attitude and practice respectively. **Reliability Analysis:** The questionnaire was prepared in local language (Hindi) and a pilot study conducted among 20 randomly selected staff to assess the validity and reliability of the questionnaire.

Analysis of data showed a high degree of internal consistency as indicated by Cronbach's alpha correlation coefficient, the value being 0.9.

**Statistical Analysis:** Data analysis was done using Statistical Package for Social Science (SPSS) version 17. Unpaired t test, Chi-square test, Pearson's correlation test were used for statistical analysis. p values <0.05 were considered statistically significant.

## RESULTS

A total of 160 questionnaires were distributed out of which 155 (96.87%) responded. Twelve questionnaires were not

included due to incomplete information. So total 143 paramedical staff participated in the study, out of which 56.9% were males and 43.1% were females (figure1).

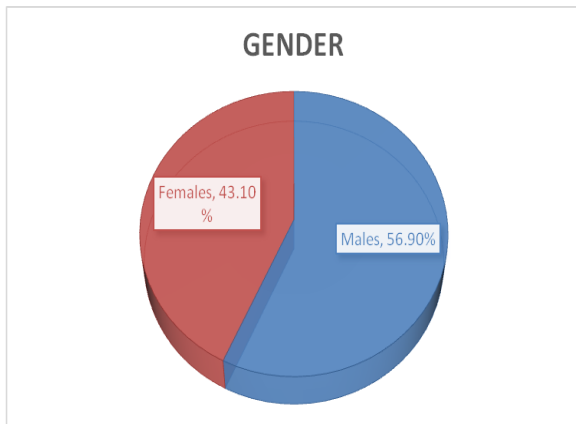


Figure 1: Distribution of study population according to gender.

The result of the study showed that most 72.7% of the subjects were non-operating type of auxiliary while only 27.2% were operating type. (figure 2)

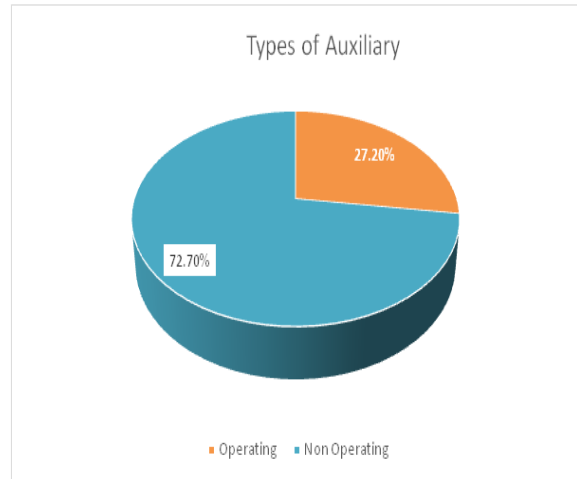


Figure 2: Distribution of study population according to type of auxiliaries

Table 1 illustrates Hepatitis B related knowledge. The subjects had good knowledge regarding Hepatitis B and its modes of transmission. However, only 33.3% were aware of transmission by saliva. It was alarming to know that more than three-fourth of the population did not have correct knowledge of Hepatitis B not being transmitted by touch (70.6%) or mosquito bite 86.3%).

Table 1: Distribution of affirmative responses for knowledge among the paramedical staff with respect to Hepatitis B.

Questions	Affirmative response (n)	Percentage (%)
1.I know about Hepatitis B.	99	64.7%
2. Hepatitis B can be transmitted by saliva.	51	33.3%
3. There is a screening test for Hepatitis B.	90	58.8%
4. A negative screening test surely indicates that the patient is free of viruses.	120	62.2%
5. I am aware of post exposure prophylaxis available for Hepatitis B.	114	74.5%
6. Hepatitis B is completely curable.	84	54.9%
7. Hepatitis B can be transmitted by blood transfusion.	105	68.6%
8. Mosquito bite can transmit Hepatitis B virus.	132	86.3%
9.Needlestick can transmit Hepatitis B virus.	99	64.7%
10.Hepatitis B can be transmitted by touch.	108	70.6%
11. Hepatitis B patients can contaminate dental workers.	99	64.7%
12. Health care workers can act as an intermediary for transmission of Hepatitis B.	99	64.7%

Table 2 demonstrates the questions regarding attitude. The statement that “Test for Hepatitis B should be a routine test for all patients” obtained the highest score (84.3%) whereas the statement that “I would assist the health care worker in treating a patient who has Hepatitis B” obtained the lowest score (54.9%).

Table 2: Distribution of positive responses on attitude towards Hepatitis B among the study population.

Questions	Positive response	Percentage(%)
1. Hepatitis B patients can lead a normal life.	126	82.4%
2. Test for Hepatitis B should be a routine test for all patients.	129	84.3%
3. All patients should be considered potentially infectious.	99	64.7%
4. I am morally responsible to treat Hepatitis B patients.	129	84.3%
5. My knowledge about infection control is enough to treat Hepatitis B patients.	111	72.5%
6. Health care workers with Hepatitis B should be allowed to treat patients.	99	64.7%
7. I would assist the health care workers in treating a patient if I know he’s having Hepatitis B.	84	54.9%
8. I should use separate instruments (slide, test tube, needle) for Hepatitis B patients.	99	64.7%

Table 3 illustrates the practice regarding Hepatitis B among the paramedical staff. More than half (64.7%) were tested for Hepatitis B. About 39.2% had needle pricks, out of which only 35.3% had taken medication for the same. A large section (74.5%) wore gloves while only half of the population followed the practice of disposing off needles after use.

**Table 3: Distribution of positive responses on practice towards Hepatitis B among study population.**

Questions	Correct response	Percentage(%)
1. Have you got yourself tested for Hepatitis B ?	99	64.7%
2. Have you ever had needle pricks?	60	39.2%
3. Did you take any medication or undergo any test after needle prick?	54	35.3%
4. Do you wear gloves while handling pathologic specimens or cleaning instruments ?	114	74.5%
5. Do you clean your hands with soap after contact with blood?	81	51.2%
6. Do you dispose off needles?	81	51.2%

Table 4 shows that around 45.1% participants were vaccinated for Hepatitis B, out of which only 43.1% had taken all three doses of vaccination. The same percentage had got their family members vaccinated against Hepatitis B as well.

**Table 4: Response regarding vaccination status for Hepatitis B.**

Questions	Yes	Percentage
1. Are you vaccinated for Hepatitis B ?	69	45.1%
2. Are you fully vaccinated for Hepatitis B (3 doses)?	66	43.1%
3. Are your family members vaccinated for Hepatitis B?	66	43.1%

Individual scores were calculated for knowledge, attitude and practice. The mean scores for knowledge, attitude and practice were 8.69, 7.82 and 6.18 respectively and

the mean knowledge, attitude and practice score was found to be  $22.72 \pm 4.533$ (table 5)

**Table 5: Distribution of knowledge, attitude and practice scores in the study population for Hepatitis B.**

Attributes	Mean	SD(Standard deviation)
Knowledge	8.69	1.648
Attitude	7.82	1.461
Practice	6.18	2.598
Knowledge, attitude and practice mean	22.72	4.533

There was a significant correlation between years of experience and the knowledge, attitude and practice scores. This indicated that their knowledge, attitude and practice increased with increase in the number of years of experience. (table 6)

**Table 6: Correlation matrix between knowledge, attitude, practice, kap scores and years of experience.**

	Knowledge r	Attitude r	Practice r	KAP r	Years of experience r
Knowledge	-	0.294*	0.366*	0.664*	0.137*
Attitude	0.294*	-	0.597*	0.786*	0.165*
Practice	0.366*	0.597*	-	0.860*	0.218*
KAP	-	-	-	-	0.219*

\*Correlation is significant at 0.05 level.

There was no significant difference between the type of auxiliaries with the knowledge, attitude and practice. (table 7)

**Table 7: Distribution of knowledge, attitude and practice scores according to type of auxiliaries:**

	Operating	Non operating	t value	p value
Knowledge	8.85 ± 1.74	8.63 ± 1.62	0.701	0.485
Attitude	7.85 ± 1.55	7.81 ± 1.43	0.23	0.81
Practice	6.05 ± 2.56	6.31 ± 2.57	-0.53	0.59
KAP scores	22.76 ± 4.69	22.69 ± 4.57	0.130	0.896

## DISCUSSION

Various programmes have been working for prevention against Hepatitis B such as BRodh programme which focussed on improving knowledge, attitude and

practice among masses. [12] However, as per our literature search very few programmes have been conducted to increase the awareness among healthcare workers. In our study 64.7% of the paramedical staff were aware of Hepatitis B, which was less than the study conducted by Samuel et al [13] in which about 81% of the subjects which comprised of nurses, doctors, laboratory scientists, pharmacists, ward maids, record

officers, administrative staff knew about Hepatitis B.

Hepatitis B virus transmits in a non-immune host by an infectious source through skin or mucous membrane injury. [14] Subjects were asked four questions about transmission. Only 33.3% subjects were aware about salivary transmission of Hepatitis B. In the study by Kabir [15] et al 53.3% subjects were aware of transmission by saliva and health care workers had a better knowledge of HBV transmission via saliva in comparison with the other specialists *i.e* dentists, general practitioners, paraclinicians, surgeons and internists. It was encouraging to know that 64.7% of the paramedical staffs were aware of needle stick injuries (NSIs) which was in contrast to the study done in Pakistan among 300 healthcare workers at Holy Family Hospital Rawalpindi which revealed their inadequate knowledge about the risks associated with needle stick injuries. [16] In the healthcare settings, blood is the most important vehicle of transmission as it comprises the highest HBV titres of all body fluids.

However, transmission through other body fluids in spite of having HBsAg is not efficient because they contain low quantities of infectious HBV. [17] It was encouraging to know that 68.6% subjects were aware of transmission of Hepatitis B by blood transfusion. We found that 74.5% of the subjects were aware of postexposure prophylaxis which was higher than the study by Shagufta et al. In that study 48.1% were aware of postexposure prophylaxis. [18] Postexposure prophylaxis should be emphasized as Hepatitis B immunization and post exposure management are integral components of a complete program. To prevent infection following blood borne pathogen exposure, Postexposure prophylaxis should be given emphasis as Hepatitis B immunization and post exposure management are integral parts of a complete program. In the present study, 54.3% believed that Hepatitis B was completely curable which was more than 30% as reported by Khan et al. [19] In developing

and transitional countries, by contrast, blood borne pathogens are commonly transmitted to health-care workers.

Frequency of exposure, concentration of infectious viron in body fluids and volume of infected material transferred are the risk of acquiring blood borne infections from occupational exposures. [18] In our study, 64.7% subjects believed that Hepatitis B patients can contaminate health workers and health workers can act as an intermediary for transmission of Hepatitis B which was similar to the findings by Lewis et al in which 74.1% of the health workers expressed concern that there is risk of cross-infection to themselves and their auxillary health workers. [20] HBV transmission from HCWs to patients depends on a combination of factors. HCW being HBeAg positive is one of the factors associated with increased hazard of transmission indicating a higher level of infectivity. [21] One of the most common modes of HBV transmission in the health care setting is an unintentional injury of an HCW from a needle contaminated with HBsAg-positive blood from an infected patient. [18] Studies in Australia and Poland found that good knowledge of occupational risk reduces the risk of occupational exposure. [22] Occupational risk is associated with poor knowledge about occupational injuries. [23] In the present study it was seen that 72.5% were confident about their knowledge on infection control to work on Hepatitis B patients which was just opposite as compared to the study in Iran in which 90.9% of medical university midwives, nurses and students stated that their education about standard precautions was inadequate and expressed their desire for more training. This study revealed that the causes of many infection risks in HCWs were the lack of knowledge about disease and protective systems. [14] According to Maupomi in 2000, the various factors associated with negative attitudes towards HBV infection are less liberal ideology, a low knowledge level, young age, fear,

exaggerated risk assessment, not knowing someone with HBV infection and lacking the experience of caring for patient with HBV infection.<sup>[24]</sup> 64.7% of the subjects supported the statement that dentists with Hepatitis B should be allowed to treat Hepatitis B patients.

Padilla et al stated that only few cases have been reported for the transmission from a HCW to patients.<sup>[25]</sup> Degree of contact with blood in the workplace and the Hepatitis B-e antigen (HBeAg) status of the source person is primarily the risk of HBV infection. For HBV transmission from HCWs to patients a combination of factors believed to be responsible. HCW being HBeAg positive, indicating a higher level of infectivity is one of the factors associated with increased hazard of transmission.<sup>[26]</sup> The laboratory for disease control recommends that doctor with HBsAg must refrain from working on patients. In recent years to reduce nosocomial HBV infections in India various measures have been implemented such as improved hygiene, increased vaccine coverage, increased awareness of medical staff, and highly sensitive testing of blood products despite the fact that the exact incidence of nosocomial HBV transmissions is unknown.<sup>[27]</sup> In the present study, 74.5% subjects wore gloves while dealing with blood.

Health care workers must wear operating gloves to prevent contact of blood and saliva with the operator's hands and to prevent transmission of infection from the operator's hands to the patients.<sup>[28]</sup> Current research stated that 74.5% paramedical staff used gloves which were higher than 27% as in the study by Alam et al in 2002.<sup>[29]</sup> It was seen that 39.2% subjects had needle stick injuries. According to CDC (Centers for disease control and prevention) the risk of HBV infection from a single needle stick injury from HBV infected blood ranges from 6-30% in an unvaccinated person. Various reasons for needle stick injuries are heavy work load, hasty work, negligence<sup>15</sup> or due to disposal related

activities.<sup>[30]</sup> To minimize these injuries, it is vital to safely handle and disposal of the sharps in separate puncture proof containers immediately after use. This emphasizes the importance of teaching program to educate staff at risk to practice high practice during such handling. The risk of sharps injury increase 3-fold in fatigue resulting from long working hours and sleep deprivation among medical trainees.<sup>[31]</sup>

In a study by Chen in 2009 during the past year, 71.3% of the health care workers had sustained sharp object injuries (SOIs). Approximately 50% of the SOIs occurred while devices were being used. Disposable syringes caused most of the injuries.<sup>[32]</sup> Out of the 39.2% subjects who had needle pricks in our study, 35.3% took postexposure treatment. In the study by Khan et al 30.8% subjects took post-exposure treatment.<sup>[19]</sup> Siddique et al stated that the drawing out blood, washing the pricked site with running water, application of antiseptic solution and pressing the pricked site are the immediate responses reported by HCW after NSI. 24.7% HCW got viral serology of the patient on whom the needle was used, 20% got their Liver function tests done and only 16.7% HCW got their viral serology done after being pricked. Knowledge about the Post Exposure Prophylaxis (PEP) is reported by only 10%.<sup>[16]</sup> Sharma et al in 2010 concluded that washing the injury site with soap and water immediately after the NSI is reported by most of the injured staff (60.9%) but 14.8% did not take any precautions after injury.

After follow-up for one and a half years, all participants in the study were seronegative for Hepatitis B surface antigen, and all of them had received Hepatitis B vaccination prophylactically.<sup>[33]</sup> With advancement the number of invasive diagnostic and therapeutic procedures is increasing<sup>[34]</sup> thereby further increasing the risk of HCWs for getting an infection with HBV; therefore, HBV vaccination has been strongly recommended for them. Our study reported that 45.1% were vaccinated for

Hepatitis B, out of which 43.1% had taken all three doses of vaccination and their family members were vaccinated as well. In the studies done by Sofola et al [35] and Adebamowo [36] only 37.9 and 18.1% of their respondents respectively were reported to be fully vaccinated against Hepatitis B infection.

Many Studies from Pakistan suggests a higher percentage of vaccination status than in this study. [19] Busy schedules, lost time (and perhaps income) while getting the vaccination, procrastination, lack of knowledge about severity and vaccine efficacy, perception of low risk status, the bother of a sore arm are the potential reasons for low vaccination coverage. [37,38] Unfortunately the practice of vaccination is not yet well accepted. According to WHO, Hepatitis B vaccination coverage among health-care workers is lowest in Africa (18%) and highest in Australia and New Zealand (77%). [39] A significant association was seen between the KAP scores and number of years of experience of the paramedical staff. According to Singhal et al, degree of exposure to the infected body fluids or blood-contaminated sharps such as needles and other medical instruments, and the duration of employment in an occupational risk category are associated with the risk of HCWs acquiring occupationally related HBV infection. [26] It was encouraging to see that there was a significant correlation between knowledge, attitude, practice and years of experience in this study.

We find that paramedical persons had good knowledge, therefore attitude and practice percentage is also very high. This was in line with the study done by Goswami et al in 2012 on lab workers.

## CONCLUSION

The overall knowledge, attitude and practice of paramedical staff showed satisfactory outcomes. It is easy to generally assume that health workers by virtue of their proximity to the health facility should have adequate knowledge about diseases and

other health conditions. This finding is promising considering the fact that knowledge is usually the first step towards modification of a desirable behavior.

But there is a need for continuing education courses designed to allow paramedical staff to explore the affective domain regarding the care of patients with infectious diseases. Also, there is an urgent need for formulation of a national policy in these matters. CDC guidelines and OSHA regulation should be strictly followed in health care settings.

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