International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

To Study the Knowledge, Attitude, and Practices Toward Prevention of Hepatitis B Infection among Health Care Workers in a High Risk Setting of a Private Institute and Public Institute: A Cross - Sectional Study

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Abstract: ***Introduction: India is in the intermediate hepatitis B virus endemic zone with hepatitis B surface antigen prevalence among the general population ranges from 2% to 8%. Among health-care workers, sero prevalence is two to four times higher than that of the general population. Health care workers (HCWs) are at high risk of Hepatitis B virus (HBV) transmission. Hepatitis B vaccination is effective in protecting against HBV infection. Different factors influence HCW vaccination status such as lack of knowledge & awareness, cost, availability, and hesitancy. (4) So, we are conducting this study because lack of knowledge is most important factor about the Hepatitis B infection. Aim: Assessment of knowledge, attitude and practices toward prevention of hepatitis B infection among Health care workers. Objective: To Assessment of knowledge, attitude, and practices toward prevention of hepatitis B infection among Health care workers Methodology: Sampling technique: Purposive sampling of healthcare workers from And Vashi. 1) Type of study: Observational cross sectional study. 2) Place of study: Public hospital & Private hospital of a Corporation. 3) Duration of study: 6 months (November 2022 to May 2023) Results: 43.3% and 55.6% study participants from Private and Public Institute respectively gives correct response about profession risk for hepatitis B virus transmission. The response about the modes of transmission of hepatitis B 97.8% and 91.1% study participants from Private and Public Institute respectively gives mosquito and insect bite response. 98.9% and 93.3% study participants from Private and Public Institute respectively having positive attitude regarding Hep B vaccine is effective in preventing HBV infection. 76.7% and 66.7% study participants from Private and Public Institute have been vaccinated against Hep B respectively, and out of these 27.2% and 14.4% study participants from Private and Public Institute taken 3rd dose of Hep B vaccine respectively.***

Keywords: Health care workers, Hep B infection, Mode of transmission

1. Introduction

India is in the intermediate hepatitis B virus endemic zone with hepatitis B surface antigen prevalence among the general population ranges from 2% to 8%. Among health-care workers, sero prevalence is two to four times higher than that of the general population. (1)

Hepatitis B is a serious infection and major public health problem caused by the hepatitis B virus. Nearly 2 billion people (30% of the world population) have serological evidence of infection with the hepatitis B virus (HBV).350 million of these people have chronic HBV infection, of which about one million die each year from chronic liver disease, such as hepatocellular carcinoma and cirrhosis. HBV is reported to cause 80% of liver cancer cases and could be the second most important human carcinogen after tobacco. Chronic hepatitis B infection prevalence is low (< 2%) in most developed countries and it is high (> 8%) in all countries in Africa.

Healthcare workers including medical students are considered a high - risk group due to high occupational exposure. Global studies demonstrated that, depending on location, 10–40% of healthcare providers may show serologic evidence of hepatitis B infection. The risk of getting HBV infection is related to the degree of contact with infected blood or other body fluids; the risk is 1% − 6% for acquiring hepatitis B virus from a needle stick injury if the source patient is only HBsAg - positive. However, the risk increases to 22% − 40% when the source patient is both HBsAg - positive and HBeAg - positive. Medical students are among those at high risk of acquiring hepatitis B infection in the hospital when they are attending clinical training as they are relatively inexperienced, and may be less aware than other healthcare providers. Medical students are also less likely to follow universal precautions consequently accidental needle - stick injuries and muco - cutaneous blood exposure may occur while performing invasive procedures and handling high - risk fluids. Hepatitis B is a vaccine - preventable disease and an effective HBV vaccine has been available since 1982, which is effective in preventing infection when administered before or immediately after exposure. Vaccination of infants during 24 hours of birth is reported to be 90–95% effective in preventing HBV infection.

As a part of occupational safety measures, all healthcare workers should be vaccinated. Medical students needed to be vaccinated too to ensure that future healthcare providers are adequately protected from HBV. Unfortunately, the World Health Organization reported that a significant proportion of healthcare workers do not receive the HBV vaccine. WHO reported that HBV vaccination coverage amongst health care providers is only 18–39% in low and middle - income countries compared to 67–79% in high - income countries. (3)

Health care workers (HCWs) are at high risk of Hepatitis B virus (HBV) transmission. Hepatitis B vaccination is

effective in protecting against HBV infection. Different factors influence HCW vaccination status such as lack of knowledge & awareness, cost, availability, and hesitancy. (4) So, we are conducting this study because lack of knowledge is most important factor about the Hepatitis B infection.

Aim:
To study the knowledge, attitude and practices toward prevention of hepatitis B infection among Health care workers.

Objective:
To study the knowledge, attitude, and practices toward prevention of hepatitis B infection among Health care workers in public and private institute.

2. Methodology

Sampling technique: Purposive sampling of healthcare workers from Private and Public Institute.

1) Type of study: Observational cross - sectional study
2) Place of study: Private and Public Institute of a Corporation.
3) Duration of study: 6 months (November 2022 to May 2023)
4) Inclusion criteria: HCW who were available and willing to participate in the study were included
5) Exclusion criteria: HCW who will not give consent.

Data Collection:
Data was collected using a structured questionnaire administered to the participants. The questionnaire included demographic information, employment details, and KAP about Hepatitis B infection.

Data Analysis:
Data was entered in to MS Excel.
Simple demographic tables, charts, percentages were obtained.

Ethical Considerations:
Obtain ethical approval from relevant institutional review boards and ensure the privacy and confidentiality of participants' information.

Informed consent should be obtained before data collection.

3. Results

Demographic Variables (n=180)

Table 1: Distribution of Sex wise distribution of HCW (n=180)

Gender	N	%
Male	79	43.9
Female	101	56.1

Table 1 shows that 56.1% study subjects were female and 43.9% were male.

Table 2: Distribution of Age wise distribution of study participants (n=180)

Age group	Male (n=79)		Female (n=101)		Total	
	n	%	N	%	n	%
20 - 34	52	28.9	66	36.7	118	65.6
35 - 49	26	14.4	33	18.3	59	32.7
50 - 65	1	0.6	2	1.1	3	1.7
total	79	43.9	101	56.1	180	100

Table 2 shows that out of 101 female study participants 36.7% and out of 79 male study participants 28.9% were in between 20 - 34 yrs. age group.

Table 3: Distribution of marital status of HCW in study (n=180)

Marital status	Male		Female		total	
	n	%	n	%	n	%
Married	26	14.4	33	18.3	59	32.7
Unmarried	53	29.4	68	37.8	121	67.2
total	79	43.9	101	56.1	180	100

Table 3 shows that 29.4% male and 37.8% female were unmarried.

Table 4: Distribution of monthly income of HCW in study (n=180)

Monthly income	Male		Female		total	
	n	%	n	%	n	%
<5000	32	17.8	37	20.6	69	38.4
5000 - 15000	18	10	24	13.3	42	23.3
15000 - 25000	13	7.2	7	3.9	20	11.1
25000 - 50000	2	1.1	5	2.8	7	3.9
50000 - 1L	14	7.8	28	15.6	42	23.4
total	79	43.9	101	56.1	180	100

Table 4 shows that 17.8% male and 20.6% female were having monthly income of below 5000.

Table 5: Distribution of department wise distribution of HCW in study (n=180)

Department	Male		Female		total	
	n	%	n	%	n	%
Interns	49	27.2	28	15.6	77	42.8
Residents	21	11.7	5	2.8	26	14.5
Consultants	1	0.6	2	1.1	3	1.7
Nurses	4	2.2	62	34.4	66	36.6
Housekeeping	4	2.2	4	2.2	8	4.4
total	79	43.9	101	56.1	180	100

Table 5 shows that 27.2% male and 15.6% female study participants were interns.

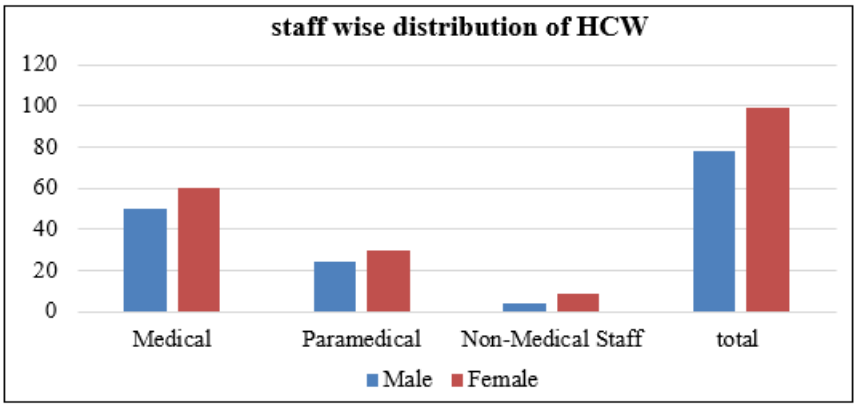

Figure 1: Education wise distribution of HCW in study (n=180)

Fig.1 shows that 27.8% male and 33.3% female participants were studied up to higher secondary.

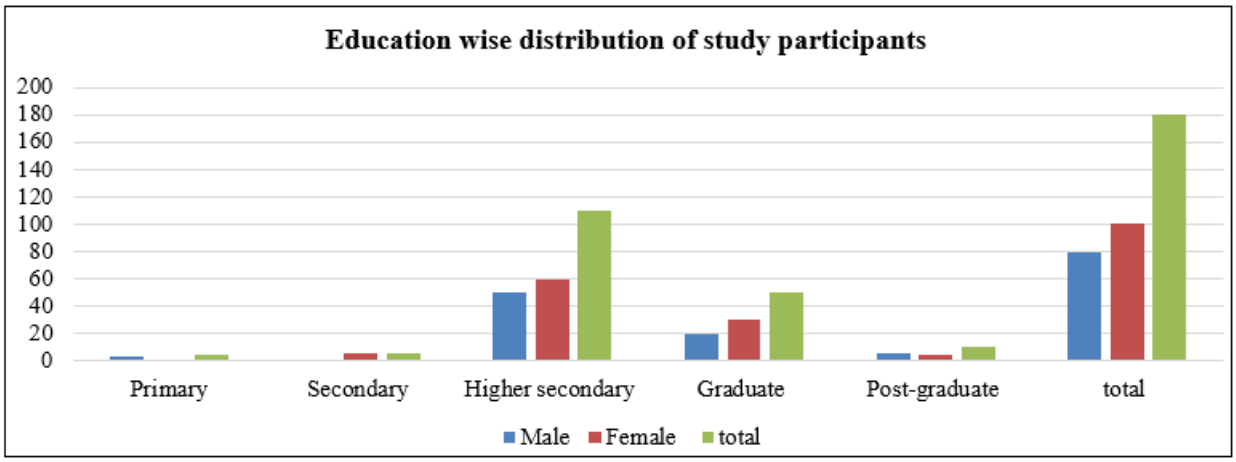

Figure 2: Staff wise distribution of HCW in study (n=180)

Fig.2 shows that 27.8% male and 33.3% female study participants were medical by profession.

Knowledge:

Table 6: Regarding correct Knowledge (n=180)

Regarding Knowledge		Private Institute (n=90)	%	Public Institute (n=90)	%
Questionnaires		Correct response		Correct response	
1. Profession risk for hepatitis B virus transmission?		39	43.3	50	55.6
2. Hepatitis B virus as a cause for liver cancer?		17	18.9	75	83.3
3. What are the modes of transmission of hepatitis B?					
a)	body fluids	73	81.1	62	68.9
b)	needle prick	80	88.9	62	68.9
c)	sexual	77	85.6	75	83.3
d)	perinatal	55	61.1	43	47.8
e)	mosquito and insect bite	88	97.8	82	91.1
f)	contaminated food and water	82	91.1	81	90
4. what are modes of prevention of hep b infection?					
a)	disposable gloves	79	87.8	67	74.4
b)	PPE kit	45	50	28	31.1
c)	cap needles after use	63	70	45	50
d)	vaccination	85	94.4	86	95.6
e)	protected intercourse	60	66.7	63	70
5. Are you aware of the safety measures while handling HBsAg positive patients?		81	90	80	88.9

Table 6 shows that the knowledge regarding Hepatitis B infection; found that 43.3% and 55.6% study participants from Private and Public Institute respectively gives correct response about profession risk for hepatitis B virus transmission. Also 18.9% and 83.3% study participants Private and Public Institute respectively gives correct response about Hepatitis B virus as a cause for liver cancer. The response about the modes of transmission of hepatitis B

97.8% and 91.1% study participants Private and Public Institute respectively gives mosquito and insect bite response. Also, response about the modes of prevention of hepatitis B infection 94.4% and 95.6% study participants Private and Public Institute respectively gives vaccination response.90% and 88.9% study participants Private and Public Institute respectively gives response about awareness of the safety measures while handling HBsAg positive patients.

Table 7: The attitude of HCW toward hepatitis B vaccination (n=180)

Regarding Attitude	Private Institute (n=90)	%	Public Institute (n=90)	%
1. Do you think you are at a higher risk of HBV infection than the general population?	87	96.7	69	76.7
2. Do you think HepB vaccine is effective in preventing HBV infection?	89	98.9	84	93.3
3. Do you think following infection control guidelines will protect you from the infection?	86	95.6	83	92.2
4. Do you think all patients should be tested for HBV before admission in hospital?	77	85.6	76	84.4
5. Do you think infection control issues have been addressed in the teaching courses?	67	74.4	64	71.1

Table 7 shows that the attitude regarding Hepatitis B infection; found that 96.7% and 76.7% study participants from Private and Public Institute respectively having positive attitude regarding they are at a higher risk of HBV infection than the general population. Also 98.9% and 93.3% study participants from Private and Public Institute respectively having positive attitude regarding HepB vaccine is effective in preventing HBV infection. The response about the following infection control guidelines will protect them from the infection 95.6% and 92.2% study participants from Private and Public Institute respectively shows positive attitude. Also, response about the all patients should be tested for HBV before admission in hospital 85.6% and 84.4% study participants from Private and Public Institute respectively shows positive attitude.74.4% and 71.1% study participants from respectively shows positive attitude about the infection control issues have been addressed in the teaching courses.

Table 8: Preventive practices of HCW toward Hepatitis (n=180)

Sr. No.		Private Institute (n=90)	%	Public Institute (n=90)	%
	Questionnaires				
Q1a	1. Have you been vaccinated against HEP B	69	76.7	60	66.7
Q1b	2. If yes, how many doses have you taken?				
	A.1	3	1.6	3	1.6
	B.2	18	10	30	16.6
	C.3	49	27.2	26	14.4
Q2	6. . Have you ever screened for hepatitis B infection?	85	94.4	25	27.8
Q3	7. Has any kind of training being taken for you for hepatitis B prevention	80	88.9	37	41.1
Q4	Do you practice safe needle disposal protocol	87	96.6	88	97.7
Q5	Do you use gloves during procedures	88	97.7	89	98.8

Table 8 shows that practice regarding hepatitis B infection prevention, found that 76.7% and 66.7% study participants from Private and Public Institute have been vaccinated against Hep B respectively, and out of these 27.2% and 14.4% study participants from Private and Public Institute taken 3rd dose of Hep B vaccine respectively.94.4% and 27.8% study participants from Private and Public Institute respectively screened for hepatitis B infection respectively.88.9% and 41.1% study participants from Private and Public Institute took any kind of training for hepatitis B prevention respectively. The study participants from Private and Public Institute were practice safe needle disposal protocol 96.6% and 97.7% respectively and use gloves during procedures 97.6% and 98.8% respectively.

4. Discussion and Implications

Exposure to blood borne pathogens such as HBV infection remains a significant occupational hazard to HCWs, especially in countries where this infection is highly prevalent. KAP surveys form a useful tool to ascertain the problem, suggest solutions, and form policies. There is a paucity of data on KAP of HCW in the city, and this study has been done to throw some light on the same. The findings mandate a health awareness and hepatitis B vaccination drive among HCW which are an invaluable resource and they should be provided with an armour of prevention against hepatitis B which is very likely to encounter them in their career.

From the study, it was found that majority of the HCW (51%) had not received hepatitis B vaccination and 30% of them had incomplete vaccination. Only 41.6% are completely vaccinated. Majority of them were from public institute compared to private institute. The reasons for no vaccination could be lack of knowledge, negative attitude and poor preventive practices as seen in study result., Other studies have also reported low immunization rates among HCW. REF: (www.jlponline. org)

While one can easily assume that HCWs or medical students will show a high level of compliance with regard to beneficial health procedures and program, evidence from literature suggests otherwise. The vaccination of HCWs become even more important as most of the HBV infections in HCWs are attributable to accidental percutaneous exposure which are deemed trivial to be recalled by HCWs for executing preventive measures.

The WHO seeks to achieve the goal of viral hepatitis elimination by 2030 and lack of general knowledge about viral hepatitis seems to be a barrier to reaching this goal. This study showed that HCW have poor knowledge and lack of awareness about hepatitis B, its routes of transmission, risk factors, and modes of prevention; however, the attitude is negative and poor preventive practices in public institute. The findings are congruent with that of other studies. According to a studies on HCW

1) **Assessment of knowledge, attitude, and practices toward prevention of hepatitis B infection among medical students in a high-risk setting of a newly established medical institution Akanksha Rathi**
   With a response rate of 81.3%, a total of 161 students participated in the study out of 198. only 13 (8%) students had received a completed course of hepatitis B vaccination in the past, 30 (18.7%) students had a history of inability to complete the three doses of hepatitis B vaccination, and the rest 118 (73.3%) students were never immunized against hepatitis B.
2) **Determinants of hepatitis B vaccination status in health care workers of two secondary care hospitals of Sindh, Pakistan: a cross - sectional study**
   Two - third of the HCWs were completely vaccinated in secondary care hospitals in Sindh, Pakistan. Hepatitis B vaccination should be made a job entry requirement to achieve more complete vaccination numbers. Vaccination policies require to implement for all part - timers and full - timer health care workers.
3) **Hepatitis B vaccination coverage and associated factors among medical students: A Cross - Sectional Study in Bosaso, Somalia 2021**
   This study demonstrated insufficient knowledge and attitudes toward HBV; however, the practice level toward HBV among healthcare students was promising. Therefore, public health efforts should modify the knowledge and attitude gaps to reinforce awareness and minimize the risk of infection.
4) **Al-Ghamdi**, anti-HBs levels were significantly low in many students after their primary immunization. Therefore, the testing medical students for anti-HBs levels may be warranted as they represent a high-risk population.

A few studies, however, reports good knowledge (>80%) among the medical students.

5. Recommendations

The findings underscore the need for

1) Comprehensive educational initiatives
2) Targeted interventions
3) Policy changes to enhance vaccination coverage and protect healthcare workers from hepatitis B infection especially in public sector like. where attitude and practice regarding hepatitis B among health care workers are poor compared to private institute.
4) The study facilitated to immunize the future budding health-care professionals against hepatitis B infection.
5) By addressing these factors, healthcare organizations can take proactive measures to safeguard the health and well - being of their workforce, while minimizing the risk of transmission to patients and the community at large.

6. Limitations

- Limited sample size preventing a subgroup analysis.
- Small sample size so study cannot be generalised.
- Selection and recall bias may affect the data.

Funding
No Funding and conflicts of interest.

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