

Original Research Article

Knowledge, socio demographic profile, vaccination status and factors determining the acceptance of hepatitis B vaccine among nursing staff of KPC Medical College of West Bengal

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ABSTRACT

Background: Hepatitis B, a vaccine preventable infection is one of the important causes of morbidity in India. The risk of acquiring the infection is more among the health care providers like nurses than in general population as they come in close contact with patients. The study has been done to know the sociodemographic profile, vaccination status along with the knowledge about the disease and the factors determining the acceptance of vaccination among nursing staff of KPC Medical College in West Bengal.

Methods: A cross-sectional study was carried out among the 284 nursing staff of KPC Medical College and Hospital in November to December, 2018 with the help of pre-designed and semi-structured questionnaire. Data on demographic characteristics, knowledge, occupational exposure, vaccination status and factors for acceptance of vaccine etc. were collected and analysed.

Results: 86% nursing staff received vaccination out of which 71% were completely vaccinated, 29% were partially and 14% were non vaccinated. The acceptable knowledge was found in 84% of the nurses. The major reason of vaccination was to protect themselves from infection and the major reason for non-acceptance was time limitation, cost issues etc. Accidental prick was found in 5% of the nurses and universal precautionary measure was taken by 98% of the nurses.

Conclusions: In spite of availability of safe, effective and cheap vaccine against hepatitis B infection, 29% of nursing staff were partially vaccinated and 14% were non-vaccinated. There should be a mandatory vaccination at the beginning of their training and frequent educational and awareness programme for them on hepatitis B.

Keywords: Hepatitis B, Vaccination, Nursing staff, Knowledge

INTRODUCTION

Hepatitis B virus (HBV) is highly infectious and causes serious health problems. Approximately 2 billion people have been infected with HBV globally. Among these, 240 million are chronically infected persons with a varying prevalence geographically, highest in Asia and Africa.^{1,2}

According to WHO global hepatitis report 2017, an estimated 257 million people globally are living with hepatitis B virus infection (defined as hepatitis B surface antigen positive).

In 2015, hepatitis B resulted in 887,000 deaths worldwide, mostly from complications (including cirrhosis and hepatocellular carcinoma).³

According to some regional level studies, it is estimated that in India, approximately 40 million people are chronically infected with hepatitis B. It has long incubation periods before the disease progresses to advanced stages like liver cirrhosis and liver cancer, resulting in death if treatment is not provided in time. Intervention for preventing the progress of the disease is particularly more challenging because during the gestation period, the disease does not manifest any specific symptoms.

Major complications of chronic hepatitis B infection are cirrhosis and hepatocellular carcinoma. Around 650,000 people die yearly due to chronic hepatitis B virus infection.³ HBV is transmitted primarily by percutaneous or mucosal contact to infected blood and other body fluids like saliva, menstrual, vaginal, and seminal fluids.⁴ Transmission of the virus may also occur from accidental exposure of small amounts of blood or fluid during medical, surgical, and dental procedures or from razors and similar objects contaminated with infected blood; use of inadequately sterilized syringes and needles during intravenous and percutaneous drug abuse; tattooing; body piercing; and acupuncture.³ Health care providers (HCP) including nursing staff are at high risk for hepatitis B virus (HBV) infection.⁵ The virus remains infectious for prolonged periods on environmental surfaces and is transmissible in the absence of visible blood. Health care providers (HCPs) do not recognize all exposures to potentially infectious blood or body fluids. They had a prevalence of HBV infection around 10 times greater than the general population.⁶ The WHO report showed that about 6% of HCPs are exposed every year to blood-borne HBV infections corresponding to about 66,000 HBV infections in health care providers worldwide.⁷ Hepatitis B surface antigen (HBsAg) positivity in the general population ranges from 1.1% to 12.2%, with an average prevalence of 3 to 4% globally. There are some infection control practices and administration of hepatitis B immune globulin following suspected exposure to reduce the risk of HBV transmission, but none have been as effective as active immunization with hepatitis B vaccine, which is actually the single most important hepatitis B prevention measure.^{8,9} It is necessary to vaccinate all health care providers as a part of policy and provide postexposure prophylaxis after having significant exposure with patient's blood.¹⁰ Health care providers need special consideration for HBV screening and HBV vaccination, but it is not widely implemented in low- and middle-income countries.^{3,5} Lack of awareness and not giving sufficient attention to health care providers along with the negligence led them being incompletely vaccinated.¹¹ The aim of this study was to determine the socio-demographic status, knowledge and vaccination status of nursing staff against hepatitis B virus infection and to identify the factors determining the acceptance of vaccine among the HCPs like nursing staff in KPC Medical College and Hospital and factors associated with it.

METHODS

The study is a hospital based observational, cross-sectional study. It was done in KPC Medical College and Hospital, Kolkata, West Bengal. All nursing staff (309) working in various departments (wards, ICCU, OT, emergency, OPD) of KPC Medical College and Hospital were taken as study population.

Study period was month of November and December in 2018.

Study design

Total nursing staff working in KPC medical college and hospital found to be 309. A pilot study for pretesting the questionnaires was done after distributing a predesigned questionnaire (hepatitis KAP questionnaire psychometric, 2012) among 25 nursing staff of KPC medical college and hospital.¹² They were explained about the questionnaires and given 7 days time for answering.

After the submission and analysis of these 25 filled up questionnaires, this predesigned and pretested questionnaire were given to remaining 284 nursing staff of various departments of KPC Medical College and Hospital (KPC MCH) within the study period. They were also explained about the questionnaires and given 15 days for each department for answering. The absent staffs of a specified department on that specified day were covered up on other day. No staffs were found chronically absent or on prolonged leave. All the submitted and answered questionnaires are taken up for data analysis.

Study tools

Predesigned and pretested questionnaires.

Study variables

Vaccination status, acceptance of vaccination, age, marital status, sex, place of stay were the study variables.

Case definition

In case of hepatitis B vaccination some were fully vaccinated (who had taken all the three doses of vaccine), partially vaccinated (who had taken one or two doses of vaccine but not taken all three doses of vaccine), non vaccinated (who did not take a single dose of vaccine) and knowledge regarding hepatitis B vaccination was taken as adequate in staff nurses who had given right answers in at least 50% of the knowledge related questions in the above mentioned questionnaires.

Inclusion criteria

All staff nurses working in various departments of KPC MCH, who had given consent for filling up the questionnaires.

Exclusion criteria

Student nurses were not taken for the study and those who did not give consent.

Institutional ethical clearance also was taken from Ethical committee of KPC Medical College, Kolkata.

RESULTS

In this study the sample size was 284. It was found that 177 (62.32%) nursing staff were above 30 years and 107 (37.68%) were below 30 years. 270 (95.07%) nursing staff were female, and 14 (4.93%) were male. 199 (70.07%) nursing staff were married and 80 (28.16%) were unmarried. Among all nursing staff 185 (65.14%) were from urban area and 99 (34.86%) were from rural area (Table 1).

The study was found to determine the vaccination status of nursing staff that, among 154 nursing staff working in wards, 94 (61.03%) were fully vaccinated, 38 (24.6%) were partially vaccinated and 22 (15.58%) were non

vaccinated. Among 52 ICU nursing staff 32 (61.53%) were fully vaccinated, 13 (25%) were partially vaccinated, and 7 (13.46%) were non vaccinated. In case of 49 OT nursing staff and 29 emergency and OPD nursing staff, 30 (61.2%) and 18 (62.06%) were fully vaccinated, 12 (24.48%) and 7 (24.13%) were partially vaccinated, and 7 (14.28%) and 4 (13.79%) were non vaccinated. So, among 284 nursing staff 174 (61.26%) were fully vaccinated, 70 (24.64%) were partially vaccinated, and 40 (14.08%) were non vaccinated (Table 2).

The reasons of non vaccination were evaluated. It was found that among 40 non vaccinated nursing staff 13 (32.5%) avoid the vaccination for time limitation (proper time management for dose of vaccination). 12 (30%) and 10 (25%) nursing staffs did not receive vaccination due to cost issues and forgetfulness respectively. 3 (7.5%) nursing staff were in wrong perception regarding age of vaccination (they are not eligible for vaccination as they have crossed the upper age limit for vaccination) and 2 (5%) nursing staff were not willing to take vaccination (Table 3).

Table 1: Socio demographic profile of staff nurses (n=284).

Socio demographic determinance		Number (%)
Age (in years)	≤30	107 (37.68)
	>30	177 (62.32)
Gender	Female	270 (95.07)
	Male	14 (4.93)
Marital status	Married	199 (70.07)
	Unmarried	80 (28.16)
	Others	5 (1.76)
Place of stay	Urban	185 (65.14)
	Rural	99 (34.86)

Table 2: Vaccination status of staff nurses (n=284).

Departments	Vaccinated		Non vaccinated	Total
	Partially N (%)	Fully N (%)		
Wards	38 (24.6)	94 (15.58)	22 (15.58)	154
ICUs	13 (25)	32 (62.53)	07 (13.46)	52
OTs	12 (24.48)	30 (61.2)	07 (14.28)	49
Emergency and OPD	07 (24.13)	18 (62.06)	04 (13.79)	29
Total	70 (24.64)	174 (61.26)	40 (14.08)	284

Table 3: Reasons of non vaccination of hepatitis B among staff nurses (n=40).

Reason of non vaccination	Number (%)
Time limitation	13 (32.5)
Cost issues	12 (30)
Forgetfulness	10 (25)
Wrong perception regarding age of vaccination	3 (7.5)
Gave up or not willing vaccination	2 (5)
Total	40

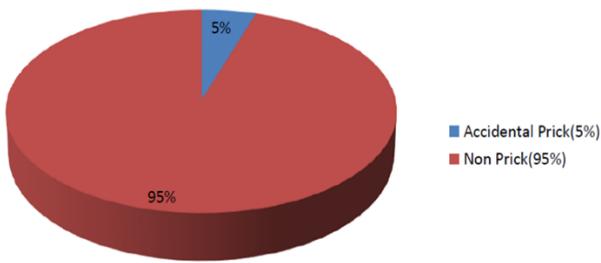


Figure 1: Study of accidental prick among nursing staff.

Among all 284-nursing staff 5% had history of accidental prick. Most common event responsible for it was recapping of needles after use (Figure 1).

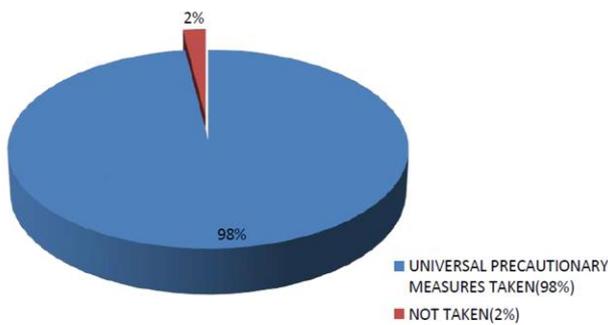


Figure 2: Status of universal precautionary measures taken by staff nurses.

98% of total nursing staff had taken universal precautionary measures (Figure 2).

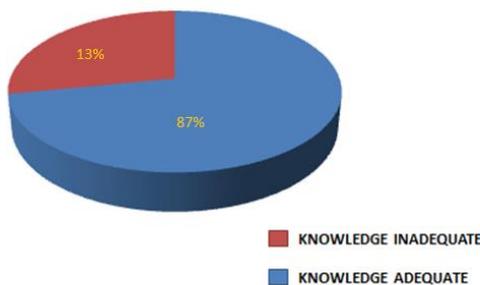


Figure 3: Assessment of knowledge of hepatitis B vaccination among staff nurses of KPC MCH.

The knowledge of hepatitis B vaccination among nursing staff was also assessed. Adequate knowledge about vaccination was present among 87% and inadequate knowledge was found in 13% of staff nurses (Figure 3).

DISCUSSION

Hepatitis B is a major global health burden and can be prevented to a great extent by the correct knowledge, attitude, and practice of the health care providers (like nursing staff) involved with the management of this infection. It is a general assumption that HCPs are better informed and more knowledgeable about infections and control measures than the general population as they are in health and management practice and are being regularly trained. So, testing the level of awareness among the nursing staff would not only indirectly assess the level of their knowledge but it will also help to go a long way in the implementation of prevention programs in a better way.

A recent study in Greece (Dimitrios et al) showed that 42% staff nurses were partially and fully vaccinated against hepatitis B.¹³

Another study in Greece (Toska et al) where 63.2% staff nurses were found to be vaccinated against HBV.¹⁴

Study on hepatitis B vaccination status and needle-stick and sharps-related Injuries in Nepal (Bhattarai et al) showed that 42.8% of nursing staff had needle-stick injuries and most common sharp involved (56.3%) was Hypodermic needle. Most injuries (35.6%) occurred while manipulating needle into patients.¹⁵

In a study of knowledge, attitudes and practices of health care workers regarding needle stick injuries in Pakistan (Zafar et al) it was found that 45% of health care workers reported having a needle stick injury in the past. The most common reason identified was stress or being over burdened followed by careless attitude. More than 50% of the injuries occurred while injecting or drawing blood samples.¹⁶

In another study of knowledge, attitude and practices among health care workers on needle-stick injuries in Nepal (Gurubacharya et al) showed that 74% of health care workers had a history of needle-stick injuries and only 21% reported the injuries to the hospital authority. Only 23% were in the habit of using gloves for phlebotomy procedures all the time. 79% were of the impression that needle should be recapped after use. Only 66% of health care workers were aware of universal precaution guidelines.¹⁷

A study on Sharps and needlestick injuries: the impact of hepatitis B vaccination as an intervention measure in Singapore (Ling et al) showed sharps and needlestick injuries occurred in the nursing staff in around 45.7%.¹⁸

In a study of practice of universal precautions among healthcare workers in Nigeria, (Sadoh et al) showed that 48.7% were nurses. About a third of all respondents always recapped used needles. Less than two-thirds of

respondents (63.8%) always used personal protective equipment.¹⁹

A recent study by Setia et al on dental, medical, and nursing interns from North India on the awareness toward hepatitis B and C reported that majority of HCPs had an adequate level of knowledge about the infection. About 71% of the HCPs in the same study could not complete the vaccination for hepatitis B and the fact that they were quite attentive to prevent acquiring the infection, made them think that there was no need for vaccination, this was the most common explanation given for noncompliance. Few of them, however, thought that being in this profession did not pose any risk of transmission to them from the patients. This lack of knowledge is of serious concern as the same study showed a positive correlation of knowledge score with the attitude of the HCPs.²⁰

Hussain et al in Ethiopia reported complete, partial, and nonimmunization rates for hepatitis B being 57.6%, 18.5%, and 24% respectively in their study and further highlighted that 93.7% of the HCPs knew about their own hepatitis B status.²¹

A large-scale study in Pakistan (Khan et al) done on undergraduate medical students in seven medical colleges reported 50 to 70% of the respondents with average knowledge about HBV infection and further highlighted that the attitude regarding postexposure management was not satisfactory. In the same study, approximately half of the participants gave a history of at least one NSI (non serious injury) during their clinical practice.²²

Studies by Nagpal et al, done in South Africa & Paul et al in Chennai, done on medical students concluded lack of awareness among the lower level students and suggested promotion of health education at school level and policy for mandatory complete vaccination and continuing health education and awareness programs for students at entry level.^{23,24} In both these studies, the knowledge about HBV infection was basic but not adequate for a health care provider who would be catering to a large community. Hence, HCPs need to be motivated and given ample opportunities through regular training and seminars to learn about the health effects of HBV infection so as to promote standard principles and practices among the patients, peer group and the general population.

One study (Afihe et al) in Ghana reported a positive correlation between knowledge and attitude, knowledge and practice, and attitude and practice; thereby concluding that as far as infection control practices are concerned a good level of knowledge will go a long way in instilling a positive attitude and thus leading to correct practices.²⁵

In this study 86% nurses received vaccination of which 71% were completely vaccinated, 29% were partially vaccinated. Non vaccinated status found in 14%. This is

similar to another studies (Kaur et al) conducted in other part of India (85% of subjects were vaccinated and aware regarding the preventive protocol against HBV infection and 15% were non vaccinated).²⁶

Nursing staff should use at least the standard precautions to avoid accidental pricks to maintain low incidence of accidental prick.

CONCLUSION

A majority (86%) of the nursing staff in the present study were aware regarding HBV infection and its immunization. Moreover, the vaccination coverage among the staff was high (86%). Also, very few of them (2%) were not following the universal precautionary measures. Among the non vaccination group main causes for non vaccination were found to be time management for vaccination, followed by cost, and forgetfulness. Therefore, it was recommended that there should be a mandatory vaccination before joining the course, free of cost from the institution. Reorientation training programmes regarding modes of transmission of HBV and hands on training programme regarding prevention of HBV infection by following universal precautionary measures and measures to protect accidental pricks, should be done involving nursing staff regularly. These initiatives may help to increase the hepatitis B vaccination coverage and reduce the probability of transmission among nursing staff. Policy for post exposure prophylaxis should be followed strictly.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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