

Original Research Article

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## Assessment of Hepatitis B vaccination status and needle stick injury awareness among doctors of a tertiary care medical college hospital

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### ABSTRACT

Doctors are more prone to get needle stick injury while giving i/v injection and during suturing process. HIV, Hepatitis B and Hepatitis C are three important fatal infections transmitted by needle stick injury. The transmission rate of Hepatitis B infection is nearly about 30% whereas transmission of HIV is only 0.3% and Hepatitis C only 1.8% and Hepatitis B being fatal can very well be prevented by proper vaccination and prophylaxis. After infection with HBV, 10% of the patients develop chronic hepatitis and about 15%-25% develop cirrhosis. Half of these individuals later develop hepatic decompensation or hepatocellular carcinoma. The study was conducted in Medical College Hospital, from May 2014 to July 2014. It was a descriptive, cross-sectional questionnaire based study. Consent was taken before the distribution of the questionnaire. All doctors were included in the study i.e. Obstetrician/Gynaecologists, Superspecialists, Anaesthetists, Paediatricians, Orthopaedician, Surgeons and Physicians. Forms were distributed among 345 doctors. Out of 345 distributed forms, 208 were returned with a response rate of 60.28%. A total of 208 doctors, (age range 30-58 years) responded to the questionnaire. Amongst them 74 % have been vaccinated and 26 % have not completed the required course of vaccination. The most commonly cited reasons for non-vaccination found in our study were forgetting dosage schedule(43.9%), and never thought of due to busy work pattern. It is seen that most of the young doctors have been vaccinated against HBV and the reason cited by them was as per government norms they had to get vaccinated during their under graduate and post graduate admissions. OG consultants (100%), super-specialists (90%) and anaesthetists (90%) were more likely to have received completed vaccination, 85 % of the paediatricians were completely vaccinated and the complete vaccination status was about 80% among surgeons, orthopaedicians, physicians. Needle stick injury was reported in 44.8 % of the doctors. Needle stick injury reporting was fairly adequate and 88% of doctors were aware of post exposure prophylaxis. Post vaccination antibody testing for anti HBs levels were known only to few doctors(13%). It is mandatory to identify low or non responders(anti Hbs <10mIU/ml) since they are not protected and post exposure prophylaxis should be initiated promptly after needle stick injuries and other exposures.

#### Keywords

Hepatitis B,  
Vaccination Status,  
Exposure-Prone  
Procedure (EPP)

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### Introduction

Hepatitis B is the major infectious occupational health hazard for the health-care workers.

Health care workers are at higher risk of getting needle stick injury. Among health care workers, doctors are more prone to get

needle stick injury while giving i/v injection and during suturing process. HIV, Hepatitis B and Hepatitis C are three important fatal infections transmitted by needle stick injury. The transmission rate of Hepatitis B infection is nearly about 30% whereas transmission of HIV is only 0.3% and Hepatitis C only 1.8% and Hepatitis B being fatal can very well be prevented by proper vaccination and prophylaxis (Pruss *et al.*, 2005).

After infection with HBV, 10% of the patients develop chronic hepatitis and about 15%-25% develop cirrhosis. Half of these individuals later develop hepatic decompensation or hepatocellular carcinoma.

Health care workers have an increased risk of acquiring hepatitis B as they attend infected patients and thus are exposed to blood and body secretions of patients. According to Centre for Disease Control, 500-600 Health care workers (WCHs) are hospitalized annually due to exposure to blood products, of which more than 200 develop chronic hepatitis. The transmission of HBV requires direct, intimate contact with or parenteral inoculation of blood and blood products, semen or tissues.

“High Transmitter Risk”-including surgeons, operating room nurses, intensive care staff, interventional physicians, phlebotomists and emergency department staff and “Low Transmitter Risk” which includes all the remaining staff. Most (58%) report exposure during a procedure and some (37%) after the procedure. The risk of transmission of an infection from HCWs to patient is also great. There has been an increase in the number of such reports. Since 1972, 50 outbreaks have been reported in which a total of 48 infected HCWs, (39 surgeons) transmitted the infection to

approximately 500 people (Puro *et al.*, 2003). In India, Hepatitis B surface Antigen prevalence among the general population ranges from 2 to 8%, where as among healthcare workers seroprevalence is two to four times higher than that of the general population (Varsha Singhal *et al.*, 2009). Studies have reported that about 10% of the health care workers (HCWs) in India have acquired HBV infection. The risk for developing serologic evidence of HBV infection was 37% to 62% if the blood was positive for both HBsAg and hepatitis B e antigen the risk for developing Hepatitis B infection was 37% to 62%, and 23% to 37% if the blood was positive for HBsAg and negative for hepatitis B e antigen. HCWs exposed to needle stick injuries, blood containing HBV, or both are at risk for developing clinical hepatitis. (Harsha Kumar *et al.*, 2015). Low vaccination rates among HCWs have been reported in South Africa, and India. (Sukriti *et al.*, 2008). Post vaccination antibody testing is essential to know the adequate immunological priming has been achieved and to identify non responders. (Rao *et al.*, 2008). No study has so far been conducted in western Tamilnadu. So, there was a need to establish the vaccination status of health care workers of the biggest tertiary care hospital, situated in Salem, Western Tamilnadu. Hence this study was carried out to assess the hepatitis B vaccination status of doctors working in Medical College Hospital, Salem, India.

## **Materials and Methods**

The study was conducted in Medical College and Hospital from May 2014 to July 2014. It was a descriptive, cross-sectional questionnaire based study. Consent was taken before the distribution of the questionnaire. All doctors were included in the study i.e. Obstetrician/Gynaecologists, Superspecialists, Anaesthetists, Paediatric-

cians, Orthopaedicians, Surgeons and Physicians. Forms were distributed among 345 doctors. A structured questionnaire was made and distributed among health care workers and medical students. The questionnaire contained socio-demographics of doctors, screening status for Hepatitis B, Hepatitis B vaccination status, knowledge and attitude regarding Hepatitis B infection and knowledge of safe practices recommended for prevention of infection while examining patients, needle stick injury and post exposure prophylaxis. Complete vaccination refers to who received three doses of hepatitis B vaccination at 0, 1 and 6 month, Partially vaccination refers to who received 1 or 2 dose of hepatitis B vaccination and not immunized means, who had not received any dose of vaccine.

### Results and Discussion

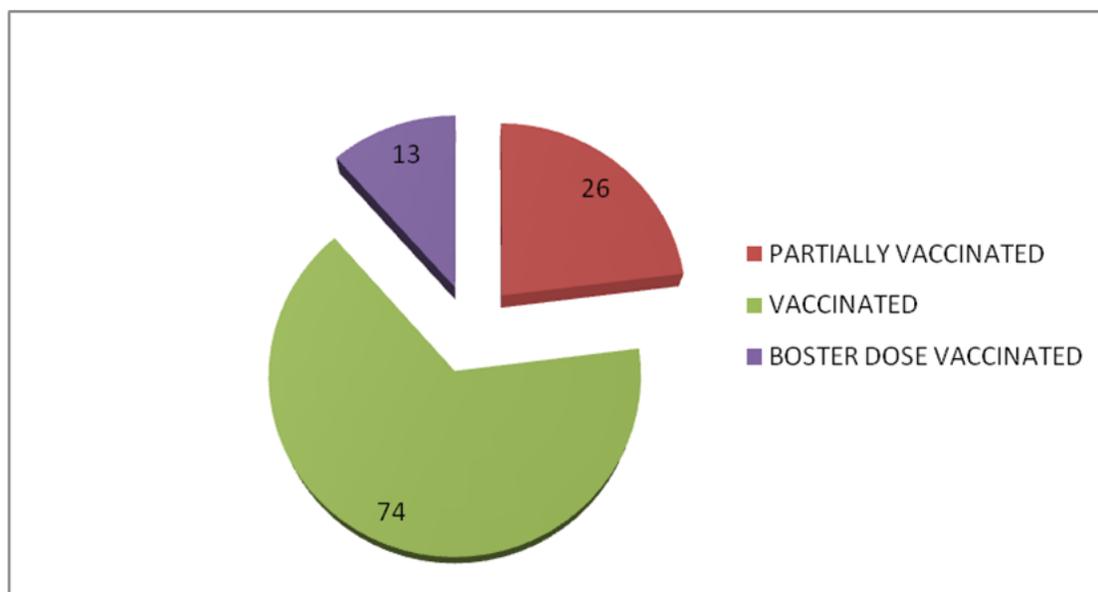
Doctors have a greater probability of acquiring hepatitis B infection by virtue of

their profession being occupationally exposed. The need for vaccination against HBV infection should be considered a priority as HBV vaccine is highly effective with 95% seroconversion rates. Doctors are vital in controlling the epidemic of Hepatitis B by effective vaccination and taking protective measures while dealing with patients.

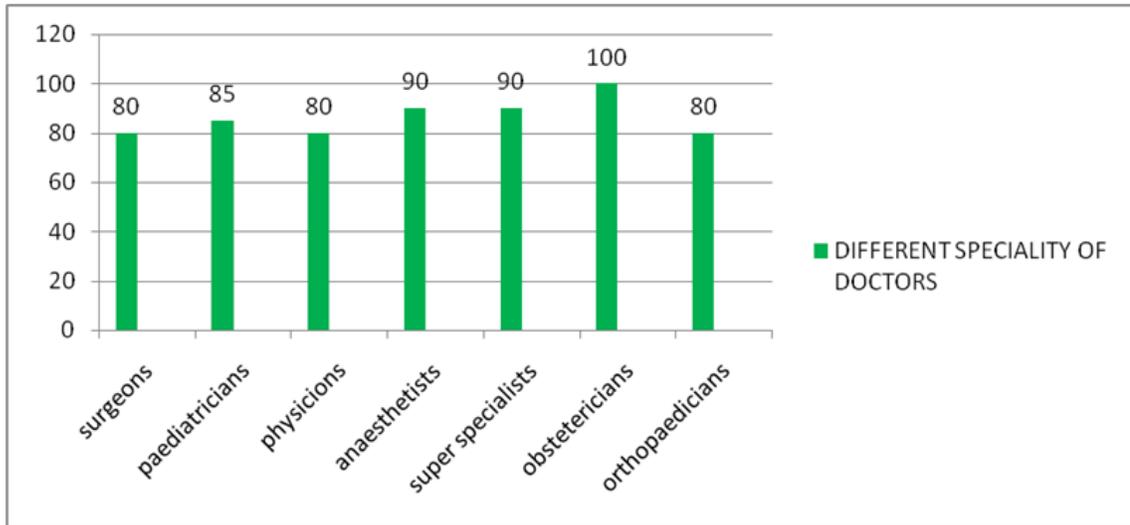
Out of 345 distributed forms, 208 were returned with a response rate of 60.28%. A total of 208 doctors, (age range 30-58 years) responded to the questionnaire.

The present study showed complete vaccination status among 74 % of doctors and partially vaccinated status among 26% of doctors(Figure 1). Singal V *et al.*, (2011) in their study have shown that out of 446 HCWs, 224 (50%) HCWs were fully vaccinated and 28 (6%) had received incomplete vaccination.

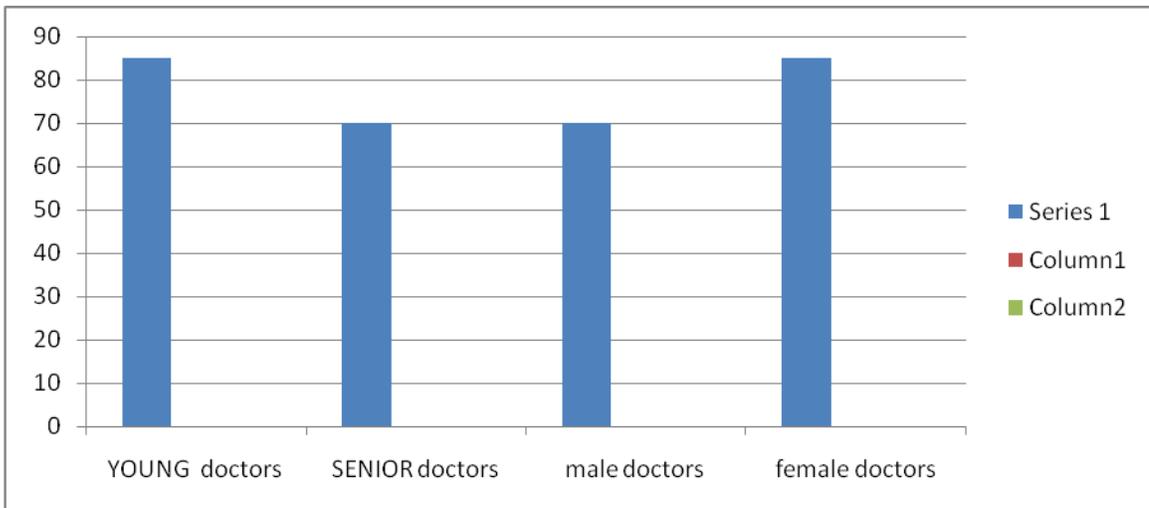
**Figure.1** Vaccination status among doctors



**Figure.2** Percentage of Vaccination status among different Specialty of Doctors



**Figure.3** Percentage of Vaccination status among senior and junior and male/female Doctors



The most commonly cited reasons for non-vaccination found in our study were forgetting dosage schedule(43.9%), and never thought of due to busy work pattern and hectic life style (56.1%). Gaudour *et al.*, (2011) had documented none specified cause as the reason for non vaccination.

In this study the complete vaccination status among the various speciality doctors were OG consultants (100%), super-specialists (90%) anaesthetists (90%), Paediatricians

(85%), surgeons (80%), Orthopaedicians (80%) and Physicians (80%) more likely to have received completed vaccination (Figure. 2).

In our study Needle stick injury was reported in 44.8 % of the doctors. . About 88% of doctors were aware of post exposure prophylaxis of needle stick injuries the reporting of needle stick injuries were fairly adequate. Rakesh *et al.*, 2010 in their study had documented that 36% health care

workers who had a history of needle stick injuries, about 92% never reported the incident to a doctor to get post-exposure treatment because they were not aware of the importance of post-exposure prophylaxis. Needle stick injuries pose a greater risk than splashes and those from hollow-bore needles.

In this study very few (13%) were knowing their post vaccination antibody titre of anti HBs after completing vaccination. TV Rao *et al.*, had shown in their study that 10.5% of the successfully vaccinated health care workers who were low or non-responders (<10mIU/ml). The Tamilnadu Government had conducted needle stick injury prevention awareness programs through Tamilnadu health systems project in all government medical college hospitals. Many of doctors had acquired good knowledge on management of needle stick injury, its prevention and post exposure prophylaxis.

Only young doctors who has less than 10 years of government service have completed their vaccination about 85% and Only 70% Of senior doctors had completed the course of Hepatitis B vaccination but Many of senior doctors were only partially vaccinated due to busy work pattern. But Rabia arshed usmani *et al.*, (2010) shown in their study at 2010 as 83% of senior doctors completely vaccinated and 70% junior doctors less than 5 to 10 years service had vaccinated completely. It is seen that most of the young doctors have been vaccinated against HBV and the reason cited by them was as per government norms they had to get vaccinated during their under graduate and post graduate admissions. Many of the senior doctors have not completed their vaccination because no completion and no such awareness before 15 years. Some of the senior doctors got complete vaccination only

after their first episode of needle stick injury.

In conclusion, the most commonly cited reasons for non-vaccination and in complete vaccination found in our study were forgetting dosage schedule (43.9%), and never thought of due to busy work pattern and hectic life style of doctors. The study shows that though large numbers of doctors were completely vaccinated against Hepatitis B only few doctors were aware of post vaccination antibody testing for anti-HBs levels. There is a need to ensure that every doctor is completely vaccinated against Hepatitis B before he/she enters professional practice and the importance of post vaccination antibody testing to identify non responders known only to few doctors (13%). It is essential to identify low or non responders (anti Hbs <10mIU/ml) since they are not protected and post exposure prophylaxis should be initiated promptly after needle stick injuries and other exposures. Our study shows the need for a more aggressive approach to doctors for 100% complete vaccination for their own benefit. 100% awareness can be created by repeated orientation program and conducting free vaccination programs.

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