

## Original Research Article

# Immunization status of students of Nishtar medical university against hepatitis B

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### ABSTRACT

**Background:** Hepatitis B virus (HBV) infection causes significant morbidity and mortality worldwide. Occupational exposure of health care workers and medical students increase their risk of acquiring HBV infection, and many authorities recommend vaccination. However, significant proportions of health care workers do not receive HBV immunization, and remain at increased risk to HBV infection. The present study was conducted on medical students to evaluate their knowledge regarding HBV and to know their vaccination status.

**Methods:** This cross sectional, randomized, observational study was done at Nishtar medical university, Multan from November 2017 to July 2018. A pre-structured and tested questionnaire was given to 150 medical students from first year to final year. Out of these students 75 were males and 75 were females. The students were also interviewed about age, gender, year of study, screening before vaccination, history of vaccination, completion of all 3 doses and reasons for not getting vaccinated.

**Results:** Out of 150 participants, 117 (78%) were vaccinated against HBV. In the vaccinated group, 90 (77%) completed all the three doses of their vaccination schedule and remaining 27 (23%) students were incompletely vaccinated. Rate of vaccine uptake was higher in females; 63 (84%) than in males: 53 (71%). Reasons of not being vaccinated were lack of knowledge about consequences (15.5%), casual behaviour (36%), not knowing from where to get vaccine (12%), fear of injection (10%), busy in studies (10%) and financial problems (8%). Prior screening was done in 74 (63%) students before the vaccination.

**Conclusions:** Despite the availability and accessibility of a cost-effective hepatitis B vaccine since mid80's, the vaccination coverage among medical students is low. Health education needs to be improved in all medical students. The orientation and awareness programmes should be held to create awareness regarding HBV infection.

**Keywords:** Cost effective, Hepatitis B, Medical students, Vaccination, Vaccine

### INTRODUCTION

Two major forms of hepatitis, B and C, are among the most serious and prevalent diseases. These two viral infectious diseases are among the major health problems, especially in developing countries.<sup>1</sup> Hepatitis B virus (HBV) infection is seen in all ages and all around the world with high morbidity and mortality. According to

global statistics over two billion cases are infected with hepatitis B of whom 350 million are chronic carriers.<sup>2</sup> Transmission of hepatitis B virus results from exposure to infectious blood or body fluids containing blood. It is 50 to 100 times more infectious than HIV. Possible forms of transmission include sexual contact, blood transfusions and transfusion with other human blood products, re-use of contaminated needles and syringes, and vertical

transmission from mother to child (MTCT) during childbirth.<sup>3</sup>

Every year more than one million of the affected individuals die because of complication such as cirrhosis and liver cancer which happens despite the availability of an effective vaccine with minimal/transient side effects.<sup>4</sup> Pakistan Medical Research Council in its seroprevalence survey has shown national HBsAg prevalence as 2.5%. The gender wise distribution in Punjab province is 3.4% in males and 1.7% in females.

The health care workers and medical students are at risk of infection with hepatitis B through occupational exposure to blood and infectious body fluids.<sup>5</sup> There are 35 million HCWs worldwide, and percutaneous injuries have been estimated to result in approximately 66,000 hepatitis B viral infections per year.<sup>6</sup> Data from the United States in the 1990s showed that unvaccinated HCWs had serologic evidence of past or current HBV infection three to five times greater than the general population.<sup>7</sup> A survey of the medical students showed that 30% of reported needle stick injuries occurred in the operation room.<sup>7</sup> Therefore it is important for medical students to be actively protected against HBV through vaccination.

Prevention is the only safe strategy against high prevalence of viral hepatitis. Having enough knowledge and proper attitudes toward this infection is cornerstones of preventing transmission. Medical students have a very important role in preventing the disease by improving the disease knowledge among themselves and the patients they treat. Safe and effective HBV vaccines have been available since 1982.<sup>8</sup> The introduction of hepatitis B vaccine has increased the annual budget for immunization services by approximately 56%. It is predicted that more than 4000 future deaths shall be averted annually by this intervention.<sup>9</sup> It is found that the monovalent hepatitis B vaccine is considerably more cost-effective than the hepatitis B vaccine in combination with DPT. The currently available hepatitis B vaccine is extremely safe. A study from Lahore reported that 49% health care workers and 42% medical students were vaccinated against hepatitis B. Internationally the vaccination coverage among medical students was 11% in South Florida and 29% in Yemen.<sup>10</sup>

This study was planned in a public sector medical college in South Punjab to assess the status of vaccination in this group and determine the reasons of non-vaccination with the aim of improving the health status of the community.

**METHODS**

A descriptive, cross-sectional study was carried out from November 2017 to July 2018 at Nishtar Medical University, Multan. Ethical issues were addressed according to institutional review board. The class representatives were intimated beforehand about the time

and place of conducting the session so that all those willing to participate could be assembled in the lecture theatre. All the participants were informed about the targets of the research, the methods of the study, and how to fill the questionnaire. All procedures were performed only with the consent of the participants, and all information was used solely for this research. Those who did not give their consent to participate were excluded.

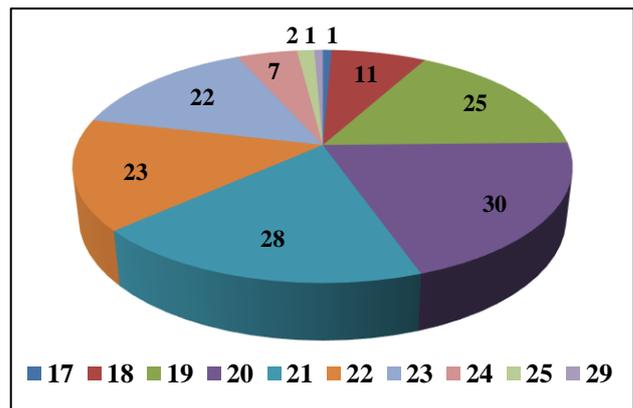
A pre-structured and tested questionnaire was given to 150 medical students from first year to final year. Year wise breakup of students was 1<sup>st</sup> year n=30, 2<sup>nd</sup> year n=30, 3<sup>rd</sup> year n=30, 4<sup>th</sup> year n=30 and 5<sup>th</sup> year n=30. Out of these students 75 were males and 75 were females. The information gathered was age, gender, year of study, screening before vaccination, history of vaccination, completion of all 3 doses and reasons for not getting vaccinated. Complete vaccination was defined as all three doses of vaccine and incompletely vaccination was less than 3 doses of vaccine. The questions also include the history of Hepatitis B infection among the medical students.

**Statistical analysis**

All these students were interviewed using pretested questionnaire and data was coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 20.0 (SPSS, Chicago, IL, USA).

**RESULTS**

Out of 175 medical students, 150 (M=75, F=75) completed the questionnaire giving a response rate of 85%. Age of the participants ranged from 17-29 years (Figure 1).



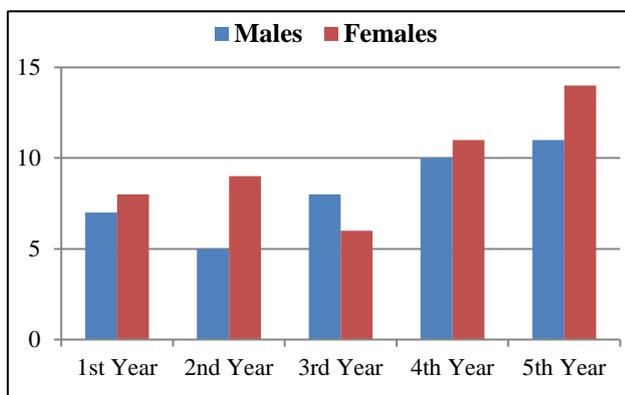
**Figure 1: Frequency distribution of ages of students who took part in study.**

Out of 150 participants, 117 (78%) were vaccinated against HBV (Figure 2). In the vaccinated group, 90 (77%) completed all the three doses of their vaccination schedule and remaining 27 (23%) students were incompletely vaccinated. Rate of vaccine uptake was

higher in females; 63 (84%) than in males: 53 (71%). The proportion of complete vaccination decreased from 50% in the first year to 46% in second year and remained the same in third year and increased in fourth year (73%) and again went up in final year (83%) (Table 1).

**Table 1: Frequency distribution of status of vaccination of students of all years.**

Year of study	Completely vaccinated	Incomplete vaccination	Not vaccinated	Don't remember
1 <sup>st</sup>	15	05	06	04
2 <sup>nd</sup>	14	06	09	01
3 <sup>rd</sup>	14	09	05	02
4 <sup>th</sup>	22	03	03	02
5 <sup>th</sup>	25	04	01	00



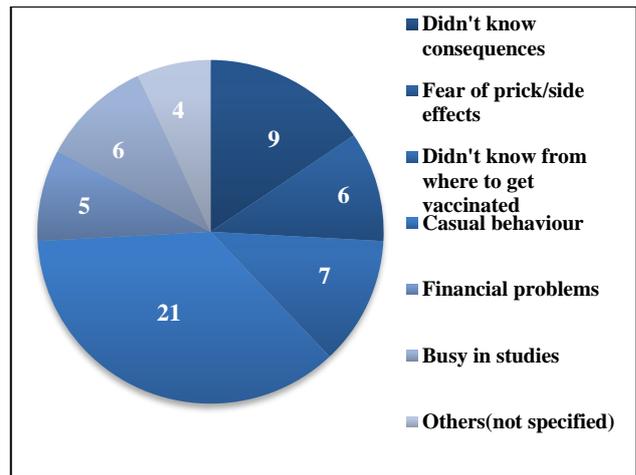
**Figure 2: Complete vaccination percentages of male v/s females.**

Reasons of not being vaccinated were lack of knowledge about consequences (15.5%), casual behaviour (36%), not knowing from where to get vaccine (12%), fear of injection (10%), busy in studies (10%) and financial problems (8%) (Figure 3). Prior screening was done in 74 (63%) students before the vaccination.

Following is the frequency distribution showing the year of vaccination for those who were vaccinated after admission: first year; 38 (66%), second year; 08 (14%), third year; 04(07%), fourth year; 03 (05%), final year; 05 (08%) (Table 2).

**Table 2: Frequency distribution showing the year of vaccination for those who were vaccinated after admission.**

Year	Frequency	Percentage (%)
First	38	66
Second	08	14
Third	04	07
Fourth	03	05
Fifth	05	08



**Figure 3: Frequency distribution showing the cause of being non-vaccinated.**

**DISCUSSION**

Only 60% medical students were fully vaccinated against hepatitis B, though these health care producers have a higher chance of acquiring this and other infections in their professional life.<sup>11</sup> The need for HBV vaccination in this group should be a priority. The 60% vaccination in our subjects is similar to a study done in North Sydney 64% but higher than the study done in Lahore (42.2%), South London (33%), Sweden (40%), Egypt (16%), and Yemen (29.5%).<sup>12</sup> The fact indicates that discrete qualitative variables affect the uptake of vaccine more than its availability.

The increase in the uptake of vaccine with the advancing age and professional years in MBBS indicate increasing awareness about the disease.<sup>13</sup> Similar result were found in the nursing students of tertiary care hospital of Peshawar. Higher vaccination coverage in girls was seen in the present study and same was reported from Lahore.

Despite the availability of HBV vaccine for more than two decades over 90% coverage has not been achieved in this group.<sup>14</sup> The most frequent reason for not getting vaccinated in the present study were lack of knowledge of consequences (29.2%), casual behavior (24.8%), don't know where to obtain the vaccine (21.7%), fear of injection (10.5%).

These are serious issues and need to be improved by educating them. Reasons of not vaccination were lack of knowledge about consequences (15.5%), casual behavior (36%), don't know where to obtain the vaccine (12%), fear of injection (10%), busy in studies (10%) and financial problems (8%). These are also baseless reasons and need to be improved by education. Casual behaviour was cited as the main reason for not getting vaccinated. 49% students were vaccinated before admission to university and 31% students get vaccinated after admission to university. 47% students got their

vaccination without screening and 77% students didn't checked their anti-HBs titers.55% students have their siblings vaccinated and 52% students have their roommates vaccinated. Fortunately, 100% students were free of hepatitis B.

## CONCLUSION

Despite the availability and accessibility of a cost-effective hepatitis B vaccine since mid80's, the vaccination coverage among medical students is low. Health education needs to be improved in all medical students. The orientation and awareness programmes should be held to create awareness regarding HBV infection. Lastly, we recommend further studies with larger sample size, diverse source population, variety of means of measuring knowledge and awareness, and different study design, to overcome majority of the limitations of this study.

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