

Original Article

## Hepatitis B Virus Vaccination Status among the Students of Dhaka National Medical College

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### Abstract

**Objective:** To determine the Hepatitis B vaccination status among Medical students at Dhaka National Medical College. As well as to identify the reasons for non vaccination.

**Materials and Methods:** It was a cross sectional survey conducted from 1st of September to 31st of October 2016 among 705 medical students from 1st to 5th year at Dhaka National Medical College using a pretested, self-administered, structured questionnaire with prior informed consent. Through the questionnaire the status of hepatitis B vaccination, and the reasons for vaccination as well as causes for not getting vaccination were assessed among the students.

**Result:** The response rate of this survey was 96% where 82% were local students and 18% were foreign students. 399 (72%) local students and 102 (84%) foreign students were vaccinated. 93% local students and 100% of the foreign student completed their full dose of vaccine. The major reason for receiving vaccination among the local students was their parental effort (72%) and laziness (78%) was found as the main reason for non-vaccination. Foreign students who were vaccinated, the primary reason behind it was their parental effort (88%) and the main reason for non-vaccination was laziness (55%) which is similar as among the local students.

**Conclusion:** Vaccination rate among medical students is not satisfactory. There is a definite lack of awareness regarding benefit of hepatitis B vaccination among them. Increasing awareness, increase in availability of hepatitis B vaccination centers, reduce the cost of hepatitis B vaccine and introduce the regulation of mandatory hepatitis B vaccination during medical admission may improve this situation.

**Keywords:** Hepatitis B, Vaccination, Medical Students, Chronic Liver diseases.

### Introduction:

Hepatitis B Virus (HBV) infection is considered as one of the concerning global public health problem now a days. An estimated two billion people have been suffering from acute Hepatitis B infection worldwide whereas almost 350 million have been living with chronic Hepatitis B infection.<sup>1</sup> Among the people with chronic Hepatitis B infection, at least one million lives end with death from diverse HBV-related chronic liver disease, including cirrhosis and liver cancer.<sup>1,2</sup> However, the significance and magnitude of the problem vary from country to country. Similarly, in Bangladesh HVB is one of the leading cause of both acute and chronic liver diseases (CLD) which cause approximately 30% cases of acute hepatitis,<sup>3</sup> 75% cases of chronic hepatitis,<sup>4</sup> 60% cases of liver cirrhosis<sup>5</sup> and 65% cases of hepatocellular carcinoma (HCC).<sup>6</sup>

Millions of healthcare professionals are working in health care settings throughout the world who are extremely vulnerable for exposure to occupational injury through cut and puncture injuries with an estimated

number of 6,00,000 to 8,00,000 per year with an annual proportion 5.9% for HBV, corresponding to about 66,000 HBV infections in healthcare workers worldwide.<sup>7</sup>

Biomedical explanation proved that HBV infection is even more dangerous to HIV infection in terms of occupational exposure as its transmission rate after percutaneous exposure to blood is much higher (about 50%) than that of HIV.<sup>8</sup> Medical students are more susceptible to be infected with HBV infection while handling clinical cases and different procedure. In this perspective, we conducted a survey in National Medical College to observe the pattern of vaccination against hepatitis B virus, as well as cause of non-vaccination, amongst the students from first to fifth year.

### Materials and Methods:

It was a cross sectional survey conducted from 1st of September to 31st of October 2016 among 705 medical students from 1st to 5th year at Dhaka National Medical College. A pretested, self-administered, structured questionnaire was used collect data from the survey

participant. To comply with ethical issues prior informed consent was taken from each participant. The study objective and methodology were properly explained to each participant. All the available students from 1st to 5th year at Dhaka National Medical College who were available during the survey period were selected as participants of the survey (Take all sampling).<sup>9</sup> Through the questionnaire the status of hepatitis B vaccination, and the reasons for vaccination as well as for not getting vaccination were assessed among the students.

#### Result:

A total of 705 students were approached to participate in the survey; among them 676 students responded. The response rate was 96%. Among 676 students who were participated in the survey, 554 (82%) were local students and 122 (18%) were foreign students (from Kashmir and other parts of India, and also from Nepal). 399 (72%) local students and 102 (84%) foreign students were vaccinated. Among the vaccinated local students, 93% completed their full dose of vaccine where as 100% of the foreign student completed their full dose of vaccine. In case of local students, the primary reason for receiving vaccination was their parental effort (72%). Among the remaining reasons, 25 students were vaccinated from their self-awareness, 14 students because of motivation by the information from senior or mentor while only 2 students because of peers. 155 (28%) local students were not vaccinated and the main reason for non-vaccination was laziness (78%) followed by lack of awareness (11%), lack of information (10%) and lack of knowledge about where to get vaccine (<1%). Foreign students who were vaccinated, the primary reason behind it was their parental effort (88%) whereas 5 students were vaccinated during their process of migration, 2 students because of motivation by information from senior or mentor and only 2 students because of rule of the institution. 20 (16%) foreign students were not vaccinated. The main reason for non-vaccination was laziness (55%) followed by lack of information (25%) and lack of awareness (20%).

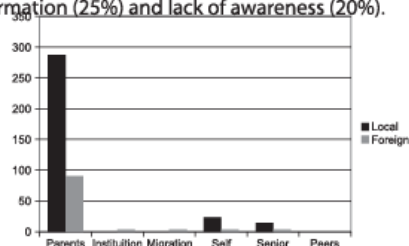


Fig1: Reasons for vaccination

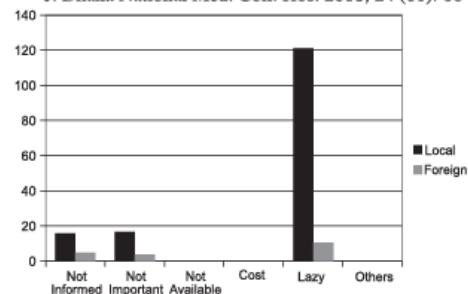


Fig2: Reasons for non vaccination

Batch	Local Vaccinated	%	Local Non Vaccinated	%	Foreign Vaccinated	%	Foreign Non Vaccinated	%
N14	40	53%	33	44%	20	80%	5	20%
N15	42	51%	32	39%	22	79%	6	27%
N16	55	66%	23	28%	25	93%	2	8%
N17	55	61%	25	28%	19	79%	5	26%
N18	92	81%	22	19%	6	100%	0	0%
N19	87	79%	20	18%	10	83%	2	20%
Total	371	67%	155	28%	102	84%	20	20%

Table1: Breakdown of vaccination versus non vaccination within local and foreign students across different batch.

Batch	Local Completed	%	Local Not Completed	%	Foreign Completed	%	Foreign Not Completed	%
N14	40	95%	2	5%	20	100%	0	0%
N15	42	84%	8	16%	22	100%	0	0%
N16	55	92%	5	8%	25	100%	0	0%
N17	55	85%	10	15%	19	100%	0	0%
N18	92	100%	0	0%	6	100%	0	0%
N19	87	97%	3	3%	10	100%	0	0%
Total	371	93%	28	7%	102	100%	0	0%

Table2: Breakdown of students who completed versus not completed the full course of vaccination within local and foreign students across different batch.

#### Discussion:

This cross-sectional survey was conducted among the 1st year to 5th year medical students at Dhaka National Medical College, to assess their immunization status against HBV and the factors behind vaccination as well as for not getting vaccination.

Bangladesh is a country with intermediate prevalence of Hepatitis B virus infection where the estimated prevalence among the general population is 5.4%.<sup>10</sup> Occupational exposure is considered as one of the potential risk factors behind the transmission of HBV and medical students are at high risk due to high chance of occupational exposure.<sup>11</sup> Medical students may

be at a higher risk of acquiring hepatitis B infection in the hospital settings as they are less experienced and cautious about maintaining universal precaution than other health worker of similar settings. So, they are always in a highly vulnerable position to needle stick injuries and to get HBV infection. Moreover, the consequences of HBV infection widely vary from asymptomatic acute hepatitis to life threatening hepatocellular carcinoma (HCC). Since 2003, mass hepatitis B vaccination was introduced in the expanded immunization programme (EPI) schedule in Bangladesh with >97% coverage which reduce the prevalence of HBV infection from 8% (1984) to 5.4% (2007) in Bangladesh.<sup>10</sup>

In this present survey, a total of 705 students were approached to participate in the survey; among them 676 students responded. The response rate was 96% which was comparable to study conducted in Mirpurkhas, Pakistan, where response rate was 95%.<sup>12</sup> The response rate of this survey was found to be higher than similar studies conducted at Islamabad Medical & Dental College where the response rate was 85%,<sup>13</sup> at Brazil (78.7%)<sup>14</sup> and almost 67% response rate was found in a study at Nepal<sup>15</sup> which is a bit lower than our study.

In our survey 72% local students and 84% foreign students were vaccinated with an average vaccination rate of 74% among the 1st year to 5th year students at Dhaka National Medical College. Among the vaccinated local students, 93% completed their full dose of vaccine where as 100% of the foreign students completed their full dose of vaccine. Still 26% students remained unvaccinated which is an area of great concern due to their high risk of getting infection from occupational exposure. 63% of MBBS students were found to be vaccinated against hepatitis B in a study conducted by Anjali Singh & Shikha Jain<sup>16</sup> and 22% among MBBS students at Syrian Private University.<sup>17</sup> Similarly, a study revealed that 42% of the MBBS students at Mumbai completed hepatitis B vaccination<sup>18</sup> and 66% hepatitis B vaccination rate was found among the medical students at Lahore Medical & Dental college, Pakistan.<sup>19</sup> A very high rate of hepatitis B vaccination rate (80%) was found among the medical students in a study conducted at Orissa by Singh et al<sup>20</sup> as well as among the medical students (85.3%) at B.P. Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal<sup>21</sup> which are closure to the vaccination rate of our survey result.

Parental effort was found to be the most dominant factor in our survey that influence completion of Hepatitis B vaccination among both the local (72%) and

foreign (88%) medical students which indicates that their parents are highly aware of hepatitis B vaccination. Among the remaining reasons self-awareness, motivation by the information from senior or mentor, peer influence, migration process and rules of institution were the important determinants. In one study conducted among Medical Students at the University of Port Harcourt Teaching Hospital found that effort of the institution to promote hepatitis vaccination and promotion of hepatitis B vaccination during orientation or on inception of their clinical posting promotes the high vaccination rate among them.<sup>22</sup> So, it is clear that the reasons behind receiving and completing hepatitis B vaccination differs between different countries and depends on the local context.

In our survey, laziness was found as the main contributory factor (78%) for non-vaccination in both local (78%) and foreign (55%) students followed by lack of awareness (11% for local students and 20% for foreign students), lack of information (10% for local students and 25% for foreign students) and lack of knowledge about where to get vaccine (<1%). Almost similar finding was documented in another study in Islamabad, Pakistan where laziness (53%) was found to be the most common reason for not receiving vaccination. Lack of awareness (23%) and no knowledge about where to get vaccination (15%) were also found as factors behind non-vaccination.<sup>23</sup> The reasons of non-vaccination in a study conducted in Cameroon are consistent with the reasons of our survey.<sup>24</sup> In one study in Pakistan, high cost of vaccination (44.7%) and false belief among students that they were not even at risk (33.7%) were found as the major reasons<sup>25</sup> whereas lack of motivation among peers (29.2%) and lack of feeling that they need it (24.8%) were found in another study.<sup>26</sup> In one study conducted among Undergraduate Medical Students of Two Medical Colleges in Bangladesh revealed that "didn't think about it seriously" (41.8%), "lack of awareness" (24.1%), "not sure about vaccination status" (20.8%) and "no need felt" (13.3%) were the major reasons behind hepatitis B non-vaccination among the medical students.<sup>27</sup>

## Conclusion

From our survey report, it is obvious that vaccination rate among the local and foreign medical students though high but cannot attain a satisfactory level yet despite of availability of hepatitis B vaccine. As the main cause of non-vaccination was found as laziness among both the local and foreign medical students so it can



easily be assumed that the awareness regarding benefit of hepatitis B vaccination among them is still considerably low. Hence, increasing awareness will be expected to increase higher vaccination rate among these highly vulnerable group to occupational exposure and can prevent Hep-B virus related diseases and their deadly consequences. Moreover, further increase in availability of hepatitis B vaccination centers, reduce the cost of hepatitis B vaccine and introduce the regulation of mandatory hepatitis B vaccination during medical admission may improve this situation.

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