

A Cross Sectional Study on Knowledge about HBV Vaccination among the Medical Students of a Tertiary Medical College and Organizations Involved In Vaccination and Awareness

Md Rezwanul Haque Chowdhury*

Department of Statistics, University of Rajshahi, Rajshahi, Bangladesh

Abstract

Objectives: The study was done to know about the knowledge about Hepatitis B infection and develop awareness among the students to receive vaccine.

Methods: A cross sectional study was conducted among the medical students of northern Bangladesh in January, 2020 using a pretested self administrated structured questionnaire. Chi-square (X^2) test was used to compare between different variables to identify significance level.

Results: Total 253 medical students from a tertiary thousands bed medical college under MBBS and BDS curriculum, among them 50.99% was male and 40.01% was female and 47.82% was from town and 52.17% was from village. From all participants 57.31% was vaccinated with full dose completed, 26.29% did not complete dose (Booster dose) and 13.44% never received vaccine, from the unvaccinated persons 16.33% did not know about the organizations from where vaccine is received and who knew about the organization form where vaccine can take, more than 90% mentioned the name of shandhani (A free blood donating and vaccination organizations). Along with HBV vaccination 53.78% could mention that they also completed EPI schedule, 20.32% could not remember and 23.9% did not complete EPI. Before taking vaccine 64.94% was go through screening procedure and 15.54% did not know about screening.

Conclusion: From our study we can say that we need more awareness for taking vaccine and government should include HBV in EPI schedule. And also need to organize awareness program or campaign among the community people and students of all sectors to increase knowledge.

Keywords: Hepatitis; Vaccination; Vaccine; Medical students; Booster dose

Introduction

Viral hepatitis is a significant disease afflicting hundreds of millions of people. Hepatitis-causing viruses initiate significant morbidity and mortality by establishing both acute and chronic infections, and several of these viruses are specifically associated with the development of Hepatocellular Carcinoma (HCC).

Consequently, intense research efforts are focused on increasing our understanding of virus biology and on improving antiviral therapy [1]. Even though viral hepatitis can be caused by several viruses from a range of virus families, the discovery of components of the Hepatitis B Virus (HBV) became a catalyst for the development of diagnostic assays that differentiate between these viruses as well as strategies for novel methods of vaccine development [2]. Improvements in both the treatment and prevention of viral hepatitis are advancing rapidly. However, HBV, along with the associated infection by the hepatitis D virus, is still among the most common pathogens afflicting humans [3]. Hepatitis B is one of the most common infectious diseases in the world. It has been estimated that 350 million people worldwide are chronic Hepatitis B Virus (HBV) carriers. The global prevalence of chronic HBV infection varies widely, from high (>8%, e.g., Africa, Asia and the Western Pacific) to intermediate (2%-7% e.g., Southern and Eastern Europe) and low (<2%, e.g., Western Europe, North America and Australia) [4]. The predominant routes of transmission vary according to the endemicity of the HBV infection. In areas of high endemicity, perinatal transmission is the main route of transmission, whereas in areas of low endemicity, sexual contact

amongst high risk adults is predominant. Between one third and one quarter of people infected chronically with HBV are expected to develop progressive liver disease (including cirrhosis and primary liver cancer) [5]. Although mass vaccination programs have begun to control the spread of HBV infection, therapeutic intervention is the only option for those with established chronic HBV-associated liver disease. Until recently, the only treatment for chronic hepatitis b was the immune modulator, Interferon (IFN) alpha [6]. However, IFN alpha treatment has several disadvantages; it is expensive, it must be administered by

***Corresponding author:** Md Rezwanul Haque Chowdhury, Department of Statistics, University of Rajshahi, Rajshahi, Bangladesh, Tel: 1701037470; E-mail: rezwan1996mehedi@gmail.com

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injection, there are side-effects, and IFN alpha is poorly tolerated. Lamivudine, a nucleoside analogue, is the first effective, and well tolerated, oral treatment for chronic hepatitis b in conclusion, although we are still some way from eradicating or curing chronic hepatitis b, the advent of lamivudine allows new populations to benefit from therapy and helps to address the global public health problem of hepatitis b Bangladesh, together with the Indian sub-continent, is recognized as a country with moderate prevalence of hepatitis [7].

Beyond this rather surface-level characterization, there remains considerable ambiguity regarding the epidemiology of Hepatitis B Virus (HBV) infection in the country. Lack of reliable epidemiological information has been cited as one of the key challenges to effective hepatitis B response in Bangladesh and yet, a substantial number of studies on HBV prevalence in Bangladesh has indeed been conducted since the early 1980's in this context, there is a need for a comprehensive analysis of the findings of these studies which would guide both future research and policy [8]. The present review aims to address this gap. In order to characterize the review with a sharp focus, we sought to confine ourselves to a few key questions regarding HBV prevalence in Bangladesh first, has enough epidemiological data been generated to draw precise, quantitative estimates about the prevalence of HBV in Bangladesh? Second, what do the studies targeting particular [9]. Population groups tell us about the specific modalities of HBV transmission-for example, the extent to which vertical transmission is important in the spread of HBV, or vulnerabilities of particular risk groups? third, what do we know about the distribution of HBV genotypes in Bangladesh? answers to these questions are often nebulous and require substantial qualification, which necessitates a commentary on the general trends characterizing HBV epidemiology research in Bangladesh in the last decades [10]. Based on these trends, we also provide suggestions as to the direction of future HBV research in Bangladesh the present article does not aim to be a systematic review. However, the analysis presented here is hoped to be comprehensive enough to serve as an update to current HBV epidemiology in Bangladesh. The present article does not aim to be a systematic review. However, the analysis presented here is hoped to be comprehensive enough to serve as an update to current HBV epidemiology in Bangladesh [11].

Materials and Methods

Study design and setting area of study

A cross-sectional study was conducted among 253 students of Rangpur Medical College of five current batches. All current batches participated during data collection. A self-administrated pretested questionnaire was provided [12].

Sampling techniques and sample size

A single population proportion formula was used to estimate sample size. By considering 95% confidence level with Z value of 1.96 with a 5% margin error the sample size is measured. By calculation the ideal sample size was 384 and due to vacation of few current batches we could manage 253 participants [13].

Data collection variables and measurements

Data was collected by pre-tested self-administrated questionnaire. The validity and reliability of the questionnaire was tested through a cross-sectional study and discussed with public health and internal medicine experts. Then 20 students from 4th and 5th year students were randomly selected to explore if there was any ambiguity or presence of any misunderstanding in the questionnaire to reach the final form of it. There are few variables and they are age, gender, study year, residence [14]. Age group was divided into three categories and they are a age group of 18-20 years of age, 21-23 years of age and above 23 years of age group. Study year was considered as all current batches like first-fifth year and covered age groups. Male and female two groups of gender and residence was mainly considered as their academic and non-academic residence like two groups who recently stay at home with family is non-academic residence and who stay in campus residence is considered as academic residence thus we can compare the knowledge level who knew about hepatitis after coming medical college and received vaccine [15].

Investigations of knowledge level

Identification of knowledge about hepatitis and hepatitis b virus infection was determined by their answer on some questions we frequently asked them about Hepatitis-b infection. The questions included about hepatitis b mode of transmission, mode of contamination, screening procedure, total dose and duration [16]. Total ten questions were included in the questionnaire. All the questions were true or false based and whom answered correctly got 1marks and for incorrect answer no point was given. According to their answer we determined their knowledge as who correctly answered 7-10/10 is considered as good knowledge, correctly answered 5-6/10 considered as moderate knowledge and below 5 correctly answered from total 10 are considered as poor in knowledge about hepatitis. In result section level of knowledge is presented by a pie chart which is shown on (Table 1) [17].

Variables	N	%	P
Male	129	50.99	-
Female	124	40.01	
Present residence			
Hostel (institutional)	217	86	0.083
With family	36	14	
Others	0	0	

Permanent residence			
Town	121	48.82	0.021
Outside the town	132	52.17	
Outside the country	0	0	
Age group			
18-20	93	36.75	0.582
21-23	102	40.71	
>23	58	22.29	
Study year			
First professional	141	55.57	0.001
Second professional	13	0.05	
Third professional	11	0.04	
Final professional	71	28.06	
Internship	17	0.06	
Family income (monthly)			
<20,000	21	8.3	0.092
20,000-40,000	152	60.07	
>40,000	80	31.62	

Table 1: Different variables of the health science students.

Doses of vaccine received and reason of not received

In case of Hepatitis B virus vaccine have total four doses, One is initial dose after screening and then second, third dose should take

after one and two month interval of initial dose. Last dose or fourth dose should take one year after initial dose which called Booster dose [18]. Who already received and receiving vaccine we collected the information which was included as a chart of doses of vaccine and calculated the total number of doses they received (Table 2).

	Response	Vaccinated (n, %)	Partially (n, %)	P value
The easiest way to get hepatitis B through sharing equipment to inject drugs.	Correct	71,48.96	58,53.7 50,46.2	0.9
	Incorrect	74,51.03	9	
The majority of people with chronic hepatitis B do not have any symptoms.	Correct	95,65.51	84,77.7	0.011
	Incorrect	50,34.48	24,22.2 92,85.1	
There is medication to treat hepatitis B	Correct	125,86.21	16,14.8 78,72.2	0.832
	Incorrect	20,13.79		
Hepatitis B can be transmitted by air.	Correct	134,92.41	30,27.7	0.087
	Incorrect	11,7.58		
Everybody with a positive hepatitis B antibody test has chronic hepatitis B disease (infection).	Correct	84,57.93	77,71.29 31,28.7 68,62	0.872
	Incorrect	61,42.06		
There is a vaccine for hepatitis B	Correct	93,64.37	40,37.03	0.214
	Incorrect	52,35.86		

People who clear the hepatitis B virus, either spontaneously or after medical treatment can be infected again.	Correct	79,54.48	83,76.8 5 25,23.1 101,93.	0.007
	Incorrect	66,45.51		
Hepatitis B vaccine has total 4 doses.	Correct	115,79.31	7,6.48 99,91.6	0.01
	Incorrect	30,20.68		
Booster dose is initial dose of hepatitis B	Correct	101,69.65	6 9,8.33	0.08
	Incorrect	44,30.34		
Hepatitis B can be transmitted by syringe, blade, during receiving blood, by cutting sharp objects.	Correct	83,57.24	71,65.74 37,34.25	0.03
	Incorrect	62,42.75		

Table 2: Hepatitis B virus vaccine of different values.

Statistical analysis

Statistical analysis was done by both SPSS version 20.0 and Microsoft Excel 2007 version. Microsoft excel version 2013 was used to entry data and SPSS version 20 used to analysis data. Chi square (X^2) test was. Done to compare the responses, if p value shows <0.05 it was considered as significant result of the variable [19].

Ethical and administrative consideration

- A formal approval was taken from research ethics of community medicine department of rangpur medical college.
- A formal ethical clearance was taken from the principle of rangpur medical college.
- A formal ethical clearance was taken from Rangpur Medical College Hospital (RpMCH).

Results and Discussion

Total 253 participant were participated in this study and from them male (n=129; 50.99%) and female (n=124; 50.99%) and significance level, $p=0.1$ According to present residence n=217 (86%) stay in hostel (institutional residence) and 36 (14%) stay with their family, here significance level of $p=0.83$ Age group was divided into three categories, from 18-20 age group here n=93 in number (36.75%) age group of 21-23 here n=102 in (40.32%) age group above 23 years here n=58 (22.29%), in case of significance level among different age group here $p=0.21$ which is <0.05 and shows a significant relation [20]. Total five current academic batches and intern students were participated and maximum number of interest group was from 1st, 2nd and 5th year students, here from 1st and 2nd year students n=141 (55.57%), 3rd year students n=13 (0.05%), 4th year students n=11 (0.04%), 5th year students n=71 (28.06%) and intern doctors n=17 (0.06%) and significance level of $p=0.001$ which shows a significance result, demographic information are presented in Table 1. According to the response of questions on Hepatitis b transmission the knowledge level about Hepatitis-B virus considered as good knowledge, n=204 (81%), moderate knowledge, n=36 (14%) poor knowledge, n=13 (5%), result of knowledge about hepatitis B infection, transmission, vaccination is presented in the Table 2 by a pie chart in Figure 1.

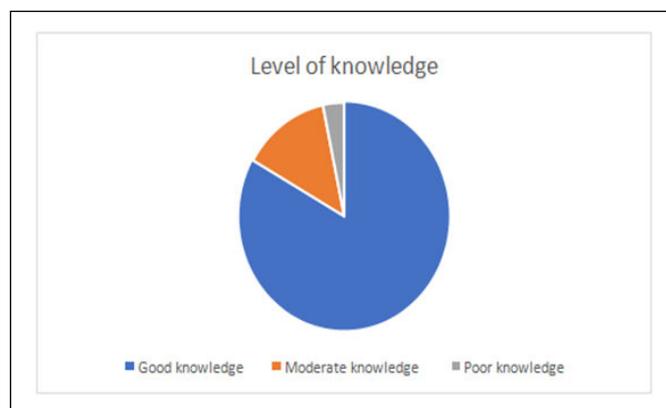


Figure 1: In result section levels of knowledge.

Screening is a most important things to confirm about presence or absence of Hepatitis B in a human body. We frequently asked them about screening who already received vaccine because before taking vaccine screening have to done. People who did screening before receiving vaccine, did screening, n=163 (64.43%) did not go through screening but received vaccine, n=90 (19.76%), it is present in Figure 2.

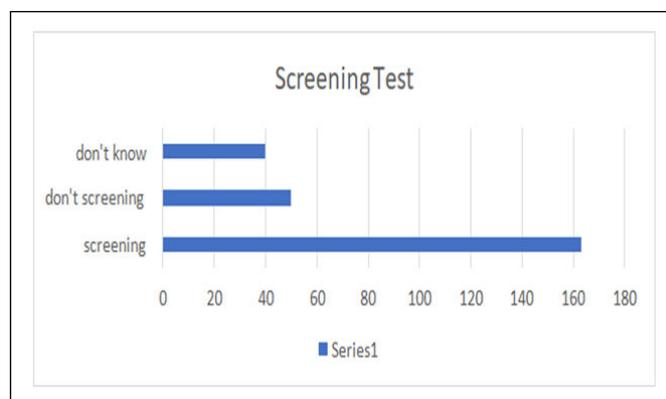


Figure 2: Image showing screen test.

From total participants Vaccinated are n=145 (57.31%) and they have completed all four doses, partially vaccinate or receiving vaccine or yet not completed all four doses are n=66 (26.09%) and people who

do not received any dose, n=34 (13.44%), result of vaccination shown in Figures 3 and 4.

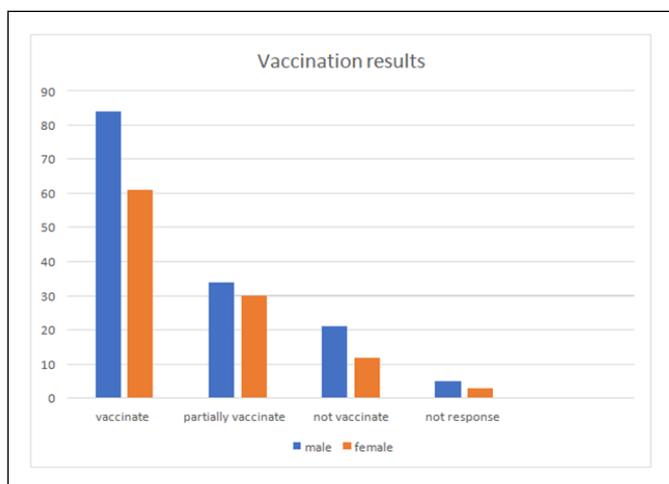


Figure 3: Shows vaccination result.

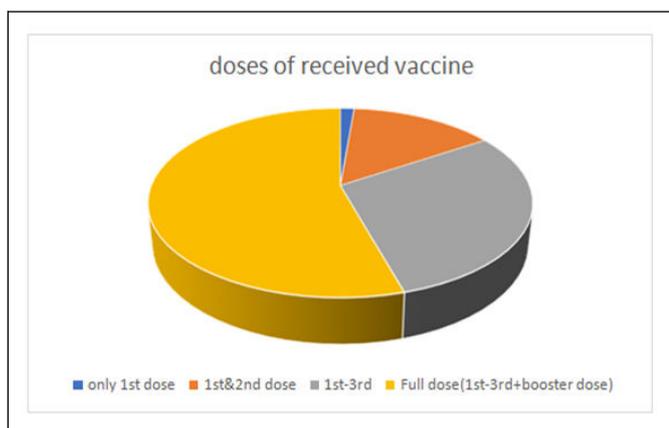


Figure 4: Shows does of received vaccine.

There were many organizations involved in making awareness among the medical students about infectious diseases and encouraging to receive vaccine in time, result of organizations involved in making awareness and vaccination program without profit are presented by histogram and shown on Figure 5.

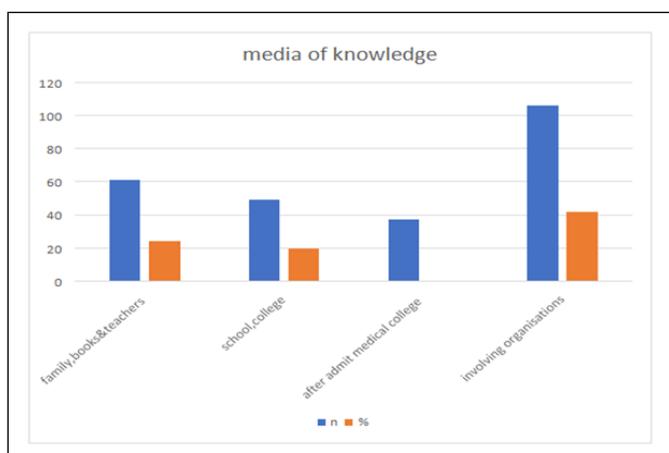


Figure 5: Shows media of knowledge.

We found many names such as shandhani, medicine club, friends foundation, red crescent, rbdc and many more. From them all maximum participants mentioned the name of organization from where received vaccine, it was shandhani and which is a non profit blood donating organization also involved in some vaccination program. media from where they knew about hepatitis-b and vaccination they mentioned from family, school, social media, campaign program, television and many more. Result of media is shown in Figure 6.

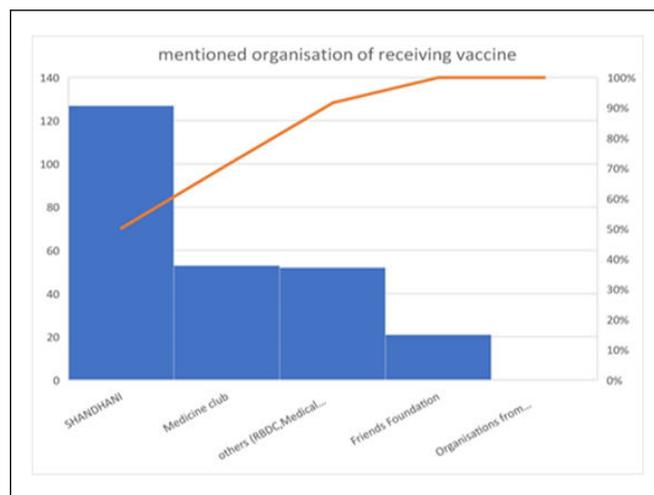


Figure 6: Shows mentioned organisation of receiving vaccine.

Hepatitis B infection, is a global problem and middle and low socioeconomic country of the world are suffering from this in current situation. Vaccination awareness is low in this countries. And now a days, it shows a public health demand to make awareness, build knowledge among the people about hepatitis and also make vaccine available to every people over the world. The study was done to find out the knowledge about hepatitis b and importance of receive vaccine within appropriate age [21]. Although there is no age limit to take vaccine but it is wise to take vaccine as early possible. We did a survey among the medical students of a tertiary medical college of northern bangladesh. The survey was done on the medical students because. Hepatitis is a medical term and it is must that sincere level should be significant in health science students. Vaccination awareness also be expected higher in this sector than we can compare the knowledge level and awareness of receiving vaccination percentage to other faculties in future study [22]. We compared the knowledge level among different variables of the health science students. The aim of this study was to know about the knowledge of the students about Hepatitis b transmission and disease awareness. We found a significant result or response from the students who already have a good knowledge and very few who have moderate or poor knowledge, our aim is to make more scope to make them interested to know about hepatitis b this step to provide a good knowledge we can start from institutions by arranging monthly seminar or by campaign.

Another aim of our study was to aware the students to receive vaccine and complete all doses in time. Here we also found a significant result of receiving vaccine but poor response in completing full doses. We found from investigation that who received all four doses or who are complete vaccinated, n=145 (57.31%) we can say that more than half are well vaccinated or completely vaccinated. Partially or who did not completed all doses (some have one or two or

three doses of complete) n=66 (26.09%) so, we have to make aware that completing doses are very important. If someone don't received all the doses and it goes for many years they have chance for viral attack of hepatitis b so, have to make awareness among the students about importance of final or booster dose. From this study we can make a decision that the institutions should make all the students aware to receive vaccine in mean time and also check the vaccination progress. Knowledge and awareness about screening before receiving vaccine to for confirmation and pre-vaccination treatment was a important part of this study because screening is a very necessary part before receive vaccine because already infected person of hepatitis b can not get cure from the vaccine and he need to pre-vaccination preparation and treatment to be ready for proper vaccination outcome. So, we need to make awareness about pre-vaccination task or screening before decided to receive vaccine [23]. We also tried to know about the vital media form where they knew about hepatitis-b and importance of vaccination and we found different media such as television, radio, newspaper, social media, campaign, form family members and institutions. In case of medical students. Maximum of them have knowledge about hepatitis-b from secondary school level and they received vaccine before coming medical college and that also a great news that they have awareness from very early stage of education life. So, we need to make aware among them about screening. We included in our survey the organizations that doing a great job in making awareness about vaccination program among medical students and others. Because this institutions are playing a vital role in vaccination awareness and encouraging to receive vaccine in time and in available cost. We think we should do more investigation and awareness outside of health science students and make more campaigns on vaccination to prevent people form hepatitis.

Conclusion

The aim of this study was to make awareness for taking Hepatitis-B virus vaccine immediately to the health professionals and the students also. Because we know this virus can enter our body by blood and medical students when go to ward and sometimes they may injured by used needles, blades and can easily infected. So, it's very important to them to take vaccine to prevent themselves from hepatitis. The hepatitis B vaccine is the mainstay of hepatitis B prevention. WHO recommends that all infants receive the hepatitis B vaccine as soon as possible after birth, preferably within 24 hours-followed by two or three doses of hepatitis B vaccine at least four weeks apart to complete the series. Timely birth dose is an effective measure to reduce transmission from mother-to-child. According to latest WHO estimates, the proportion of children under five years of age chronically infected with HBV dropped to just under 1% in 2019 down from around 5% in the pre-vaccine era ranging from the 1980's to the early 2000's. This marks the achievement of one of the milestone targets to eliminate viral hepatitis in the Sustainable Development Goals to reach under 1% prevalence of HBV infections in children under five years of age by 2020.

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