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Hepatitis B Screening Program for patients attending out-patient department (OPD) at Sir Salimullah Medical College Mitford Hospital, Dhaka – An Observational Study

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Key words:
Screening, Hepatitis B virus, Chronic Hepatitis B, Vaccination, Barrier of vaccination.

Abstract:

Background*: Hepatitis B (HBV) is a major cause of chronic hepatitis, cirrhosis of liver and hepatocellular carcinoma in Bangladesh. It is also the most common cause of death from liver disease in the country. The prevalence of hepatitis B is 5-6% in the general population. So the present status of the virus is considered as an important public health concern of Bangladesh.*

Objectives: *To investigate hepatitis B prevalence among the persons attending the OPD and to increase awareness about hepatitis B.*

Materials and methods: *A cross-sectional observational study was carried out the at the Department of Hepatology, Sir Salimullah Medical College Mitford Hospital, Dhaka on March 17&18, 2022 at Special Treatment Campaign on the occasion of celebration of the birth anniversary of the Father of Nation, Bangabandhu Sheikh Mujibur Rahman. A total of 190 people of both sexes from 18 years to 50 years of age group were enrolled in the study. These people were unaware of whether they were carrying hepatitis B virus or also was not aware of whether they are suffering from any kind of liver disease. Informed consent was taken and a pre-designed structured questionnaire was used. Screening was done by HBsAg detection using rapid diagnostic kit.*

Result: *The mean age of respondents was 35.95±6.42 years with a male to female ratio of 0.83. Most of the respondents were married (72.63%) and Muslim (87.37%). Among them 47.36% of the respondents were service holders. Only 17.89% had a previous history of some types of hepatitis. 25.26% of respondents had history of different types of surgical procedure. 8 (4.2%) participants were found positive for HBsAg on the screening test in our study.*

Conclusion: *This study shows 4.2 % of participants were screening positive among the respondents. This correlate with the intermediate prevalence of hepatitis B in Bangladesh as stated in World Health Organization data. Screening program increases knowledge and awareness among the population and thereby increase treatment seeking, which ultimately reduce incidence of disease and complications as well as death.*

Introduction:

Hepatitis B (HBV) infection is a serious global public health problem. It is the leading cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma in the world. Of the 6 billion population of the world about 2 billion people have a history of exposure with HBV. More than 350 million are chronically infected. An estimated 600,000 death per year are due to HBV related diseases[1]. HBV is a highly infectious virus, usually transmitted by

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parenteral infusion/transfusion or sexual contact. Percutaneous transmission is also reported. This probably occurs through close contact within the household, abrasions and cuts, toothbrushes and razors sharing and contaminated needles[2]. Maternal-to-infant transmission is recognized as an important way of spreading HBV. Hepatitis B virus is 50-100 times more infectious than human immunodeficiency virus (HIV) and 10 times more infectious than hepatitis C virus (HCV). Infectious dose of HBV is very low also[3].

The prevalence of hepatitis B surface antigen (HBsAg) - the serologic marker of hepatitis B virus infection varies significantly worldwide. Bangladesh, together with the Indian sub-continent, is recognized as a country with intermediate prevalence of hepatitis B. The prevalence of HBV in our country is 4%[4], higher among female and in married people. People under 25 years of age have a higher prevalence than over 25 years[4]. Another study shows that prevalence of HBV in Bangladesh is 5.5% in the general population [5].

The World Health Organization emphasizes screening of hepatitis B in apparently healthy population as it is a disease of immense public health importance. Persons unaware of CHB may unknowingly transmit the virus to unprotected persons. All guidelines recommend that high risk persons for HBV infection should be screened (like persons from geographic areas with a high prevalence, persons at high risk for acquiring or transmission or reactivation of HBV). The Centers for Disease Control and Prevention (CDC) updated 2008 guidelines which now recommend testing for HBV in all persons born in geographic areas with a HBsAg prevalence of ≥2%, IV drug abuser, men who have sex with men, persons with elevated ALT and AST of unknown etiology, and persons with medical conditions requiring immunosuppressive therapy. The American Association for the Study of Liver Diseases (AASLD) and other professional liver organizations support these recommendations. For identifying susceptible persons for HBV vaccination or patients those are at risk of reactivation or transmission of HBV, screening should include testing for HBsAg, hepatitis B core antibody (anti-HBc) and hepatitis B surface antibody (anti-HBs). A simple, relatively inexpensive, confirmatory, and widely available test should be done to identify Hepatitis B during mass screening. It should be FDA-licensed or FDA-approved serologic assay for HBsAg (having sensitivity and specificity of > 98%) [6].

Table I. CDC recommendations for screening of Hepatitis B[6]

At-Risk Population	Initial Screening Tests
Persons born in regions with HBV prevalence > 2%	HBsAg
U.S. born persons not vaccinated as infants and whose parents were born in regions with HBV prevalence > 8%	HBsAg
Injection drug users	HBsAg, anti-HBc, or anti-HBs
Men who have sex with men	HBsAg, anti-HBc, or anti-HBs
Prior to immunosuppression	HBsAg, anti-HBc, and anti-HBs
Elevated ALT/AST of unknown etiology	HBsAg
Donors of blood, plasma, organs, tissues or semen	HBsAg, anti-HBc, and HBV DNA
Hemodialysis patients	HBsAg, anti-HBc, and anti-HBs
All pregnant women	HBsAg
Infants born to HBsAg positive mothers	HBsAg and anti-HBs after 1–2 months of completion of vaccination series
Household, needle sharing, or sex contacts with persons who are HBsAg positive	HBsAg, anti-HBc, or anti-HBs
Source person in sexual assault or needlestick injury	HBsAg
Persons who are HIV positive	HBsAg, anti-HBc, and/or anti-HBs

WHO sets a vision for "a world where viral hepatitis transmission is halted and every person living with viral hepatitis has access to safe, affordable and effective prevention, care and treatment services". The strategy also includes targets for the elimination of hepatitis B and C as public health threats - a 90% reduction in new infections and a 65% reduction in mortality by 2030 from 2015 levels[7].

Methodology:

A cross-sectional study was done among patients attending the outdoor of the department of Hepatology, SSMCMH on 17 &18 March 2022 in Special Treatment Campaign to mark the birth anniversary celebration of Bangabandhu Sheikh Mujibur Rahman, the Father of Nation. Adult healthy populations of both sex who are not known of harboring hepatitis B virus were included in the study. HBsAg screening was done by ICT method by using Rapid Diagnostic Kit (Healgen, Zhejiang Orient Gene Biotech Co. Ltd, China).

According to the prevalence of HBV, Bangladesh is a country of intermediate zone. Meanwhile through different programs for detection of hepatitis B virus like mass screening, awareness building the case detection and treatment status has improved much in Bangladesh. At present anti-viral agent for HBV treatment is supplied free of cost by the government of Bangladesh. More HBV case detection and prompt treatment is necessary to reach the target of SDG by 2030.

SSMCMH is situated at southern part of Dhaka, the capital of Bangladesh, at the bank of Buriganga river. Population density in the region is very high. This area is also an important commercial area. Everyday a huge number of people travels here from different part of the country. Thus the area represents a mixed population, mostly poor and middle class who are from rural and urban areas. Consent of the study population was taken before their inclusion in the study.

Table 2. *Baseline data of study population.*

Criteria	Variable	Total No.	Number	Percentage
Gender	Male	190	86	45.26
	Female		104	54.74
Religion	Muslim		166	87.37
	Hindu		24	12.63
Marital Status	Married		138	72.63
	Unmarried		52	27.36
Occupation	Service		90	47.36
	Business		16	8.42
	Housewife		36	18.94
	Day labor		06	3.15
	Others		22	11.57
H/O Previous Hepatitis	Yes		34	17.89
	No		156	82.10
H/O Previous Surgery	Yes		48	25.26
	No		142	79.73
H/O Needle prick	Yes		36	18.94
	No		154	81.05
H/O Dental Procedure	Yes		26	13.68
	No		164	86.31
H/O extra marital Sexual exposure	Yes		00	00
	No		190	100
H/O IV drug abuse	Yes		2	1.05
	No		188	98.95

Table 1. *(Cont'd)*

Criteria Variable		Total No.	Number	Percentage
Family history of CHB	Yes		24	12.63
	No		166	87.36
Family history of CLD	Yes		26	13.68
	No		164	86.31
Positive spouse history	Yes		04	2.10
	No		186	97.89
H/O Blood Transfusion	Yes		18	9.47
	No		172	90.52
Screening result	Positive		08	4.2
	Negative		182	95.78
Status of HBsAg positive person	Male		2	
	Female		2	
Age of HBsAg positive person	Male		22 & 26 years	
	Female		25 & 32 years	

Result:

Total 190 people participated in the study which includes 86 (45.26%) male and 104 (54.74%) female (Table I). Their age range was 18 - 53 years with a mean of 35.95±6.42 years. Among them 166 (87.37%) were Muslim and rest 24 (12.63%) were Hindu. Most of the (72.63%) respondents were married. Among the respondent 90 (47.36%) were service holder, 16 (8.42%) persons were businessmen, 36 (18.94%) were housewives, 6 (3.15%) were day labor and rest 22 (11.57%) were from different profession (Fig.-1). Only 34 (17.89%) respondents had previous history of some sorts of Hepatitis.

Forty-eight persons (25.26%) previously underwent different types of major surgery and 26 (13.68%) had undergone some sort of dental procedure. Thirty-six (18.94%) persons had a previous history of needle prick injury. Only two (1.05%) of them were injectable drug abuser and 18 (9.47%) persons have history of previous blood transfusion.

We found that among total respondent, 26 (13.68%) people had positive family history for chronic liver disease and most of them suffered from HBV (24, 12.63%). Four (2.1%) people said that their partner had Chronic Hepatitis B. Finally, we found 8 (4.2%) respondents were HBsAg positive (Figure 1).

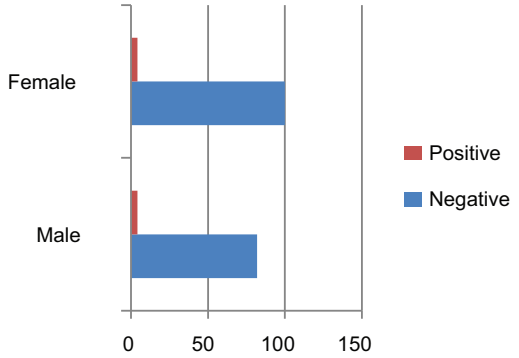

Fig.-1: *Screening Result*

Discussion:

This study was conducted by the department of Hepatology, Sir Salimullah Medical College Mitford hospital with the objectives to see the HBsAg status along with awareness about hepatitis B transmission and vaccination of outpatient group. We enrolled 190 people attending the outpatient department for screening on the Special Medical Campaign. We screened for HBsAg by ICT method by using Rapid Diagnostic Kit. The mean age of the study population was 35.95±6.47 years with female predominance and male female ratio was 0.83, that reflect usual outpatient scenario of Bangladesh where more female sought treatment from outpatient department indicating female are more treatment seeker in comparison to male.

Most of the respondents (90, 47.36%) were service holders that reflected usual professions of the old part of Dhaka city as because most of the people live here are from lower and lower middle class socioeconomic status. Thirty four (17.89%) persons had suffered from hepatitis in their previous life but they could not mention about any specific virus or etiology which indicates that these people have ideas regarding jaundice but not aware of underlying etiology. Fouty eight (25.26%) people underwent different types of major surgery, 26 (13.68%) people had history of some dental procedure and 36 (18.94%) people experienced needle stick injury in their lifetime which are all potential route of HBV transmission. Twenty four (12.63%) found to have positive family history of hepatitis B infection which is responsible for intra familial transmission as well as vertical transmission. Twenty six (13.68%) respondents had positive family history of chronic liver disease and most of them (87.37%) had been suffering from HBV, indicating HBV is the most important cause of chronic liver disease in the community which is similar to the etiology of chronic liver disease worldwide. Among the participants 4 (2.10%) spouses had HBV infection which is relatively small in number indicating the tip of the iceberg. Because of social stigmata and fear of virus detection, in most of the cases spouse and family members are not become interested to go for virus screening. In this study we found that 8(4.2%) persons (2 Male, 2 Female) were screening positive for HBV. These persons are young (Age range 22-32 years). It correlates with the data as of an area of intermediate prevalence of 2-8%, but it is to some extent less than previous studies done by different investigators at different times and by different institutions. According to Mahtab et. Al, 2008 the prevalence of HBV infection found 5.5% but recent meta-analysis done by Banik et. Al, 2022 revealed that the prevalence has now reduced up to 4%. Though it is still higher than that of the global prevalence of 3.5% but this reduction of prevalence indicates the success and effectiveness of ongoing vaccination program against HBV infection which has incorporated into EPI schedule. Though the sample size of this study was not a representative one for a prevalence study, but the finding of 4.2% HBV positivity among the study participants consistent with recently published metanalysis of the recent prevalence data of Bangladesh[4].

Conclusions:

Screening helps Hepatitis B virus detection. The primary goal of HBV screening are early detection of HBV cases so that these cases can be treated early and thereby reduce the morbidity and mortality of HBV related liver disease and also to prevent transmission. Prevention includes primary prevention of HBV by vaccinations as well as secondary prevention by advice regarding transmission. To prevent HBV transmission, emphasis should be given on using of disposable syringe, instrument sterilization and safe blood transfusion.

Recommendation:

Repeated screening program for HBV should be arranged throughout the country for different communities throughout the year to develop people awareness and education.

The current prevalence as seen in this study needs to be validated in large groups. Also, further research is needed to determine the barriers to hepatitis B detection, improve vaccination rate, identification of complications, and to develop newer models of health care delivery system to reduce the burden of HBV related liver disease. Different national and international organizations and NGOs may play active role and combined effort of them will eliminate HBV hepatitis and thereby we can achieve SDGs goal.

Ethical issue

Written and verbal informed consent was obtained from the people for use and to report their information.

Conflicts of interest

There is no conflict of interest.

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