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Sociodemographic Characteristics Status of Slum Population and Associated Risk Factors for HBV Infection

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Abstract **Original Research Article**

Background: Hepatitis B virus (HBV) infection is an important global health problem and may cause acute and chronic infection in man. Worldwide hepatitis B virus infection is a leading cause of death with development of liver failure and hepatocellular carcinoma in chronically infected individuals. ***Objective:*** The aim of the study was to assess the Sociodemographic characteristics status of slum population and associated risk factors for HBV infection. ***Methodology:*** This cross-sectional study was conducted among the 2000 adult slum population of Dhaka city, Bangladesh in the Department of Gastroenterology, BSMMU. Period of study was from July 2006 to June 2007. Inclusion criteria were Age ≥18 years residing in slum area and Patient without jaundice. Exclusion criteria were adult age <18 years and Adult who refuse to participate. Sample size was 2000. simple random sampling method was used. With a semi-structured questionnaire, a face-to-face interview was done. Data were analyzed using a computer programme SPSS 23.0 version. ***Result:*** Out of 2000 people, 828 (41%) were male and 1172(59%) were female with male: female ratio of 4:6. Among all the respondents Illiterate 1062(53.1%), Primary level 522(26.1%), SSC 318(15.9%), HSC 54(2.7%), Graduate or above 44 (2.2%). Housewives were the largest population 602 (30%) and 340(17%) were day laborers. Total of 923 (46.17%) of the population live in kacha house and 896 (44.8%) in pakka vit. About 65.95% use supply water inside the house, 22.27% use supply water outside the house, 11.52% use tube well water. the source of water used for household activities. Regarding source of water used for household activities about 63.11% use supply water inside the house, 24.53% use supply water outside the house, 11.91% use tube well water, 0.26% use water from lake. Regarding Marital status, unmarried 417 (20.87%), Married 1474 (73.72%), widow 57 (2.84%), separated 39 (1.97%), divorced 12(0.60%). Maximum population use slab, about 5.57% use pit latrines, 0.19% go for open place, 1.94% use hanging, 18.58% use septic tank. About 97.67% had no history of vaccination for Hepatitis B. ***Conclusion:*** There are certain risk factors that have been found to be associated with HBV infection. These findings highlight the need for improved health education, increased vaccination coverage, and better access to safe healthcare services to address the burden of hepatitis B in this population. The study provides valuable insights for targeting public health interventions and improving the overall health and well-being of the community.

Keywords: Hepatitis B virus, Hepatitis-B virus infection, Slum population, Socio-demography, Risk factors.

INTRODUCTION

Hepatitis B virus (HBV) infection is an important global health problem and may cause acute and chronic infection in men [1]. Worldwide hepatitis B virus infection is a leading cause of death with the development of liver failure and hepatocellular carcinoma in chronically infected individuals. Globally, 350 to 450 million people are carriers of hepatitis B virus infection and about one million people die annually due to HBV-related liver disease prevalence rates of HBV infection vary in different parts of the world [2]. In southeast Asia, China, the Philippines, Indonesia, the Middle East, and Africa, part of South America's prevalence rate is high, i.e. 8% to 15% [3,4]. The prevalence rate is lowest (<2%) in the USA, Canada, Northern Europe, and Australia. In developed countries, the prevalence rate is low due to several reasons, like maintenance of sterility, change in behavior, especially safe sexual practice related to HIV education and an effective HBV vaccination

programme [5]. Few studies were done about the knowledge, attitude and behavior of people regarding HBV infection in Bangladesh. A study was done among medical students in 1993 about the knowledge, attitude and behavior regarding HBV infection [6]. Chowdhury et al. [7] and Jabbar AM et al. [8] conducted the other two studies on the knowledge, attitude, behavior, and practice of junior doctors and nurses. There are few studies about the Prevalence rate of HBV among the general population in Bangladesh. In one study, the seroprevalence rate was 6.4%, [9] and in another, it was 7.5% of cases [10]. A population-based study in rural populations revealed that the prevalence rate of HBV infection is 1% [11]. In another study, 8% of parental drug addicts, 11% of prostitutes and 20% of professional donors were found positive for HbsAg [12]. So, the study aimed to assess the sociodemographic characteristics and status of the sum population and associated risk factors for HBV infection.

METHODOLOGY

This study was a cross-sectional study. This study was conducted among the 2000 adult slum population of Dhaka city, which was conducted in the Department of Gastroenterology, BSMMU. The period of study was from July 2006 to June 2007. Inclusion criteria were age ≥18 years, residing in a slum area and patient without jaundice. Exclusion criteria were adults aged <18 years and adults who refused to participate. The sample size was 2000. A simple random sampling method was used. With a semi-structured questionnaire, a face-to-face interview was done. Before collecting data, training and workshops were arranged. Manpower for data and blood collection (technician) was recruited and sufficient training was given to them. Special attention was given to the trainer about the maintenance of confidentiality of privacy and confidentiality of the studied population. An informed consent form in the local language for every individual was taken and then questions were filled out. After the data was collected, 15–20 participants were brought into a carefully planned laboratory space. A single-use disposable syringe was used to draw 3–5 ml of blood from each participant so that the HBsAg kit (test strips made by Biotek, USA, with a 99% sensitivity and a 97% specificity) could be used to find HBsAg. The procedure for the serological test will be followed according to the standard operating procedure and protocol of the manufacturer's instructions. The ELISA method will confirm a person who is HBsAg positive. A trained technician with aseptic precaution collected blood.

All disposable syringe blood containers and other accessories were collected in a large container and not destroyed in the study place. Unfortunately, they were disposed of elsewhere by proper waste disposal management. Collected data were edited and analyzed according to the objectives and variables by IBM software, Statistical Package for Social Science (SPSS 23) version. Ethical clearance was taken from the IRB of the institution.

RESULT

The demographic characteristics of the 2,000 study participants showed that the mean age was 31.91 ± 11.34 years, with a median of 30 years (range: 18-90 years). The gender distribution was 41% male and 59% female. Over half the population (53.1%) was illiterate, while 26.1% had a primary education, 15.9% had completed SSC, 2.7% had completed HSC, and only 2.2% had a graduate or higher degree. Occupationally, the largest groups were housewives (30%) and day laborers (17%), followed by service holders (13%), industry workers (10%), transport workers (9%), and businessmen (9%). Regarding the marital status of the study participants, the majority (73.72%) were married, 20.87% were unmarried, 2.84% were widowed, 1.97% were separated, and 0.60% were divorced. The income distribution of the participants showed that the largest group (36.4%) had a monthly income between Tk. 2,001-3,000. The next largest groups were those earning Tk. 3,001-4,000 (27.2%) and those earning less than Tk. 2,000 per month (13.2%). A small proportion (2.5%) had no income, while 9.3% earned Tk. 4,001-5,000 and 10.4% earned more than Tk. 5,000 per month. These findings indicate that the study population consisted primarily of married individuals, with a wide range of income levels represented, but with the majority earning between Tk. 2,001-4,000 per month. Most (65.95%) used supply water inside their homes for drinking, while 63.11% used supply water inside for household activities. Regarding sanitation, 73.59% used slab latrines and 18.58% had septic tanks. The majority (46.17%) lived in kacha (mud) houses, while 44.8% lived in pakka (brick) houses. These findings suggest that certain high-risk behaviors and exposures, such as needle use, blood transfusions may have contributed to hepatitis B among the study population.

Table 1: Demographic characteristics of the respondents (N=2000)

Variable	n	%
Age (yrs)		
Mean±SD	31.91±11.34	
Median	30	
Max-Min	18-90	
Gender Distribution		
Male	828	41
Female	1172	59

Educational background		
Illiterate	1062	53.1
Primary	522	26.1
SSC	318	15.9
HSC	54	2.7
Graduate or above	44	2.2
Occupation		
Transport worker	183	9
Industry worker	190	10
Day laborer	340	17
Service holder	252	13
Businessman	178	9
Domestic help	110	6
Housewife	602	30
Hawker	37	2
Student	56	3
Others	51	3
Marital status		
Type	N=2000	%
Unmarried	417	20.87
Married	1474	73.72
Widow	57	2.84
Separated	39	1.97
Divorced	12	0.60
Income		
Nil	50	2.5
<2000 pm	264	13.2
2001-3000	728	36.4
3001-4000	564	27.2
4001-5000	186	9.3
>5000	208	10.4
Nil	50	2.5
<2000 pm	264	13.2
Household		
Mean±SD	4.91±2.13	
Min-Max	1-20	

Table 2: Source of drinking water and sanitation status of the respondents (N=2000)

Source of drinking water		
Supply inside house	1319	65.95
Supply outside house	445	22.27
Tube well	230	11.52
Others	5	0.26
Source of Water		
Supply inside house	1262	63.11
Supply outside house	491	24.53
Tube well	238	11.91
Lake	5	0.26
Others	4	0.19
Sanitation status		
Pit	111	5.57
Slab	1472	73.59
Open	4	0.19
Hanging	39	1.94
Septic tank	372	18.58
Others	3	0.13

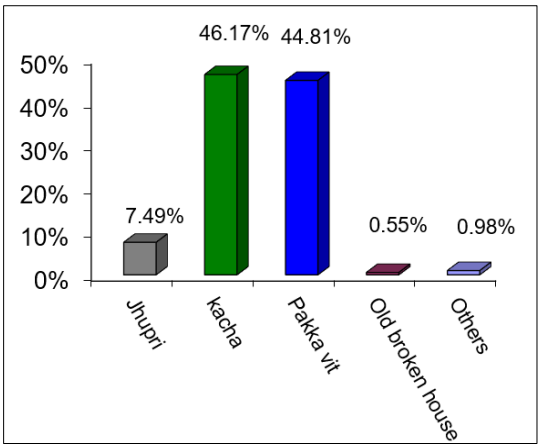

Figure 1: Type of House of the study population

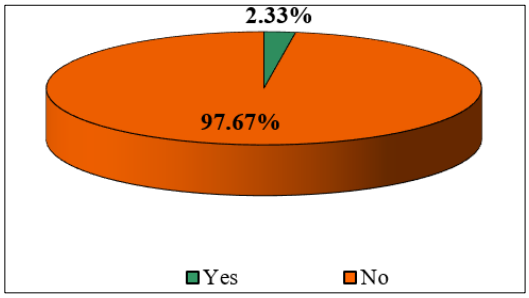

Fig 2: History of vaccination for Hepatitis B virus

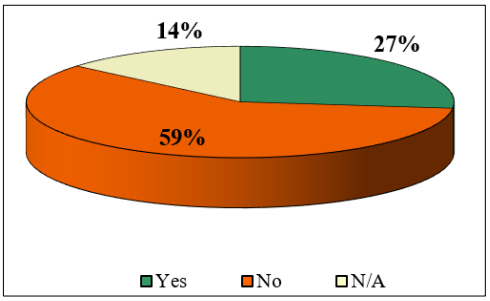

Figure 3: History of EPI/BCG vaccination in childhood

DISCUSSION

Prevalence rate of HBV infection vary from country to country. In Far East prevalence rate is 8 to 15%. In Japan, part of South America, East Europe and Southern Europe prevalence rate is intermediate (2-7%) but in USA, Canada, Northern Europe rate is lowest (0-2%). [5] Number of population-based studies done in Bangladesh regarding prevalence of hepatitis B virus infection is limited.

In this study 828(41%) were male and 1172(59%) were female with a mean age of 31.91 ±SD11.32. Mean household population was4.1±2.1. Regarding occupation of the study population, 30% were housewives, 17% were day laborer, 13 % class four service holder, 10% industry worker and 9% transport worker. About two-third (76.80%) of the population had a monthly family income of less than four thousand take. Fifty three percent of the people were illiterate. About 54% people live in kacha (46%) and jhupri (7%) house. In CUS Urban Study (2005) 6.3%, 39.7% and 52.3% were from jhupri, kacha and semi-pucca vit house respectively [14].

In our study, major population (65.95%) of the subjects' drinks water from supply inside house. A smaller fraction of the population (11.52%) drinks from tube well. About sanitary latrine, majority (53.39%) of Dhaka slum residents use slab latrine. In our study population, the prevalence rate of HBV infection is 5.4%.

The prevalence rate in the study conducted by M. Rahman et al. in a village of Rangpur during 1994 to 1995 on a population of 1000 was 6.4% [9]. Another population based serological study conducted recently by H Ashraf et al. [13] in 1250 asymptomatic subjects of peri-urban area of Dhaka City showed a prevalence rate of 7.3%. The prevalence rate in this study is lower than that of M Rahman et al. [9], H Ashraf et al. [13], and higher than that of Safiullah et al. in Bangladesh [14]. In this study subjects were selected in random basis of sample from slum area, and age of subjects were 18 years and above. In study by M Rahman et al. method of subject selection is not clearly mentioned [9]. In study of H Ashaf et al. age of subjects was from 0-60 years, but in our only adult were included [13]. It may have happened that some of the subjects in this study might be infected in earlier age and clear the virus later on. As Anti-HBc IgG was not seen it cannot be claimed that HbsAg negative subjects have never been exposed to HBV. Mean age of the positive cases were 28.78±10.78 yrs (P=0. 013) in our study.

It is observed that Hbs Ag positive rate is significantly more among male subjects (P=. 002). Among the positive groups 22.4% were housewives and 15.8% were businessman (P=0.009). HbsAg rate was also significantly related with the source of drinking water and it was significantly more among that drinking water supplied from inside the house (p=0.0001). None of the positive cases received HBV vaccine (p=<0.05).

Among the HbsAg positive subjects 26% had history of receiving EPI vaccine in childhood (p=0.04).

CONCLUSION

There are certain risk factors that have been found to be associated with HBV infection. These findings highlight the need for improved health education, increased vaccination coverage, and better access to safe healthcare services to address the burden of hepatitis B in this population. The study provides valuable insights for targeting public health interventions and improving the overall health and well-being of the community.

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