

Demographic Characteristics of Hospitalized Hepatitis B Virus Patients

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Abstract

Original Research Article

Introduction: Hepatitis B virus (HBV) is a small DNA virus infecting about 350 million people globally. Bangladesh, the Indian subcontinent, the Middle East, North Africa, and the former Soviet Union are regions with intermediate prevalence of HBV infection. **Objective:** The aim of this study was to illustrate the demographic profile of hepatitis B virus patients who are hospitalized. **Methodology:** This observational study aims to demonstrate the demographic characteristics of adult-infected patients of Hepatitis B virus in Medicine and Hepatology, department of BSMMU and DMCH from June 2012 to September 2012. Non-randomized sampling method was used to select the patients. **Results:** Most adult patients with hepatitis B virus infection are aged 20 to 40, with an average age of 35.34 years. The highest incidence is in the 18-27 age group, accounting for 28% of cases. Approximately 72% are male, and 66% come from rural areas. About 35% of patients are illiterate, while 30% have completed primary education and 20% have secondary education. Socioeconomically, 59% are low income, 36% are middle income, and 5% are high income. Additionally, 12% of the participants are students. **Conclusions:** HBV infection is most common among illiterate, rural, and low socioeconomic groups due to limited medical knowledge, screening, vaccination access, and awareness of its causes. **Keywords:** Hepatitis B virus, HBV, DNA virus, demographic profile, demographic characteristics, hospitalized.

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INTRODUCTION

Hepatitis B virus (HBV) is a small, encapsulated DNA virus that affects nearly 350 million people globally. Regions with intermediate HBV prevalence include Bangladesh, the Indian subcontinent, the Middle East, North Africa, and the former Soviet Union. In these areas, transmission primarily occurs during infancy and childhood, with a lifetime risk of acquiring HBV infection ranging from 20% to 60% [1]. A Bangladeshi study of 1,018 individuals found about 5.5% positive for HBsAg, with a male predominance mainly between the ages of 16 and 50. Major risk factors included the misuse of injectable medications and treatments by unqualified practitioners [2]. HBV is a major public health issue, leading to chronic hepatitis, cirrhosis, and hepatocellular carcinoma (HCC). An estimated 2 billion people have been infected with HBV, with over 350 million being chronic carriers. Approximately 15% to 40% of infected individuals may develop severe liver diseases, resulting in 500,000 to 1.2 million deaths each year due to HBV complications [3-8]. In developing regions like Southeast Asia and sub-

Saharan Africa, HBV prevalence is high, with 70% to 95% showing evidence of infection [10]. In parts of Europe and the Middle East, the prevalence ranges from 10% to 60%, while in developed regions like North America, it is low, affecting only 5% to 7% [11]. In India, HBV prevalence among healthy adults is between 2% and 8%, with about 40 million carriers [12-16]. In Pakistan, the prevalence is about 10% [17]. In Bangladesh, HBV causes 76.3% of chronic hepatitis cases and 61.15% of cirrhosis cases. Overall, HBV is the leading cause of HCC in Bangladesh, responsible for 33.3% of cases, and remains a significant health burden in the region [18-20]. A previous study has shown that the Hepatitis B virus (HBV) is the second most common cause of acute hepatitis in Bangladesh, accounting for 31.25% of cases, just after the Hepatitis E virus. These figures have remained consistent over the decades, with rates of 25% in 1984 and 35% in 1996. In India, the prevalence ranges from 34% to 45%, while in Pakistan, it is reported to be 31% [21-23]. The current study aims to demonstrate the demographic characteristics of HBV infected population who are hospitalised. Ethical

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clearance and written consent were assured before the study.

Objectives

- **General objective:** The primary aim of this study was to evaluate the demographic data of hepatitis B virus-infected hospitalised patients
- **Specific objective:** This study targeted to illustrate age, sex, education level, income, employment status, marital status, and geographic location variation of Hepatitis B virus infection among the study patients

METHODOLOGY

This hospital based observational study included a total of 100 patients with positive test results for HBV who were admitted the Department of Medicine and Hepatology of DMCH & BSMMU, Dhaka, Bangladesh, from June 2012 to September 2012. The present study included all adult patients.

- **Inclusion criteria:** The current study included adult patients who were aged more than 18, serology positive (HBsAg), participants and or legally accepted guardians, who gave consent and willing to comply with study procedure.
- **Exclusion criteria:** Patients who were below 18 years of age and were unwilling to participate in the study were excluded from this study.

Patients admitted to the Medicine and Hepatology Departments of DMCH and BSMMU,

presenting with hepatitis symptoms, will first be assessed by the corresponding department doctors. Following this initial evaluation, the study physician will be informed. The study physician will then conduct a thorough evaluation of the patient through a detailed clinical history and a relevant physical examination focused on the hepatobiliary system. Data were analysed using a statistical package for social science (SPSS) version 17.0. The hospital authority gave ethical clearance and well-informed written consent was ensured before the study.

RESULT

In 100 cases, 72% male and 28% female. The minimum age is 18 years while the maximum is 78 years. The more age-specific incidence is seen in the age group 18-47 years (76%) whereas the highest incidence is seen in the age group 18-27 years (28%) [Table-1]. Figure-1 shows the marital status of the study patients where 55% were married, 40% were unmarried and 5% were widows. Table-2 shows, illiterate were 35%, primary completed were 30%, secondary completed were 20%, higher secondary completed were 10% and graduate were 5%. Among the study patients, most of the participants were farmers (20%) and the least were drivers/ rickshaw pullers (6%). The student and unemployed were 12% respectively. Similarly, housewives and businessmen were 8% respectively, among the study patients [Table-3]. According to Table-4, low socioeconomic were 59% (n=59) and high socioeconomic were 5% (n=5) among these, 66% lived in rural areas and 34% lived in urban areas.

Table-1: Gender and age distribution of study population (n=100).

Characteristics	Variable	Frequency (n)	Percentage (%)
Gender distribution	Male	72	72.0%
	Female	28	28.0%
Age (in years)	18-27	28	28.0%
	28-37	25	25.0%
	38-47	23	23.0%
	48-57	12	12.0%
	58-67	7	7.0%
	68-77	5	5.0%

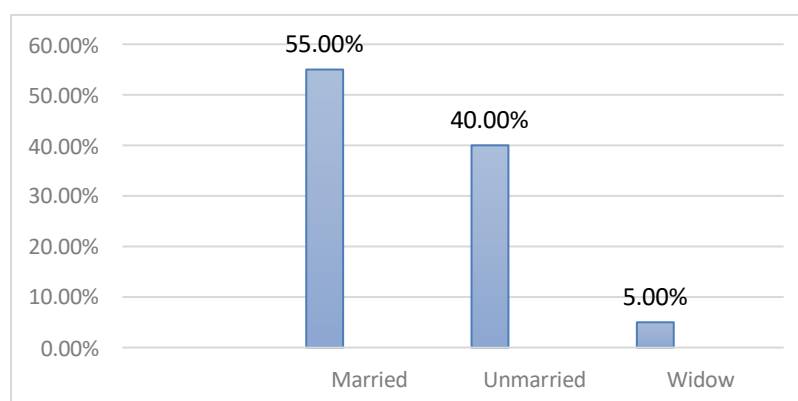


Figure-1: Marital status (n=100)

Table 2: Educational Background of the study patients (n=100)

Educational Background	Frequency (n)	Percentage (%)
Illiterate	35	35.0%
Primary	30	30.0%
Secondary	20	20.0%
Higher Secondary	10	10.0%
Graduate	5	5.0%

Table 3: Occupational distribution of the patients (n=100)

Occupation	Frequency (n)	Percentage (%)
Farmer	20	20.0%
Businessman	10	10.0%
Service holder	8	8.0%
Teacher	8	8.0%
Housewife	10	10.0%
Driver/Rickshaw puller	6	6.0%
Student	12	12.0%
Unemployed	12	12.0%
Coming from abroad	6	6.0%
Health Worker	8	8.0%

Table 4: Socioeconomic and living area distribution of the study patients (n=100)

Variable		Frequency (n)	Percentage (%)
Socioeconomic condition	Low Socioeconomic	59	59.0%
	Middle Socioeconomic	36	36.0%
	High Socioeconomic	5	5.0%
Area distribution	Rural	66	66.0%
	Urban	34	34.0%

DISCUSSION

Approximately 75% of chronic carriers of hepatitis B virus (HBV) reside in Asia and the Western Pacific. Reports indicate that 15-40% of individuals infected with HBV may develop serious health issues such as cirrhosis, liver failure, or hepatocellular carcinoma (HCC), resulting in an estimated 500,000 to 1.2 million deaths annually due to HBV infection [24]. The majority of patients in this study come from rural areas, with 66% living in such settings. Most of these affected individuals are farmers. The situation may be attributed to several factors, including poor socioeconomic conditions, limited medical knowledge, a lack of screening programs, inadequate vaccination, and an unclear understanding of the disease's aetiology. Furthermore, the educational background of the affected population is notably low, with 35% being illiterate, 30% having completed only primary education, 15% having secondary education, and the remaining 20% with various other levels of education. This is primarily because many of these individuals are farmers who have not had access to education.

Khan *et al.*, (2011) in Virology reported that the highest frequency of infection occurs in the age group of 21-30 years, which accounts for 34.93% of cases. This is followed by 23.83% in the 31-40 age group. Only 13.39% of infections were found in individuals aged 11-20 years. The rate of infection declines with increasing

age, as shown by the 41-50 age group at 16.13% and the 51-60 age group at 7.09%. Very few infections were observed in children aged 0-10 years (1.49%) and in the elderly over 60 years of age (1.65%) [25]. In the present study, the incidence of infection starts to increase after the age of 18 years, peaking between 18 and 27 years at about 28%. The second highest peak occurs between 28 and 37 years at approximately 25%, followed by a third peak between 38 and 47 years. Additionally, below 20 years of age, the incidence rate is around 6%, indicating that no age group is immune to Hepatitis B virus (HBV) infection. This is possibly due to perinatal transmission of the virus.

A study published in Epidemiologic Reviews in 2006 indicates that the Hepatitis B virus (HBV) is transmitted through percutaneous or mucosal exposure to infected blood or other body fluids. HBV can be transmitted through various forms of human contact, including perinatal (mother-to-child), household (non-sexual), sexual, needle-sharing, and occupational exposure among healthcare workers. The highest concentrations of infectious HBV are found in blood and serum, but other body fluids derived from serum, such as semen and saliva, can also be infectious. Any individual who tests positive for HBsAg has the potential to infect both household and sexual contacts. Mother-to-infant transmission during delivery is particularly efficient and is one of the most prevalent routes of HBV infection globally. Sexual contact is another efficient means of

transmission; individuals who are sexual partners of chronically infected persons have a higher prevalence of HBV infection compared to the general population. Men who have sex with men (MSM) have consistently higher rates of HBV infection than the general population. Additionally, injection drug users are at an elevated risk for HBV infection due to practices such as sharing needles, syringes, and other drug paraphernalia. In the United States during the mid-1990s, approximately 70% of injection drug users became infected after five years of injecting. Outbreaks linked to other percutaneous exposures, such as tattooing and acupuncture, have also been reported. Contaminated injections were responsible for an estimated 21 million HBV infections worldwide in 2000, accounting for 32% of all new infections. In developed countries, outbreaks related to these transmission routes continue to be a significant issue, often resulting from lapses in infection control practices by healthcare workers. Transmission vehicles can include multidose vials, finger-stick devices, acupuncture needles, and jet injection guns [26].

CONCLUSION

The incidence of HBV infection is prevalent among illiterate, rural, and low socioeconomic groups, likely due to a lack of medical knowledge, screening programs, vaccination access, and awareness of its aetiology.

Limitations of the study

A limited population and short study duration may affect the overall outcome of the study.

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Conflicts of interest: No conflicts of interest were found

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