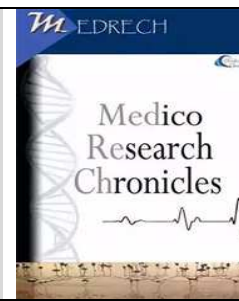




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### EVALUATION OF THE PREVALENCE OF DIFFERENT TYPES OF HEPATITIS VIRUSES IN A TERTIARY CARE HOSPITAL

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#### ABSTRACT

**Background:** Bangladesh is not exempt from the global viral hepatitis pandemic. Hepatotropic viruses comprise the majority of those that cause viral hepatitis. Hepatitis B virus (HBV), with hepatitis C virus (HCV), hepatitis A virus (HAV), and hepatitis E virus, is one of the most important hepatotropic viruses (HEV). The objective of the current study was to determine if individuals who were clinically thought to have the aforementioned diseases were also seropositive for HBV, HCV, HEV, and HAV.

**Aim of the study:** This study's objective was to determine the prevalence, typical causes, mode of transmission, and risk factors associated with acute viral hepatitis.

**Methods:** This descriptive cross-sectional study was carried out between March 2012 and September 2012, in the department of Medicine, Shaheed Ziaur Rahman Medical College hospital in Bogura. In total 100 cases of acute viral hepatitis, patients were included in this

#### ORIGINAL RESEARCH ARTICLE

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study. These cases were included and excluded based on the inclusion and exclusion criteria. Information was acquired using a questionnaire after receiving written, informed consent, and applicable research was done. The information was then looked over.

**Results:** The study comprised 100 cases of acute viral hepatitis in total. In this study, acute viral hepatitis is most frequently caused by the hepatitis E virus (52%), with a peak incidence in people between the ages of 32 and 41. Hepatitis A virus (32%), which is most prevalent in people between the ages of 12 and 21 (54.55%), is the second most common cause. At a ratio of 7.33:1, males were more frequently impacted than females. The workforce was made up of 43%-day workers, 20% employees, 15% business owners, 10% students, and 12% others.

**Conclusion:** An increase in new instances of hepatitis B, C, and D was observed in Bangladesh, according to a study of their prevalence. These findings show that individuals in high-risk groups require the development of efficient preventative interventions and screening procedures. To determine the significance of diverse acute hepatitis causative agents in Bangladesh, more research is required.

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## INTRODUCTION

Bangladesh is one of the countries or regions with a moderate to high risk of developing hepatitis A and B, according to the WHO. Hepatitis A virus (HAV) is a single-stranded RNA virus that is not encapsulated and is a member of the Picornaviridae family of viruses [1, 2]. Being a country in South East Asia, Bangladesh is thought to have an endemic hepatitis B virus (HBV) infection [3]. Acute hepatitis is sporadic throughout the year in Bangladesh [4]. The most frequent forms of liver cancer and cirrhosis, specifically type B and C, affect hundreds of millions of individuals chronically. The estimated death rates are 0.1%, 0.3%, and 2.1%, respectively, for children under the age of 15, adults between the ages of 15 and 39, and people over the age of 40 [5]. The World Health Organization (WHO) estimates that the hepatitis B virus (HBV) has infected about 2 billion people worldwide, 350 million of whom are chronic carriers, and 600,000 people die each year from either acute or chronic viral infections [6]. According to the WHO [7],

HBV is transferred by sexual contact, blood, and blood products and is 50–100 times more contagious than HIV. Hepatitis C infection causes acute symptoms in 15% of cases [8]. Persistent infection occurs in around 80% of persons who are exposed to the virus [9]. HDV is viewed as a subviral satellite since it can only proliferate in the presence of the hepatitis B virus [10]. Superinfection and coinfection with HDV result in more serious outcomes than HBV infection alone. These issues include a higher chance of liver cancer, a speedier progression from liver cirrhosis in situations of chronic infections, and an increased risk of liver failure in cases of acute infections [11]. In the general population, HEV has a low death rate of 0.5–4%. However, this percentage rises by >75% in underdeveloped countries like Bangladesh, during the second or third trimester of pregnancy, and in cases of fulminant hepatic failure. The prevalence of hepatitis viruses varies from country to country, however, there are no precise numbers available for Bangladesh. However, a few isolated studies

on the general population found an 8.0% frequency, while in other subpopulations, including heterosexuals, the prevalence was as high as 19.0%.

### **METHODOLOGY**

This descriptive cross-sectional study was conducted from March to September 2012 at Shaheed Ziaur Rahman Medical College Hospital in Bogura, Bangladesh. In total, 100 patients participated in this trial. The size of the sample was estimated using the epi info tool from a population of 200 people. 20% was the predicted frequency of the study component. The level of confidence was 99%. A total of 100 patients were chosen based on inclusion and exclusion standards. A thorough physical examination of each patient revealed findings such as injection sites, tattoos, piercings, skin issues, lymphadenopathy, ascites, an enlarged uncomfortable liver, jaundice, anemia, fever, splenomegaly, edema, arthralgia, and rash. CBC, ESR, Serum Billirubin, ALT/SGPT, PT, HBsAg, IgM anti-HAV, anti-HCV, anti HDV, IgM anti-HEV, Serum Creatinine, USG of the HBS and Pancreas, and IgM anti-HBC testing were performed on each case. Both a written informed consent form (in Bengali and English) and a questionnaire were created. The case was chosen per inclusion and exclusion criteria, and a questionnaire with signed informed consent was finished. A thorough inquiry was conducted. Data collection was done with caution. The handling of the data was cautious. The data from epi info were correctly evaluated using the SPSS application. The entire intervention was carried out by the guidelines for human research outlined in the Helsinki Declaration [12] and carried out following the laws in effect at the time and the General Data Protection Regulation's (GDPR) provisions [13].

### **RESULT**

This study comprised a total of 100 patients with acute viral hepatitis who were admitted to the Shaheed Ziaur Rahman Medical College Hospital in Bogura. Acute viral hepatitis due to HEV was found to be most common in the age group of 32-41 years (57.69%) and due to HAV in the age group 12-21 years (54.55%) when compared with another age group. Males were more commonly affected than females (table 2) with a ratio of 7.33: 1. In 7 cases of hepatitis B, 1 case of hepatitis C, 4 cases of hepatitis A, and 3 cases of hepatitis E, we discovered the inappropriate use of injectable drugs. Two cases of hepatitis B and one case of hepatitis c involved blood transfusions, one case of hepatitis A involved a daycare worker, and four cases of hepatitis B involved unsafe sex. Hepatitis A cases: 6, hepatitis E cases: 2. H/O drug injector was involved in one hepatitis B case. In one hepatitis B instance, the damage was caused by a needle stick. Hepatitis A was found in 33 cases (33%) and the peak incidence was seen in the age group 12-21 years. Hepatitis E was found in 52 cases (52%) with the peak incidence in the age group of 22-31 years. Hepatitis B was found in 09 cases and hepatitis C was found in 01 cases. Mixed infection with hepatitis A & E, B & A, and B & E in 1 case each respectively. No virus marker could be detected in the 02 cases. Acute liver failure was seen in two cases of hepatitis E and one case each of hepatitis A and hepatitis B. Hepatomegaly was seen in 84.85% of cases of hepatitis A, 86.54% of cases of hepatitis E and 66.67% of cases of hepatitis B respectively, whereas splenomegaly was found in 11.11%, 9.09%, 7.69% in hepatitis B, A and E respectively. Relapse was seen in one case of hepatitis A. Occupational status shows most of the patients of this study are day laborers (43%), others include service holders (20%), business (15%), students (10%), and others (12%).

**Table 1:** Distribution of cases according to age group (N=100)

Age (years)	Hepatitis-A	Hepatitis-B	Hepatitis-C	Hepatitis-E	Hepatitis-A&E	Hepatitis-B&A	Hepatitis-B&E	No virus marker could be detected
12-21	18	01	00	05	00	00	00	00
22-31	13	05	00	15	01	01	00	00
32-41	01	02	01	30	00	00	01	01
42-51	01	01	00	01	00	00	00	00
52>	00	00	00	01	00	00	00	01

**Table 2:** Sex ratio of the studied patients (N=100)

Sex	Number of patients	Percentage (%)
Male	88	88%
Female	12	12%
M:F ratio	7.33: 1	

**Table 3:** Other risk factors (N=100)

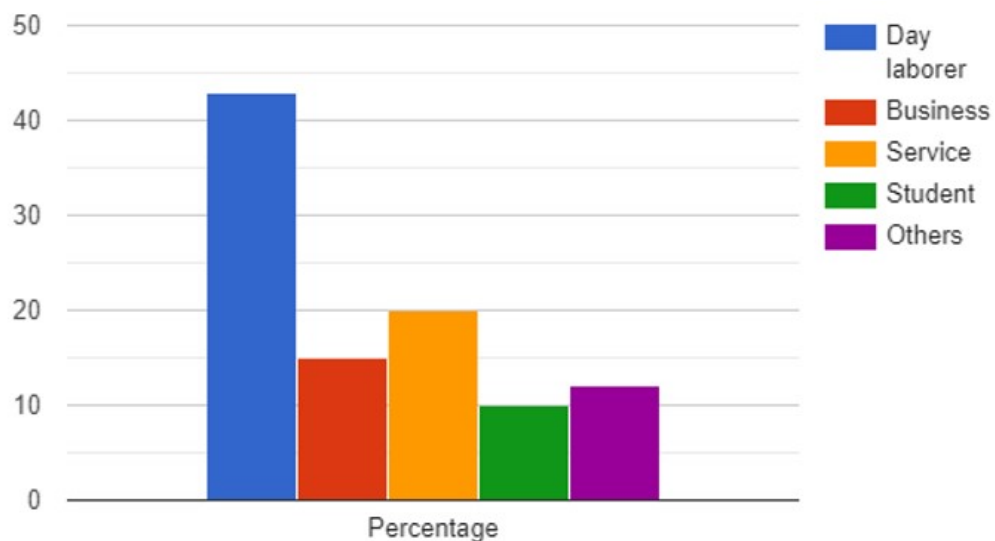
Factors	No of patients	Percentage
Day-care employee	01	01%
Injudicious use of injectable medications	15	15%
h/o blood transfusion	03	03%
Any unsafe sex	12	12%
Injecting drug users	01	01%
Unsafe piercing, tattooing, acupuncture	02	02%
Sexually transmitted disease	08	08%
h/o a solid organ transplant	00	00%
Hemodialysis patients	00	00%
Health care workers	01	01%
h/o alcohol intake	01	01%
Police personnel	01	01%
h/o needle stick injuries	01	01%
h/o visiting community barber for shaving in males	56	56%
h/o circumcision	79	79%
h/o surgical operation	04	04%

**Table 4:** Etiological distribution of cases (N=100)

Viral hepatitis	Total	Percentage (%)
Hepatitis A	33	33%
Hepatitis B	09	09%
Hepatitis C	01	01%
Hepatitis E	52	52%
Hepatitis A & E	01	01%
Hepatitis B & A	01	01%
Hepatitis B & E	01	01%
No virus marker could be detected in	02	02%

**Table 5:** Clinical features of acute viral hepatitis (N=100)

Clinical features	Hepatitis -A	Hepatitis -B	Hepatitis -C	Hepatitis-E	Hepatitis-A&E
Hepatomegaly	28	06	00	45	02
Splenomegaly	03	01	00	04	00
Pruritus	02	01	00	09	01
Acute liver failure	01	01	00	02	00
Relapse	01	00	00	00	00

**Fig-1:** Occupational status

## DISCUSSION

This study was out to identify the prevalence and origin of acute viral hepatitis. This outcome is consistent with research done in our region, especially in India, where sporadic viral hepatitis is 50–70% brought on by HEV infection [14,15]. The most common cause of acute viral hepatitis at the moment is hepatitis E virus infection [16]. We identified hepatitis A in one-third of our adult patients. Arankalle *et al.* discovered an increase in the incidence of hepatitis A in adults, especially in those who had a fulminant hepatic failure (from 3.5% to 10.6%), in research that evaluated the etiology of sporadic and fulminant hepatitis ten years apart [17]. As a result, it demonstrates some parallels with the current investigation. In many developing countries, including Bangladesh, viral hepatitis brought on by HAV infection is widespread. This is so because we have no control over transmission factors [18]. In a study by Khan *et al.* [19], it was discovered that these variables were risk factors for the transmission of these viruses. Therefore, it supports this research. Nine instances of hepatitis B and one case of hepatitis C were both confirmed. Hepatitis A and E, B and A, and B and E co-infection all happened once. 02 cases had no viral markers that could be found. Hepatitis C was present in 1% of the trial subjects. According to Chau *et al.* study's [20] in a related sector, this virus was present in 1.65 percent of people. Risk factors for HBV infection include the improper use of injectable medications, h/o blood transfusions, instances of immoral sex, drug injectors in the first instance, unsafe tattooing, acupuncture, alcohol consumption, needle stick wounds, men visiting their neighborhood barbershop for shaving, circumcisions, and surgical procedures. These risk variables were also discovered by studies [19, 20]. Cholestasis in HEV has been extensively documented in earlier studies [22]. Before a blood transfusion, it's critical to promote the use of sterile

syringes and suitable blood screening procedures. The transmission of the HCV virus will be slowed down by raising awareness about how to handle blood and blood products. The study's findings, which are based only on investigations into suspected cases and do not represent the prevalence rate of viral hepatitis in Bangladesh as a whole, most likely reflect the current viral infection situation in the nation, particularly the alarmingly high incidence of acute HEV and HAV infections.

### Limitation of the study:

This investigation was carried out at a single hospital facility with a small sample size. Patients under the age of 12 were excluded from this study. There is no clearly defined geographic area. Patients could not be monitored for an extended period.

### CONCLUSION & RECOMMENDATION

The study's objectives were to determine the prevalence and causation of acute viral hepatitis. The hepatitis E virus is the most frequent cause of acute viral hepatitis. The second most common cause is the hepatitis A virus. Clinical and biochemical markers failed to distinguish the viruses, necessitating serological testing for a precise etiological diagnosis. More investigation is needed to identify the importance of various acute hepatitis causative agents in Bangladesh.

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