

## Epidemiology and Aetiology of Acute Viral Hepatitis in a Tertiary Care Hospital

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### Abstract

### Original Research Article

**Background:** Bangladesh is not an exception to the global epidemic of viral hepatitis. Aside from other causes like excessive alcohol consumption, the use of specific hepatotoxic drugs and hepatotropic viruses are the most significant cause of viral hepatitis. They can cause hepatocellular injury, hepatic failure, cirrhosis, cancer, and death. Hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis A virus (HAV), and hepatitis E virus (HEV) are among the most significant hepatotropic viruses. **Aim of the study:** The aim of this study was to identify the common causes, route of transmission and risk factors of acute viral hepatitis. **Methods:** Between March 2012 to September 2012, this descriptive cross-sectional study was conducted at the Shaheed Ziaur Rahman Medical College hospital in Bogura. Based on inclusion and exclusion criteria, 100 cases of acute viral hepatitis that were admitted to the medicine department of the Shaheed Ziaur Rahman Medical College hospital in Bogura were included. After obtaining informed written consent, information was gathered via a questionnaire and pertinent research was conducted. After that, the data was examined. **Results:** The study covered a total of 100 instances of acute viral hepatitis. The most frequent cause of acute viral hepatitis in this study (52%) is the hepatitis E virus, with a peak incidence in the age group of 32–41 years (57.69%). Hepatitis A virus (32%) is the second most prevalent cause, with a peak prevalence in the age group of 12 to 21 years (54.55%). 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 in one case each, correspondingly. **Conclusion:** This study had a modest sample size and was conducted at a single hospital center. Its goals were to identify the cause of acute viral hepatitis and its epidemiological characteristics. To determine the significance of different acute hepatitis causative agents in Bangladesh, more research is required.

**Keywords:** Acute viral hepatitis, Epidemiology, Route of transmission, Risk factors.

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## 1. INTRODUCTION

In Bangladesh, acute hepatitis is intermittent throughout the year [1]. Particularly, types B and C are the most prevalent causes of liver cirrhosis and cancer, causing chronic disease in hundreds of millions of people. Bangladesh is regarded as having an endemic hepatitis B virus (HBV) infection because it is a South East Asian nation [2]. The single-stranded RNA virus known as the hepatitis A virus (HAV) is not encapsulated and belongs to the genus Hepatovirus in the family Picornaviridae [3, 4] HAV spreads through

the fecal-oral route when ingested along with contaminated food or drink or through direct contact with an infected individual. The majority of hepatitis A patients recover completely, and case mortality is uncommon. For children under the age of 15, individuals between the ages of 15 and 39, and people above the age of 40, the estimated death rates are 0.1%, 0.3%, and 2.1%, respectively [5]. The hepatitis B virus (HBV) is thought to have infected about 2 billion individuals globally, 350 millions of whom are chronic carriers, and 600,000 people die each year from either

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acute or chronic viral infections, according to the World Health Organization (WHO) [6]. HBV is 50–100 times more contagious than HIV and is spread through sexual contact, blood, and blood products, according to the WHO [7]. In 15% of cases, hepatitis C infection results in acute symptoms [8]. About 80% of those exposed to the virus develop a chronic infection [9]. HDV can only spread in the presence of the hepatitis B virus, so it is regarded as a subviral satellite [10]. These problems include an increased risk of liver failure in cases of acute infections, a quicker progression to liver cirrhosis in cases of chronic infections, and an elevated risk of liver cancer [11]. Much has been learnt about the still-mysterious epidemiology of the hepatitis E virus (HEV), which is currently the world's most common cause of acute viral hepatitis [12]. HEV has a low mortality rate in the general population of 0.5–4%. However, in developing nations like Bangladesh, in the second or third trimester of pregnancy, and in individuals with fulminant hepatic failure, this figure exceeds >75%. There are no accurate statistics available for Bangladesh about the prevalence of hepatitis viruses, which varies from nation to nation.

## 2. METHODOLOGY

This descriptive cross-sectional study was conducted at Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh during the period from March 2012 to September 2012. A total of 100 patients were selected according to inclusion and exclusion. Each case underwent a thorough physical examination, during which time findings regarding jaundice, anaemia, fever, ascites, enlarged tender liver, splenomegaly, edema, arthralgia, rash, signs of hepatic encephalopathy, injection sites, tattoos, piercings, skin conditions and lymphadenopathy were noted. Investigations such as CBC, ESR, Serum bilirubin, ALT/SGPT, PT, HBsAg, IgM anti-HAV, anti-HCV, anti-HDV, IgM anti-HEV, Serum creatinine, USG of HBS and Pancreas, IgM anti-HBC were performed in

each case. Both an informed written consent form (in Bengali and English) and a questionnaire were created. Data collection was done with caution. With the help of the program SPSS, epi info, data were carefully evaluated. Each step of the study was carried out under the close supervision of the Guide, Co-Guide, and other knowledgeable members of the SZMCH department of medicine. During the research processes, fundamental research ethics principles in accordance with the 52nd WMA Declaration of Helsinki' 2000 & CIOMS guidelines were upheld.

## 3. 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 32-41years (57.69%) and due to HAV in the age group 12-21years (54.55%) when compared with other age group. 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 peak incidence was seen in the age group 12- 21years. Hepatitis E was found in 52 cases (52%) with peak incidence in the age group of 22- 31years. Hepatitis B was found in 09 cases and hepatitis C was found in 01 case. Mixed infection with hepatitis A &E, B & A and B & E in 1 case each respectively. No virus marker could be detected in 02 cases. Jaundice and fatigue were major presenting complaints followed by anorexia. Pruritus was seen in 17.31% of hepatitis E patients and 6.06% of hepatitis A patients.

**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: 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%

Factors	No of patients	Percentage
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%

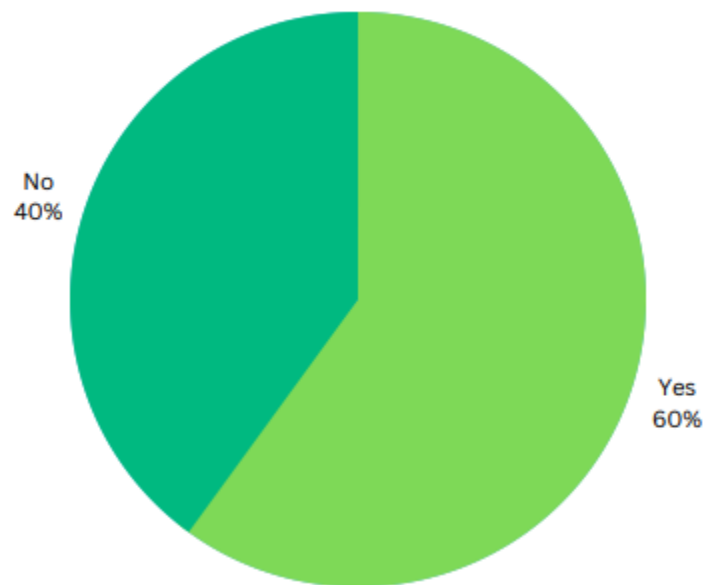
**Table 3: Etiological distribution of cases (N=100)**

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 4: Clinical symptoms of acute viral hepatitis (N=100)**

Symptoms	Hepatitis-A	Hepatitis-B	Hepatitis-C	Hepatitis-E	Hepatitis-A&E	Hepatitis-B&A	Hepatitis-B&E
Jaundice	28	06	01	49	02	01	01
Fever	15	02	00	31	01	00	01
Pruritus	02	01	00	09	01	00	00
Fatigue	24	01	01	47	02	01	01
Pain abdomen	20	02	00	39	02	00	01
Nausea	23	04	01	40	02	01	01
Anorexia	25	05	01	46	02	01	01

**Fig-1: Sanitation and hygienic condition**



**Fig-2: Lack of safe drinking water supply and drinking from public source**

#### 4. DISCUSSION

During the six-month period from March 2012 to September 2012, this study was conducted on 100 hospitalized patients with acute viral hepatitis in the department of medicine at Shaheed Ziaur Rahman Medical College Hospital, Bogura. In this study, acute viral hepatitis is most frequently caused by the hepatitis E virus. This finding is consistent with research from our region, specifically India, where HEV infection causes 50–70% of all instances of sporadic viral hepatitis [13, 14]. The most common cause of acute viral hepatitis today in the world is the hepatitis E virus [15]. In children, hepatitis A is frequent [16]. Arankalle *et al.*, identified an increase in hepatitis A incidence in adults, especially those who suffered fulminant hepatic failure (from 3.5% to 10.6%), in research that evaluated the etiology of sporadic and fulminant hepatitis a decade apart [17]. HAV primarily affects children and young adults, HEV primarily affects adults [18, 19]. The results of this investigation are in agreement with the studies mentioned above. In a study by Khan *et al.*, these parameters were discovered to be risk factors for the transmission of these viruses [20]. It therefore fits with this study. 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 in one case each, correspondingly. In 02 cases, no viral marker could be found. Hepatitis C virus prevalence in this study is 1%. In a related investigation, Chau *et al* found that the prevalence of this virus was 1.65 [21]. So, this study corresponds with that study. The risk factors for HBV infection are unwise use of injectable medicines, occurrences of h/o blood transfusion, incidents of immoral sex, drug injector in the first instance, unsafe tattooing, acupuncture, alcohol consumption, injuries from needle sticks, men visiting a neighborhood

barbershop for shaving, circumcisions, and surgical operations. These risk variables were also discovered in studies [20, 21]. The best way to prevent HBV infection is by vaccination, but since the majority of people in this country cannot afford to get vaccinated owing to financial constraints, educating campaigns on behaviors that raise the risk of horizontal transmission may also be effective. Use of sterile syringes and proper blood screening procedures before transfusion should be promoted. The findings of this study, which are based solely on investigations into suspected cases and do not represent the prevalence rate of viral hepatitis in Bangladesh as a whole, probably reflect the country's current viral infection situation, particularly the alarmingly high incidence of acute HEV and HAV infections.

#### Limitation of the study:

This study had a modest sample size and was conducted at a single hospital center. There is no geographically defined area. Not every patient in a potential area was required to attend. Patients could not be followed up with over a long period of time.

#### 5. CONCLUSION & RECOMMENDATION

The goals of the study were to identify the cause of acute viral hepatitis and its epidemiological characteristics. The most typical cause of acute viral hepatitis is the hepatitis E virus. Hepatitis A virus comes in second on the list of causes. Serological testing is necessary for accurate etiological diagnosis because clinical and biochemical parameters were ineffective at separating the viruses. To determine the significance of different acute hepatitis causative agents in Bangladesh, more research is required.

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