

Original Research Article

Prevalence of Hepatitis A Virus in Patients at a Tertiary Care Hospital in Vadodara

Muthukumaran, Mitesh Kamothi, Ritapa Ghosh

Department of Microbiology, GMERS Medical College, Vadodara, Gujarat

*Correspondence: Dr. Ritapa Ghosh (ghoshritz@gmail.com)

ABSTRACT

Background: The 27 nm, non-enveloped, single-stranded RNA Hepatitis A virus (HAV) belongs to the genus Hepatovirus and family Picornaviridae. The hepatitis A virus, which causes both sporadic and epidemic forms of acute hepatitis, is mostly transmitted through the fecal-oral route, which involves consuming tainted food and beverages.

Material and methods: Over a period of 1 year from April 2024 to March 2025, a total of 431 blood samples from clinically suspected Hepatitis A patients were received in department of microbiology. Serum was separated and subjected to enzyme immunoassay for detection of HAV IgM Antibody (anti- HAV IgM).

Results: During this study period, a total 431 blood samples were processed from suspected Hepatitis A cases out of which 112 (26%) samples were found to be positive for HAV IgM Antibody (anti- HAV IgM).

Conclusion: HAV causes AVH most commonly in early childhood and a small number of adolescents and adults. Females are more commonly infected than males. The preventive strategies and control measures of hepatitis A will be determined by future definition of HAV epidemiology in the Central Karnataka region, India.

Keywords: Hepatitis A, anti- HAV IgM, ELISA, Prevalence

INTRODUCTION:

The 27 nm, non-enveloped, single-stranded RNA Hepatitis A virus (HAV) belongs to the genus Hepatovirus and family Picornaviridae. The hepatitis A virus, which causes both sporadic and epidemic forms of acute hepatitis, is mostly transmitted through the fecal-oral route, which involves consuming tainted food and beverages. The course of more serious liver illnesses, such as cholestatic and relapsing hepatitis, is prolonged in adults, although

afflicted youngsters usually exhibit extremely mild constitutional symptoms or no symptoms at all.¹

Acute viral hepatitis is a serious health problem in developing countries, especially in slum and rural areas with low socioeconomic status.² Lack of safe drinking water, poor personal hygiene, and poor sanitation all affect people.² According to WHO estimates, 1.4 million new cases of the hepatitis A virus are found globally every.² The severity and clinical prognosis of a HAV infection are primarily influenced by the age of the infected individual.³ The

current study was carried out at a tertiary care hospital to ascertain the seroprevalence of hepatitis A virus infection, examine demographic trends, and evaluate clinical presentations in patients suffering from acute viral hepatitis. The study's overall hepatitis A virus prevalence was 26% (n=112).

MATERIAL AND METHODS

Study design and place

This was a hospital-based, retrospective cross-sectional study carried out from April 2024 to March 2025 at GMERS medical College, Vadodara .

Inclusion criteria

Patients of all age groups from various outpatient departments and wards, with clinical signs and symptoms like fever, vomiting, abdominal pain, yellowish discoloration of eyes and dark-colored urine, and loss of appetite, and laboratory findings suggestive of acute viral hepatitis, were included in this study.

Exclusion criteria

Patients with a history of preexisting liver disease were excluded from the study. Patients with confirmed cases of other types of viral hepatitis (hepatitis B, C, or E) and repeat samples from the same patient during the study period were likely excluded.

RESULTS

A total of 431 blood samples were received for microbiological analysis. Out of 431 samples tested, 26% (n = 112) were tested positive for anti-HAV IgM. Anti-HAV IgM seropositivity was 55% (n = 62) in females whereas, it was 45% (n = 50) in males. Age-wise distribution of subjects showed high seropositivity. Around (30%) (n = 58) in ≤10 years of age group, followed by 11-20 years (24%)(n = 47) , 21-30 years (16%) (n = 18) , and those more than 30 years (10%) (n = 2). There was a sudden rise in

seropositive cases during June 2024 associated with person-to-person transmission.

Table-1: Prevalence of Hepatitis A virus by age group distribution

Age Group	Suspected Cases	Positive Cases
Less than 10	190	58 (30%)
11-20	190	47 (24%)
21-30	31	5 (16%)
Above 30	20	2 (10%)

In this study period of one year, the month-wise prevalence rate was reported to be 26% in (April-2024), 31% in (May-2024), 38% in (June-2024), 15% in (July-2024), 34% in (August-2024), 21% in (September-2024), 30% in (October-2024), 25% in (November-2024), 27% in (December-2024), 25% in (January-2025), 21% in (February-2025) , 14% in (March-2025). Table 2 shows month wise prevalence of Hepatitis A from April 2024 – March 2025

Table-2: Month wise prevalence of Hepatitis A from April 2024 – March 2025

Month	Suspected Cases	Positive Cases
April-2024	19	5 (26%)
May-2024	22	7 (31%)
June-2024	50	19 (38%)
July-2024	45	7 (15%)
August-2024	35	12 (34%)
September-2024	42	9 (21%)

October-2024	40	12 (30%)
November-2024	47	12 (25%)
December-2024	33	9 (27%)
January-2025	27	7 (25%)
February-2025	37	8 (21%)
March-2025	34	5 (14%)

DISCUSSION

Hepatitis A is often linked to recurrent jaundice and is one of the most common causes of infectious jaundice worldwide⁴. As nations raise their standards of personal hygiene and sanitation, the geographic distribution of HAV infection seems to be shifting, according to the incidence rates from confirmed acute HAV cases. No matter how the infection is contracted, the hepatitis A virus takes 10 to 50 days to incubate, with a typical incubation period of about one month.⁵

Despite being rather stable in a range of environmental circumstances, the hepatitis A virus can be rendered inactive by standard disinfectants such as bleach and hypochlorite. The main way that HAV is spread globally is from person to person through the fecal-oral pathway. Children were the main source of person-to-person transmission prior to the development of the HAV vaccine. Although hepatitis A is usually an acute, self-limiting illness, the way it manifests clinically changes with age.⁶

Recurrent epidemics are a common occurrence. The hepatitis A virus typically causes sudden, explosive outbreaks when feces contaminate a single source, such as milk, food, or drinking water. Very seldom is HAV spread via administering blood or by using tainted syringes and needles.⁷

The overall prevalence of the hepatitis A virus in the current study was found to be 26%. A study conducted in Mangalore reported 19.3% seropositivity for HAV in the patients presenting with acute viral hepatitis¹. In central Karnataka, a study done by Manjunatha Sarthi et al. In 2016 reported a prevalence of 37.25%¹. Seropositivity for HAV was higher in females compared to males in this study. Many investigators have reported the male preponderance for HAV infection in their studies. In this study, positivity for anti-HAV was found to be high (58%) in children under 10 years of age. This is in agreement with other earlier studies. A similar age group was more affected by acute hepatitis in this study by Manjunatha Sarthi et al.¹. In this current study, the most common presenting complaint was fever. Similar studies were conducted by Javaria Rasheed et al. In Multan, Pakistan². The prevalence of hepatitis A was found to be 14.55% by Meghna S. Palewar et al. In 2022⁸. When fecal HAV shedding is still happening and serum aminotransferase activity is high during acute sickness, anti-HAV antibodies can be found. Rarely lasting six to twelve months, this early antibody response is primarily of the IgM class. However, IgG-class anti-HAV antibodies take over as the most common antibody after convalescence.

Hepatitis A does not develop into chronic liver disease; it is still self-limiting. In this study, the seroprevalence of the hepatitis A virus was 4.29%⁹. Similarly, a study done by A. Muneer et al. Reported that the seroprevalence of the hepatitis A virus was 60%¹⁰. A study done by Bing-Yu Yan et al. Between 2006 and 2014 provided a comparison of seroprevalence before and after vaccination¹¹. In the rural Amazon in 2004, a comparative study done with the hepatitis E virus showed seropositivity of 82.9%¹². A similar study done by Pooja Semwall et al. Revealed a seropositivity of 66.92%¹³. In Uttarakhand in 2020, a study was done on children, which revealed seropositivity of 85.2%¹⁴. In 2021, a study done by Geetika Rana et al. Showed seropositivity at 48.93%¹⁵. Table 3 shows the comparison of prevalence of different study with current study.

Table-3: Comparison of prevalence of different studies with current study

Study	Prevalence
Mangalore study ¹	19.3%
Javaria rasheed et al ²	14.5%
A Muneer et al ¹⁰	60%
Pooja semwall et al ¹³	66.92%
Uttarakand 2020 study ¹⁴	85.2%
Geetika rana et al ¹⁵	48.93%
Present study	26%

The best control strategies must stop infected people from fecal contamination before their clinical illness manifests. Therefore, when caring for children under two, the most important control measures are to wash your hands properly and refrain from using work practices that make it easier for your hands to get contaminated. The immunization is safe, efficacious, and advised for use in individuals older than one year. Excellent immunogenicity is seen in adults, adolescents, and children aged one year or older, with protective antibody levels (≥ 20 m IU/mL) ⁵. Large pools of normal **adult** plasma are used to make immune gamma globulin, which, when administered within one to two weeks following hepatitis A exposure, provides passive protection to around 90% of people exposed. Immunoglobulin should be replaced by HAV vaccinations, which provide longer-lasting immunity ⁷.

CONCLUSIONS

In the present study, HAV seroprevalence was found to be 26%. Hepatitis A virus causes acute viral hepatitis most commonly in early childhood, with a small number of adolescents and adults. Females are more commonly infected than males. The most critical control measure is proper handwashing. The

present study also highlights the need for planning decisions on public health policies, including sanitation programs as well as the formulation of vaccination strategies for appropriate use and better control of hepatitis A.

REFERENCES

1. Sarthi M, Kumar GR, Jayasimha VL, et al. Prevalence of hepatitis A virus as cause of acute viral hepatitis in central Karnataka, India. *Int J Contemp Pediatr*. 2016;4:87-89.
2. Rasheed J, Khalid M, Rubab S, Iqbal B, Nawaz I, Shahzad A. Clinical and epidemiological spectrum of acute viral hepatitis due to hepatitis A and E in children: a descriptive, cross-sectional, hospital-based study. *Cureus*. 2022;14:e24056. Doi: 10.7759/cureus.24056.
3. Guzman-Holst A, Luna-Casas G, Burguete Garcia A, et al. Burden of disease and associated complications of hepatitis A in children and adults in Mexico: a retrospective database study. *PLoS One*. 2022;17:e0268469. Doi: 10.1371/journal.pone.0268469.
4. Maasha M, Oberoi L, Sidhu SK, Singh K. Prevalence of acute viral hepatitis in symptomatic patients in a tertiary care hospital of North India. *J Adv Microbiol*. 2022;22:67-71.
5. Knipe DM, Howley PM, editors. *Fields Virology*. 6th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2013.
6. Bennett JE, Dolin R, Blaser MJ. *Principles and Practices of Infectious Diseases*. 9th ed. Amsterdam: Elsevier; 2019.
7. Jawetz E, Melnick JL, Adelberg EA. *Medical Microbiology*. New York, NY: McGraw-Hill Education; 2019.

8. Palewa MS, Joshi S, Choudhary G, Das R, Sadafale A, Karyakarte R. Prevalence of hepatitis A virus (HAV) and hepatitis E virus (HEV) in patients presenting with acute viral hepatitis: a 3-year retrospective study at a tertiary care Hospital in Western India. *J Family Med Prim Care.* 2022;11:2437-2441. Doi: 10.4103/jfmpe.jfmpe_1746_21.
9. Gaikwad P, Turbadkar D, Baveja S. Study of seroprevalence of hepatitis A and profile of patients. *MedPulse Int J Microbiol.* 2021;19:32-36.
10. Muneer A. Prevalence of acute hepatitis A virus and hepatitis E virus in urban cities of Sindh, Pakistan. *Int J Infect Dis.* 2016;53:70
11. Yan BY, Lv JJ, Liu JY, Feng Y, Wu WL, Xu AQ, et al. Changes in seroprevalence of hepatitis A after the implementation of universal childhood vaccination in Shandong Province, China: a comparison between 2006 and 2014. *Int J Infect Dis.* 2019;82:129-134. Doi: 10.1016/j.ijid.2019.03.005.
12. Vitral CL, da Silva-Nunes M, Pinto MA, de Oliveira JM, Gaspar AM, Pereira RC, et al. Hepatitis A and E seroprevalence and associated risk factors: a community-based cross-sectional survey in rural Amazonia. *BMC Infect Dis.* 2014;14:458. Doi: 10.1186/1471-2334-14-458.
13. Semwal P, Gandhi A, Gupta RK, Vajpayee S. Proportion of hepatitis A and E among children with acute viral hepatitis with special reference to differences in their clinico-biochemical parameters: a hospital-based study. *Indian J Child Health.* 2019;6:594-597. Doi: 10.32677/IJCH.2019.v06i11.005.
14. Sharma CM, Gupta S, Aggarwal B, Chaudhary P. Acute viral hepatitis in children: a prospective hospital based study. *Int J Contemp Pediatr.* 2020;7:1681-1685. Doi: 10.18203/2349-3291.ijcp20203039.
15. Rana G, Lone OY. An investigation profile in pediatric patients suspected of acute hepatitis A. *J Pure Appl Microbiol.* 2021;15:2098-2102.

Source of support: Nil

Conflict of interest: None declared.

How to cite: Muthukumaran, Kamothi M, Ghosh R. Prevalence of Hepatitis A Virus in Patients at a Tertiary Care Hospital in Vadodara. *GAIMS J Med Sci* 2026;6(2):69-73

<https://doi.org/10.5281/zenodo.20082168>