

Systematic Review

A review on prevalence, clinical features, and risk factors of hepatitis A virus infection in Sri Lanka

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Abstract

Hepatitis A virus (HAV), which causes hepatitis A, remains a global public health concern. HAV is transmitted primarily through the faeco-oral route, either by ingestion of contaminated food or water or through direct person-to-person contact. HAV causes acute viral hepatitis but does not lead to chronic infection. This review examined locally published literature on the prevalence, clinical features, and risk factors of HAV infection in Sri Lanka. A literature search was conducted on publicly accessible PubMed, SLJOL and DOAJ databases on 1st June 2025 using a keyword search [hepatitis A] OR [type A hepatitis] AND [Sri Lanka]. The search yielded 46 publications, of which nine research articles were included in the present review. The findings showed that the sero-prevalence of HAV infections in Sri Lanka ranged from 10.8% to 88.8%. Sri Lanka shows a widespread exposure to HAV, with differences in sero-prevalence across geographical areas and study cohorts. The reported clinical features were comparable to those described in the global literature. Risk factors for acquiring HAV infection included poor knowledge of hepatitis A, poor hygiene, unsafe drinking water, low income, and urban residence.

Keywords: *Hepatitis A, prevalence, clinical features, risk factors, Sri Lanka*

Introduction

Hepatitis A is caused by the hepatitis A virus (HAV), a small, non-enveloped, single-stranded RNA virus. HAV was initially believed to be an enterovirus but was later reclassified in 1991 as a member of the genus *Hepatovirus* within the family *Picornaviridae*. HAV is spread through the faeco-oral route, mainly by ingestion of contaminated food or water and through direct person-to-person transmission. The HAV infection rate is closely linked to poor socio-economic conditions and limited access to clean water for drinking and domestic purposes. HAV-associated acute viral hepatitis is a vaccine-preventable disease and does not cause chronic infections.¹ Globally, 1.5 million cases of hepatitis A are reported every year.¹ HAV infection in early childhood is often

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asymptomatic, whereas disease severity increases with age, resulting in substantial morbidity and occasional mortality among adults.²

HAV endemicity is determined by the age-specific prevalence of anti-HAV antibodies. In highly endemic settings, most individuals acquire infection in early childhood, whereas improved sanitation and access to clean water can reduce childhood exposure and shift primary infection toward older age groups, resulting in an intermediate endemicity pattern.^{3,4} Geographic regions or areas are considered highly endemic for HAV infection when at least 90% of individuals acquire immunity by 10 years of age; intermediately endemic when 50% or more are immune by 15 years; low endemic when at least half of the population becomes immune by 30 years; and very low endemic when fewer than 50% have developed immunity by the age of 30.³ Regions that were historically hyperendemic for HAV are now transitioning to intermediate endemicity, characterised by reduced exposure during childhood and increased susceptibility in adolescence and adulthood.¹ This transition has been well documented in several South and Southeast Asian countries including India, Bangladesh, Nepal, and Pakistan, where recent sero-surveys have demonstrated heterogeneous HAV antibody prevalence between urban and rural populations.^{5,6} However, despite this epidemiological shift, detailed information on the prevalence, clinical spectrum of the disease, and risk factors for HAV infection remains limited and fragmented across a small number of studies in Sri Lanka. This review aims to systematically analyse the available literature on HAV infection in Sri Lanka on prevalence, clinical characteristics, and risk factors.

Methodology

This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.⁷ However, the review registration was not done in PROSPERO, as the registry is designed for full systematic reviews with prospectively defined protocols.

All included articles in the review were published in English. Studies on hepatitis A in the Sri Lankan population, including prevalence, clinical features, and risk factors, were included in the review. Commentaries, editorials and reviews were excluded. The search was conducted using 3 electronic databases. We searched PubMed, SLJOL (Sri Lanka Journals Online), and DOAJ (Directory of Open Access Journals) databases on 1st of June 2025 from inception using the following search terms: ‘hepatitis A’, ‘type A hepatitis’, and ‘Sri Lanka’.

The search strategy used was (hepatitis A) OR (type A hepatitis) AND (Sri Lanka). Broader contextual keywords such as ‘lower-middle-income-countries’ were not included, which may have limited the retrieval of studies reporting Sri Lankan data within the lower-middle-income-countries (LMICs) framework.

We searched the reference lists of included citations for additional studies. The database search yielded 46 articles. Duplicates (n=2) were removed. Articles were first screened using the title and abstract. Two independent reviewers then examined the full text to check for eligibility within the inclusion and exclusion criteria. Any discrepancies were resolved through discussion and consensus.

A total of 35 articles were excluded from the search according to the specified criteria: 30 articles were not focused on hepatitis A in Sri Lanka, 2 articles covered hepatitis A co-infection with other infections, and there was one cover story, one editorial and one review article. The remaining 9 articles underwent full-text assessment, and all nine were included in the final review. Extraction of the data on prevalence, clinical characteristics, and risk factors for hepatitis A in Sri Lanka was then carried out by two independent reviewers. A formal quality assessment or risk of bias assessment was not performed, as this study was designed as a review with a focused scope rather than a full systematic review. Only peer-reviewed studies were included to ensure scientific validity. The process of the selection of studies based on the inclusion and exclusion criteria is shown in Figure 1.

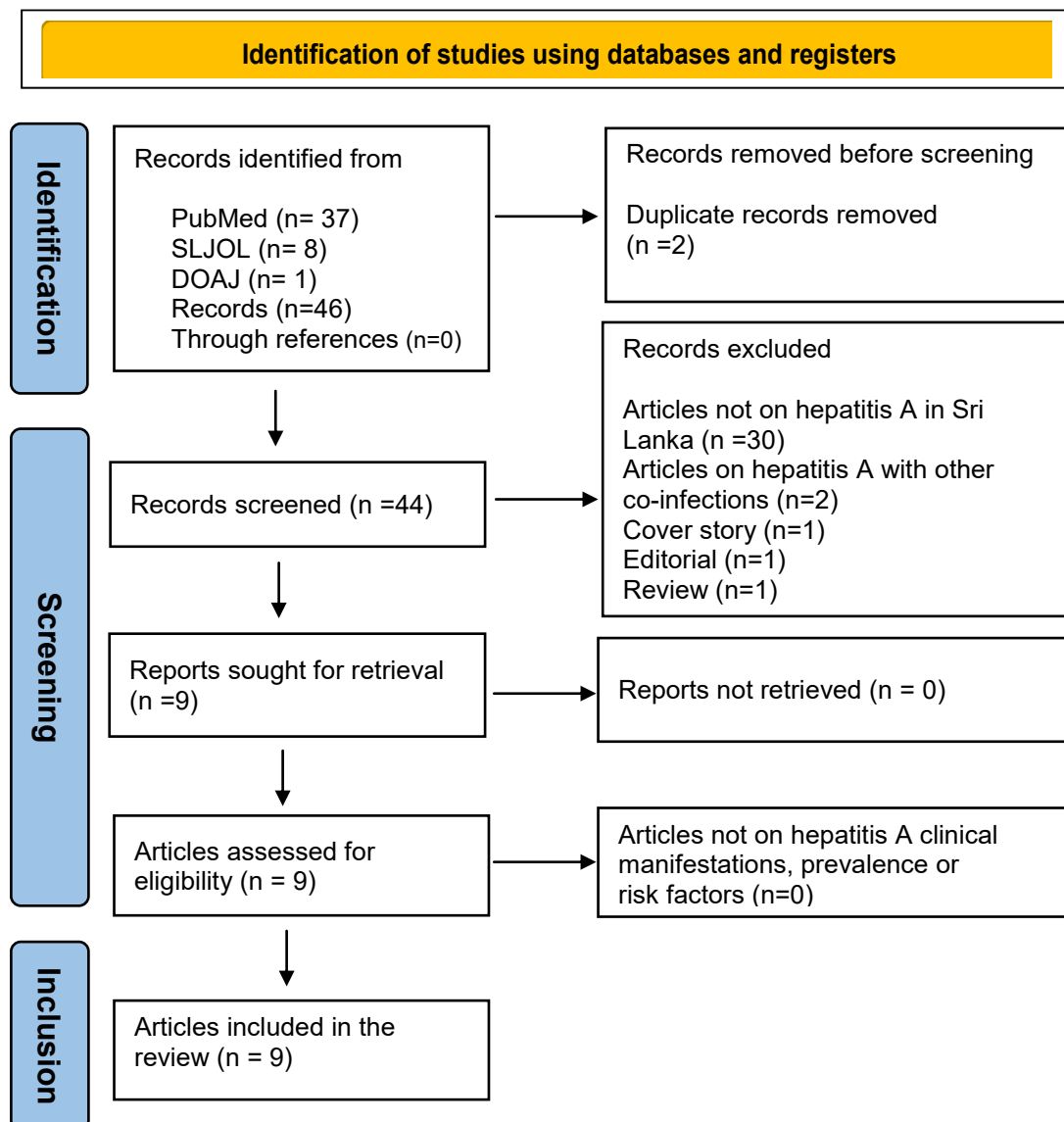


Figure 1. Flowchart showing the selection of studies for the review using PRISMA guidelines

Results

Prevalence

In 1975, 287 healthy individuals in the Colombo district were tested for antibodies against HAV using an immune adherence haemagglutination assay. The overall anti-HAV seroprevalence was 76.9%, with approximately the same prevalence in males and females. Age-specific prevalence of antibodies indicated that the majority were exposed to HAV in early childhood.⁸ Of 288 children examined in a 7-months study done at Lady Ridgeway Hospital from September 2001, 31 (10.8%) had antibodies against HAV, giving an anti-HAV seroprevalence of 11.6% in children under 10 years of age.⁹ None of the children in this study were immunised against HAV, and 243 (84.4%) were from the Western Province of Sri Lanka. In a study conducted for one year from January 2013 on 107 patients diagnosed with cirrhosis in the gastroenterology outpatient clinic of the university medical unit, Colombo North Teaching Hospital, Ragama, 45 (42%) were positive and 62 (58%) were negative for anti-HAV IgG. None of these patients had been vaccinated against HAV. The anti-HAV IgG was checked using enzyme-linked immunosorbent assay (ELISA) (CTK Biotech Inc, USA)¹⁰ as part of routine investigations.

A descriptive cross-sectional study was done between September 2015 and December 2016 on 1403 individuals aged >1 year in the Gampaha district using multistage stratified cluster sampling according to age group and residential area. This study showed an overall HAV seroprevalence of 80.7% (95% CI: 78.64–82.76). Of the 1,403 study participants, 283 (20.2%) were aged ≤14 years. Among them, 204 individuals tested positive for anti-HAV IgG, with a seroprevalence of 72.1% in this age group. Participants aged ≥15 years accounted for 1,120 (79.8%) of the study population, of whom 928 were anti-HAV IgG positive, corresponding to a seroprevalence of 82.9%. The lowest seroprevalence was observed in the 11–20-year age group (n=232; 66.9%), followed by the 21–30-year age group. Seroprevalence increased progressively with age, exceeding 90% in individuals aged ≥31 years and reaching 100% in those aged over 71 years. The seroprevalence in urban and rural areas was 83% (n=195) and 80.2% (n=937), respectively. Seropositivity in females and males was 82.2% and 77.7%, respectively. Among the 1,132 seropositive participants, 34 (3.0%) reported a previous history of HAV infection. In this study, the confirmation of seroprevalence was done using anti-HAV IgG ELISA (AccuDiag™, USA).¹¹

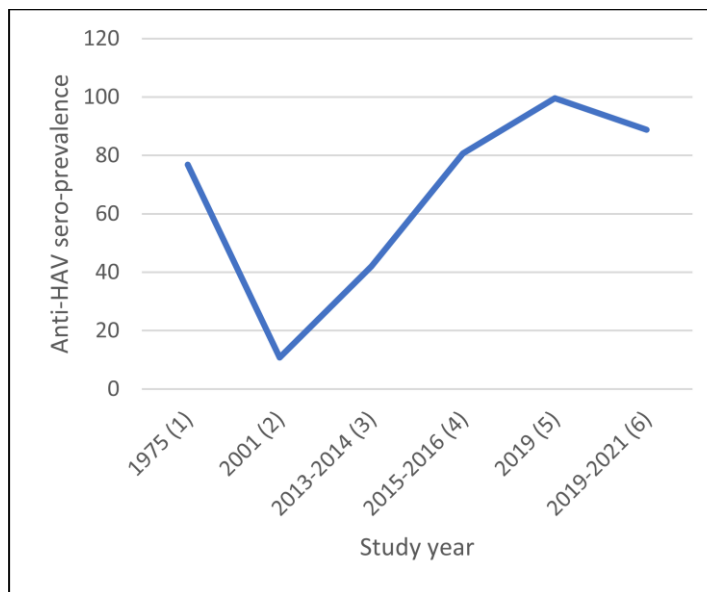


Figure 2. Reported anti-HAV seroprevalence in different regions of Sri Lanka, based on studies published from 1975 to 2021

Study locations include: (1) Colombo District⁸ (2) Lady Ridgeway Hospital, Colombo⁹ (3) Colombo North Teaching Hospital, Ragama¹⁰ (4) Gampaha District¹¹ (5) Jaffna University¹² (6) Central Province¹³

Another descriptive, cross-sectional study done on 180 Allied Health Science students at the University of Jaffna in 2019 showed an anti-HAV IgG seroprevalence of 99.4%. The study cohort consisted of 68 males and 112 females with a mean age of 23.5 years. The serum samples were qualitatively tested for anti-HAV IgG using ELISA (AccuDiag™, USA).¹²

A retrospective data analysis was done on samples received at the virology laboratory of the National Hospital, Kandy, from patients with a clinical diagnosis of hepatitis from January 2019 to December 2021. Among the 573 samples tested for anti-HAV IgG, an overall seroprevalence of 88.8% was observed.¹³ The reported anti-HAV seroprevalence rates across different regions of Sri Lanka are summarised in Figure 2, while the geographical distribution of study locations is presented in Figure 3.

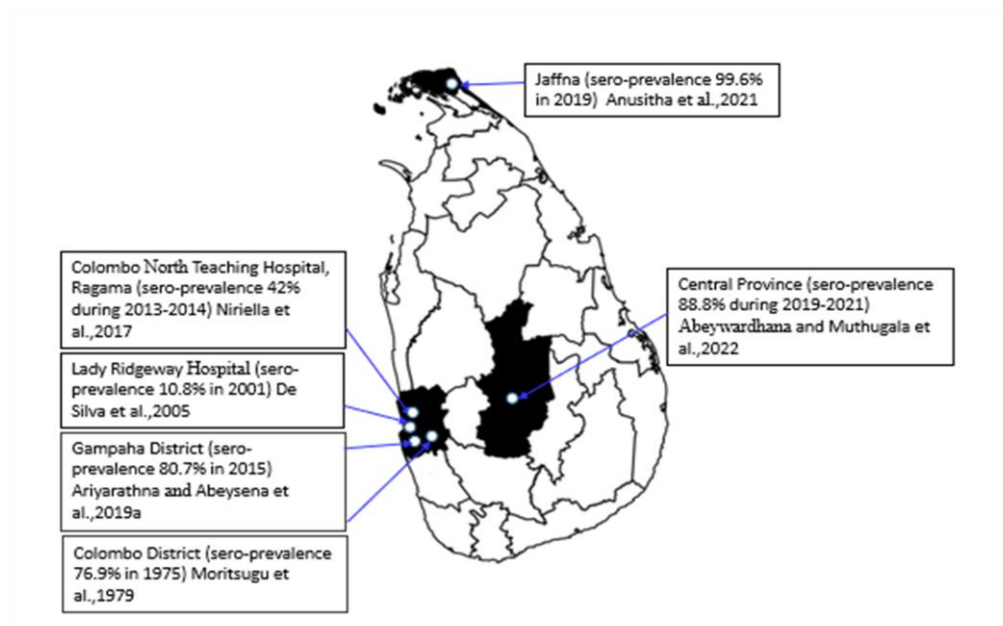


Figure 3. Geographical distribution of study locations and reported anti-HAV seroprevalence rates in Sri Lanka, 1975–2021

Clinical features

Fever, malaise, and anorexia were the commonest initial symptoms of hepatitis A in patients admitted to the Military Hospital, Anuradhapura, between January and September 2010.¹³ At the time of hospital admission, icterus, dark-coloured urine, anorexia, and malaise were present in more than 90% of patients. Fever, nausea, upper abdominal discomfort, headache, vomiting, arthralgia, pruritus, pale stools, diarrhoea, cervical lymphadenopathy, hepatomegaly, and splenomegaly were noted in patients with acute HAV infection. All patients had elevated total bilirubin and liver transaminases on admission. Most patients had normal haemoglobin, white blood cells, and platelet counts on admission. None of the patients developed severe complications such as fulminant hepatitis, hepatic encephalopathy, acute liver failure, acute renal failure, haemolytic anaemia, or myocarditis during hospitalisation. However, one case of prolonged cholestasis and one case of recurrent hepatitis were observed.¹⁴ No significant differences in

clinical or biochemical characteristics were observed between HAV subgenotypes IA and IIIA, except for the pale stools and upper abdominal discomfort.

Conversely, yellowish discolouration of the eyes, tea-coloured urine, and pale stools were the clinical features of HAV-infected individuals in a community-based, cross-sectional study conducted in the Gampaha District in 2015. Among the 1,132 sero-positive individuals, 169 (14.9%) reported a past episode of tea-coloured urine, while 110 (9.7%) had experienced pale stools. A combination of all three symptoms was reported by 53 participants (4.7%).¹¹ Tea-coloured urine with yellowish discolouration of the eyes was reported by 64 participants (5.7%), while tea-coloured urine with pale stools was noted in 69 participants (6.1%).

Risk factors

A significantly higher HAV seroprevalence was observed among children belonging to lower socio-economic classes (IV and V) and among those whose mothers had attained only primary-level education in a prospective, descriptive study done at Lady Ridgeway Hospital in 2001.⁸ The study did not find a significant difference in HAV seropositivity between children with exclusive access to water and toilet facilities and those who shared these amenities with others. Similarly, garbage disposal practices that could promote fly breeding were not significantly associated with HAV seropositivity. Most of the children (94%) had food prepared by their mothers, and nearly all caregivers reported washing their hands with soap. Analysis of maternal and caregiver personal hygiene practices revealed no statistically significant association with the presence of anti-HAV antibodies in these children. In this study, the social class of the participants was classified according to their father's occupation.⁹

In an unmatched case-control study done in the Gampaha District between January 2015 and November 2016, statistically significant associations with HAV infection were observed among male participants aged over 13 years. Factors contributing to these associations included being Buddhists, Sinhalese, married, having lower household incomes, previously or currently employed individuals, and urban residents. Participants from larger households, those sharing toilet facilities with a higher number of household members, and individuals reporting foreign travel or travel outside the Gampaha district also had an association with anti-HAV positivity. Additionally, poor knowledge of hepatitis, non-hygienic sanitary practices in general, poor-quality drinking water, residence in urban areas, and low family income were independent risk factors for acquiring HAV infection (Table 1).¹⁵

A study conducted in the military hospital, Anuradhapura in 2010 reported that social conditions are closely linked to HAV prevalence, particularly in intermediate-endemic settings. In the Sri Lankan context, major social disruption due to armed conflict was associated with a significant public health burden of hepatitis A. The study also identified young military personnel as a high-risk group for HAV infection.¹⁴

Discussion

This review discusses and summarises the prevalence, clinical characteristics, and risk factors for HAV infection in Sri Lanka based on the available published studies. An overview of the key

findings from these studies, including reported prevalence patterns, clinical manifestations, and associated risk factors, is shown in Figure 4 as a concise visual summary of the current evidence on HAV infection in Sri Lanka.

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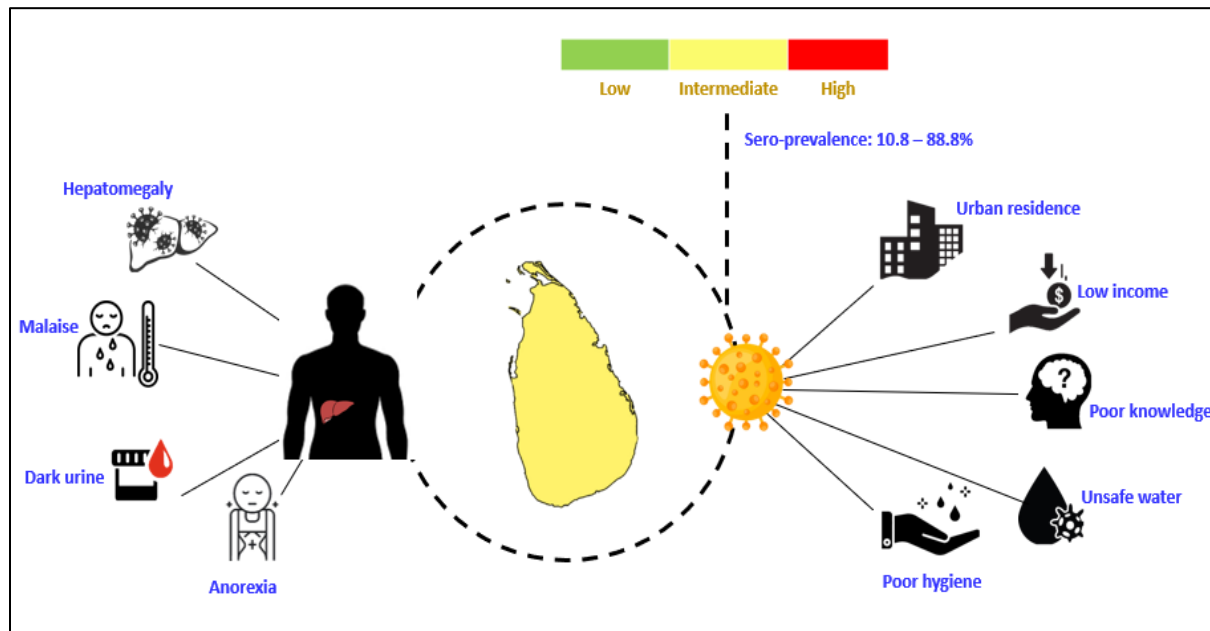


Figure 4. Overview of prevalence, clinical characteristics, and risk factors of hepatitis A virus infection in Sri Lanka, based on published studies

Early studies conducted on HAV infection in Sri Lanka demonstrated very high exposure to HAV during childhood. The earliest serological survey carried out in 1975 among healthy individuals in Colombo reported a seroprevalence of 76.9%, with age-stratified data confirming infection was acquired exclusively in early childhood.⁸ This pattern aligns with the classical hyperendemic model, observed in many South Asian countries where poor sanitation and early exposure result in widespread childhood immunity.^{1,16}

Subsequent findings, however, revealed an emergence of HAV-susceptible paediatric cohorts. The study conducted at Lady Ridgeway Hospital in 2001 reports only 10.8% seropositivity among children under 10 years,⁹ indicating low early-life exposure. A similar decline has been documented in India, Pakistan, Nepal and Bangladesh, where improvements in water, sanitation and hygiene (WASH) indicators have shifted HAV epidemiology toward intermediate endemicity with lower childhood seroprevalence and higher susceptibility among adolescents and adults.^{2,5,6} This trend is consistent with Sri Lanka's rapid socio-economic development and improved sanitation coverage over recent decades. Adult seroprevalence in Sri Lanka remains comparatively high, mirroring the findings from other transitioning countries. Anti-HAV seropositivity among cirrhotic adults (42%) and overall seroprevalence of 80.7% in the community-based survey in Gampaha¹¹ demonstrate widespread HAV exposure. Similarly, high prevalence of anti-HAV was noted during the COVID-19 pandemic in central Sri Lanka (88.8%).¹³ An exception to this pattern was the extremely high seropositivity (99.4%) among Allied Health students in Jaffna in 2019.¹² This may reflect differing environmental conditions, early life exposures in northern Sri Lanka, or

community-level sanitation variations. These results resemble patterns in India, where adults retain high antibody positivity due to historical exposure, despite declining childhood infection rates. A study conducted among children in Bijapur, Karnataka, India, reported anti-HAV IgG positivity rates of 31.8% and 55.3% among urban and rural/slum populations, respectively.¹⁷ However, a multicentric cross-sectional survey among 4,175 healthy young adults in India, selected through multistage random sampling with equal representation from all regions, reported an anti-HAV IgG seroprevalence of 92.7%.¹⁸

Risk factors identified in the Sri Lankan population are similar to those described in other endemic regions, highlighting the similarities in socio-economic determinants and HAV transmission dynamics. Earlier studies from the pre-2000 and early 2000s period mainly highlight factors like low socio-economic status and maternal education as key determinants of childhood exposure, while traditional household hygiene practices like shared sanitation or water source did not show consistent associations. In contrast, more recent studies conducted after 2010 demonstrate a broader but different risk profile, with significant associations observed with urban residence, low income, poor knowledge of hepatitis A, and inadequate sanitation and drinking water practices, particularly among older age groups. Urban susceptibility has also been reported in countries like India and Pakistan, where inconsistent municipal water supply and overcrowding continue to facilitate transmission of HAV.^{2,6}

Taken together, the available Sri Lankan evidence suggests that the pattern of risk factors for HAV infection has evolved in line with the country's epidemiological transition. This shift suggests that as childhood exposure has declined with improvements in WASH infrastructure, susceptibility has shifted to older age groups, where behavioural and environmental factors in urban settings play a more prominent role in transmission, reflecting a transition from classical hyperendemic transmission to intermediate endemicity in the island.

Overall, clinical features reported in the Sri Lankan studies are largely in agreement with the global clinical profile of acute hepatitis A. Severe complications such as fulminant hepatitis were not reported in the Sri Lankan literature, although such outcomes, though rare, are reported in adults globally.² The absence of severe cases in local studies may reflect relatively young study populations, underreporting, or the self-limiting nature of the disease. To our knowledge, this is the first review summarising the available literature on HAV infection in Sri Lanka.

Conclusion

This review highlights that while HAV infection continues to show high overall seroprevalence in Sri Lanka, emerging regional and age-specific variations suggest a transition away from historical hyper-endemic transmission toward an intermediate-endemic pattern. The clinical profile and risk factors of acute HAV infection in Sri Lanka align with global literature, reflecting vulnerabilities like poor sanitation, unsafe water, low socio-economic status, and inadequate knowledge. However, existing studies are limited by a lack of methodologically diverse studies and nationwide data. Hence, comprehensive serosurveillance, age-stratified analyses, and molecular epidemiology are urgently needed to guide public health planning and hepatitis A vaccination strategies in Sri Lanka.

Declaration

Conflict of interest: There are no conflicts of interest.

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Author contributions:

K.T.: Performed the search;

K.T. & S.R.: Screening, data extraction, analysis of the data;

K.T.: Preparation of the first draft;

F.N.: Conceptualisation, intellectual input for manuscript improvement, internal review, and editing. All authors have read, approved and agreed to the published version of the manuscript.

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