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The general public's knowledge, attitudes, and practices around hepatitis A and E prevention and control in Iraq

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ABSTRACT: Both the hepatitis A and E viruses cause acute liver infections; however, only the hepatitis E virus has the potential to develop into an extrahepatic and chronic infection. The purpose of this study was to evaluate participants' practices for adopting a healthy lifestyle to prevent contracting hepatitis A and E, as well as the general population's knowledge and attitude towards these diseases.

This cross-section observation study comprised 832 participants conducted between January and June 2024, the study population was Wasit University students from different colleges (scientific and humanitarian), also from secondary school students, and hospital patients. The majority of participants were between the ages of 18 and 30, with 554 (66.6%) females and 278 (33.4%) males, according to the individual's sociodemographic characteristics. Of the participants, 743 (89.3%) were aware that the virus causes hepatitis A and E. Additionally, 511 (61.4%), 698 (83.9%), and 565 (67.9%) of them correctly identified the virus's route of transmission, how to avoid infection, and if a vaccine was available for hepatitis A respectively.

The results show that 814 (97.8%), 811 (97.5%), and 630 (75.7%) practiced excellent food hygiene, hand washing after using the restroom, and avoiding contact with those who had hepatitis A or E, respectively. This study shows a high level of basic knowledge especially regarding the viral causes and hygiene practices also, this study reveals significant gaps in the translation of knowledge into preventive actions such as testing and vaccination

Keywords: Hepatitis A, Hepatitis E, Transmission of hepatitis, Prevention of hepatitis

1. INTRODUCTION

Human hepatocytes can become infected with viruses that cause hepatitis, which damages the liver. The consequences of a dual infection with two hepatotropic viruses are altered. Two enterically

transmitted viruses, the hepatitis A virus (HAV) and the hepatitis E virus (HEV), are both single-stranded RNA viruses with similar routes of transmission. While there are no animal reservoirs for the HAV, they are mostly spread by the fecal-oral route and the consumption of infected food. Both HEV and HAV can lead to acute, self-limiting diseases; however, only HEV has the potential to develop into extrahepatic, chronic infections [1].

The epidemiology of HEV and HAV infections is similar, but there are some notable differences as well. In resource-constrained areas and high endemicity regions, HAV primarily affects toddlers, adolescents, and young adults, whereas, in developed countries, the rate of HEV infection rises with age, primarily affecting adults over 50. The World Health Organisation estimates that 1.4 million cases of hepatitis A occur worldwide each year, accounting for about 7,000 deaths [2]. By contrast, an estimated 20 million HEV infections occur annually, resulting in 3.3 million symptomatic cases and approximately 44,000 fatalities [3].

Fecal-oral transmission is the main way that HAV spreads, mostly via direct human contact but sometimes through infected food or drink. Any individual having oral-anal intercourse, regardless of gender or sexual orientation, is more likely to become infected than males who have sex with other men [4]. Injecting drug users are at high risk of parenteral transmission via tainted blood products, and their higher incidence is directly connected with lower wages [4]. Before showing symptoms, infected people often shed the virus in their faeces for two weeks. After that, they usually do so for a few days, although they may do so for many weeks.

Hepatitis A usually manifests as clinical symptoms 14–28 days after exposure, however, they might appear up to 50 days later [4]. Clinical manifestations of the illness might vary from fulminant hepatitis to asymptomatic [5]. Very young children frequently show no symptoms at all. The illness history usually worsens with age. The normal presentation consists of two phases: an icteric phase that follows a prodromal phase that lasts for three to ten days and is characterised by myalgia and malaise [5]. Anorexia, nausea, and exhaustion are linked to mixed hepatic and cholestatic jaundice during the icteric phase. This phase lasts for one to three weeks. Although it varies greatly with age, acute liver failure happens in around 0.3% of cases; the case fatality rate is 1.8% in persons over 49 and between 0.1% and 0.3% in children and adults under 40 [6].

Acute liver failure from HAV infection is more likely when co-existing chronic HBV or HCV infection is present [6]. A cholestatic picture is shown by liver function tests (LFTs), which also indicate a modest to moderate increase in alanine aminotransferase (ALT) and a substantial elevation of bilirubin and alkaline phosphatase. Patients with cholestatic hepatitis typically simply need supportive care and recover completely.

The majority of individuals with clinically evident hepatitis E have a 4–6 week acute, self-limiting disease [7]. Patients experience symptoms that are characteristic of hepatitis after an incubation period of two to ten weeks, including jaundice, lethargy, fever, stomach discomfort, nausea, and vomiting. Young adults are the most usually afflicted group in emerging nations. Compared to women, men are more likely to appear clinically.The overall death rate is between 0.2% and 4% [8], but it is much higher in vulnerable populations, such as young children [9], people with pre-existing liver disease [10], and pregnant women [11], where the third trimester is the highest risk period since 33% of those who contract the infection during that time of pregnancy will experience fulminant hepatic failure.

At-risk persons in sexual health settings should be provided HAV screening; this screening should primarily target males who have sex with men, intravenous drug users, and patients with HIV, HBV, or HCV illness [12]. Vaccination should be administered to those who test negative, improving access to clean, safe drinking water and sanitary facilities are the main preventive measures in areas where HEV1 and HEV2 are prevalent. The main line of defence against infection in resource-rich environments where zoonotic transmission is the predominant mode of transmission is adequate food product processing.[12]

2. MATERIALS AND METHODS

2.1- Study design

A cross-section observation study comprising 832 participants was conducted in Wasit governorate between January 2024 and June 2024. The study population was university students from different colleges of Wasit University (scientific and humanitarian), also from secondary school students, and hospital patients with face-to-face interviews and some participants responding to online questionnaires.

2.2- Data Collection

The data was collected by the researchers using a structured questionnaire, in both direct face-to-face interviews and indirectly through Google form. The questionnaire consists of three parts:

- Part One of the questionnaire comprised questions on sociodemographic data:

*Age

*Gender

*Marital Status

*Educational Level

- Part Two included questions intended to assess participants' knowledge of hepatitis A and E. "Yes," "no," and "I don't know" questions were used to cover a range of information on the cause, symptoms, transmission, and treatment of hepatitis A and E. One point was awarded for a right response to the knowledge questions, and zero for a wrong one. The research participants' knowledge score was determined by taking the percentage of right answers.

- Part Three had seven questions designed to evaluate participant habits related to HEV and HAV infection prevention. One point was awarded for excellent practice on the questions and zero for poor practice. The practice score for each participant was determined by taking the percentage of those who practised well.

2.3- Ethical considerations

Before starting the trial, official approval was granted by the health department and hospital administrators. All participants were informed of the study's purpose, and their agreement was acquired. A doctor interviewed the willing patients following their consultation. By not requesting names or contact information, the questionnaire guaranteed the responders' anonymity. To prevent anyone from overhearing the interviews, they were held in a private area away from other people.

2.4- Statistical analysis

The data was analysed using SPSS-28 software with a Chi-square test to determine the relationship between knowledge and practice, as well as gender, age, education level, and marital status. *P*-values below 0.05 were considered significant.

3. RESULTS AND DISCUSSION

3.1- Demographic characteristics of the study participants.

A total of 832 participants completed the questionnaire. Table 1 displays the baseline demographic characteristics of respondents. Among participants, women made up the majority (N = 554; 66.6%) of them. Participants' ages ranged from less than 18 to more than 30 years. Of these, 692 (83.2%) were between the ages of 18 and 30, while 94 (11.3%) were older than 30. Furthermore, the majority of participants, 662 (76%), were single. Additionally, 681 (81.9%) of participants were university students, and 106 (12.7%) were in high school.

Table 1: Demographic characteristics of the study participants.

Variables		Frequency	Percentage
Age group	Less than 18 18 - 30 More than 30	46 692 94	5.5% 83.2% 11.3%
Gender	Male Female	278 554	33.4% 66.6%
Marital status	Married Unmarried	200 632	24% 76%
Educational level	Uneducated Primary school Middle School High School University	1 10 34 106 681	0.1% 1.2% 4.1% 12.7% 81.9%

The study enrolled 832 participants, of them 33.4% are men, 83.2% are between the ages of 18 and 30, and 81.9% are college students. Participants in the research had a high understanding of hepatitis A and E (73.9%).

Hepatitis A and E are significant public health concerns worldwide, particularly in regions with inadequate sanitation and limited access to clean water, both diseases are caused by enteric viruses that primarily affect the liver, leading to inflammation and a range of clinical symptoms.

The current study, which focused on knowledge, attitudes, and practices related to hepatitis A and E virus prevention, was carried out between January and June of 2024.

3.2- Assessment of the HAV& HEV knowledge of study participants.

For the knowledge questions, the right answer was worth one point, while the wrong answer was worth zero. Table 2 displays the percentages of those who answered the knowledge questions correctly. It is shown that 743 (89.3%) of participants were aware that viruses cause hepatitis A and E, and 511 (61.4%), 698 (83.9%), and 565 (67.9%) of them correctly identified the virus's route of transmission, how to avoid infection, and if a vaccine was available for hepatitis A. Additionally, 624 individuals (75%) and 551 participants (66.2%) correctly identified the signs and treatments of hepatitis A and E, respectively. To sum up, the average knowledge score was 73.9% overall.

Table 2 demonstrates that the study participants' awareness of HAV and HEV was high (73.9%). Regarding this, table 2's inferential analysis demonstrated that participants' awareness of the symptoms of HAV and HEV was correlated with their educational attainment (p=0.018), with higher educated individuals generally tending to react accurately. About HAV and HEV therapy, 66.2% of

participants indicated that they had a moderate understanding of the fact that these conditions may be treated. This factor did not correlate with age, gender, or educational attainment ($p > 0.05$); however, it was related to marital status ($p = 0.018$). Additionally, age group ($p = 0.004$) and participant education level ($p < 0.001$) were strongly correlated with knowledge about infection prevention, but not gender or marital status ($p > 0.05$). Furthermore, a strong awareness of the HAV vaccine was demonstrated by the fact that 67.9% of participants correctly answered the vaccination question. This finding was strongly correlated with participants' gender ($p = 0.014$) and education level ($p = 0.005$) but not with participants' age ($p = 0.095$) or marital status ($p = 0.559$)

Table 2: Assessment of the knowledge about HAV & HEV

Variables	Response, N(%)				P value			
	True	False	I don't know	C .A. N(%)	Gender	Age Group	Education Level	Marital Status
Is hepatitis caused by virus?	743 89.3%	25 3%	64 7.7%	743 89.3%	0.958	0.358	0.064	0.079
Hepatitis A&E transmitted faeco-orally?	511 61.4%	119 14.3%	202 24.3%	511 61.4%	0.151	0.161	0.072	0.826
Jaundice is one of the symptoms	624 75%	87 10.5%	121 14.5%	624 75%	0.643	0.50	0.018	0.168
Is there a treatment for a person infected with hepatitis A&E?	551 66.2%	115 13.8%	166 20%	551 66.2%	0.796	0.139	0.162	0.018
Can hepatitis A&E be prevented?	698 83.9%	34 4.1%	100 12%	698 83.9%	0.134	0.004	<0.001	0.427
Is there a vaccine for hepatitis A?	565 67.9%	77 9.3%	190 22.8%	565 67.9%	0.014	0.095	0.005	0.559
Average				615.3 ± 82.4 SD				
73.9%								

Additionally, 89.3% of participants in our survey were aware that viruses cause hepatitis; this knowledge was somewhat lower than the 56.8% observed in a recent Saudi Arabian study that evaluated participants' awareness of all forms of viral hepatitis [13]. The HAV vaccine was well-known (679.9%) in our research. Nonetheless, another study conducted among public university students in Malaysia revealed that the understanding of HAV immunisation was only minimal, at 49.2% [14]. Sixty-one percent of our participants correctly identified the potential mode of transmission for hepatitis A and E.

Our findings concur with a prior study's conclusion that 50% of people are aware of the hepatitis A transmission mechanism [14]. Of the participants in our study, 83.9% were aware that hepatitis A and E may be avoided. However, our results are inconsistent with the findings of a study in Saudi Arabia which found that the knowledge regarding hepatitis A and E prevention was low 7.1% [13]. Regarding the treatment of hepatitis, A and E, more than half of our participants knew that there is treatment for hepatitis A or E (66.2%). However, research by S. Jabeen *et al*. found that 85% of participants were aware that hepatitis A and E are curable [15]. Most of the participants were aware that jaundice is one of the symptoms and indicators of hepatitis 75% of the time. Our findings concur with those of research conducted among 73.3% of Malaysian university students, which evaluated participants' knowledge of all forms of viral hepatitis [14].

3.3- Assessment of study participants’ practices toward HAV & HEV.

Participants' habits regarding HAV and HEV infection were evaluated using seven questions (Table 3). The results show that 97.8% of participants select "Yes" (N=814) when asked if they washed their hands after using the lavatory. The selection of this response was substantially correlated with gender (p = 0.028), but not with age, marital status, or educational attainment (p >0.05). In addition, 689 (82.8%) of the participants select "Yes" in response to the question, "Do you eat restaurant food and appetizers?". The participants' educational attainment and this response had a strong correlation (p = 0.001).

Furthermore, 647 (77.8%) of the individuals said that they had not had a hepatitis A or E test. Gender, age, education level, and marital status were all substantially correlated with this response (p < 0.001, <0.001, 0.01 and <0.001, respectively). However, when it came to the question about taking part in hepatitis health education, there was a significant correlation found to gender, age, education level, and marital status (p = 0.006, <0.001, 0.010, and <0.001, respectively). Of the participants, approximately 687 (82.6%) answered negatively to this question.

In addition, 630 individuals (75.7%) answered "Yes" when asked if they avoided close contact with someone who had hepatitis A or E. This response was substantially correlated with marital status ($p = 0.005$) but not with age, gender, or educational attainment ($p > 0.05$). Conversely, 348 (41.8%) individuals indicated that they had not had a hepatitis A vaccination in response to the query. Age and marital status were shown to be strongly correlated with this reaction ($p < 0.001$ and < 0.001, respectively).

Table 3 : Assessment of the practices of the study participants associated with HAV & HEV

Variables	Response, N(%)			P value			
	Yes	No	I don't know	Gender	Age	Education	Marital
Do you wash your hands after getting out of the bathroom?	814 97.8%	10 1.2%	8 1%	0.028	0.518	0.680	0.265
Do you take care of food hygiene before eating?	811 97.5%	11 1.3%	10 1.2%	0.319	0.623	0.451	0.369
Do you eat restaurant food and appetizers?	689 82.8%	128 15.4%	15 1.8%	0.521	0.568	0.001	0.411
Have you been tested for hepatitis A or E?	142 17.1%	647 77.8%	43 5.2%	<0.001	<0.001	0.010	<0.001
Have you ever participated in health education against hepatitis ?	132 15.9%	687 82.6%	13 1.6%	0.006	<0.001	0.010	<0.001
Have you been vaccinated for hepatitis A?	236 28.4%	348 41.8%	248 29.8%	0.156	<0.001	0.181	<0.001
Do you avoid being close to someone Infected with hepatitis A &E?	630 75.7%	116 13.9%	86 10.3%	0.787	0.349	0.480	0.005

In terms of the participants' habits for preventing hepatitis A and E, 97.8%, 97.5, and 75.7% of them practised appropriate hand washing after using the restroom, excellent food hygiene, and avoiding contact with those who were infected with the disease, respectively. This is in line with previous Pakistani studies that have been done [15]. A possible explanation for the low participation rate of just 15.9% in health education programs against viral hepatitis might be attributed to a lack of enthusiasm and knowledge. These results align with the findings of Nazri *et al.* [14], who found that only 16 out of 120 participants had taken part in a program about viral hepatitis. 82.8% of research participants don't practice refraining from consuming restaurant meals and appetizers. This finding is inconsistent with other two surveys conducted in Saudi Arabia and Karachi [16,17].

However, only a few people 17.1% and 28.4% have good practices of being screened for hepatitis A & E and being vaccinated for hepatitis A, respectively. This percentage is lower than that reported by another study, in which 78% and 83% of participants were screened for hepatitis A & E and been vaccinated for hepatitis A respectively [15].

4. STUDY LIMITATION

One of the limitations of this study was a few studies in Iraq have reported HEV and HAV awareness and knowledge among different populations. And the convenience of sample selection in a single city limits this study's generalizability. However, to our knowledge, this is the first Iraqi study assessing hepatitis A and E prevention and control.

5. CONCLUSION

This study shows a high level of basic knowledge about HAV and HEV, especially regarding the viral causes and hygiene practices also, this study reveals significant gaps in the translation of knowledge into preventive actions such as testing and vaccination, the findings suggest the educational initiatives have been somewhat successful in raising awareness and need more effort is needed to convert this awareness into action.

Fostering awareness could contribute to developing a positive attitude toward immunization when the vaccine becomes available, by addressing these issues, policymakers and healthcare providers can work toward reducing the impact of HAV and HEV so that the residents can enjoy their healthy lifestyle in Iraq

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